KENWOOD

DRV-830

GPS Integrated Dashboard Camera
INSTRUCTION MANUAL

JVCKENWOOD Corporation

microSDXC™

Contents

- **The screen images and operation examples in this document were created for explaining the operating procedures. There may be screen images that differ from the actual screens or examples of operations not actually performed.**
- **The latest instruction manual, firmware update information, etc., are available at the JVC KENWOOD website. Please visit the following website.**

http://www.kenwood.com/cs/ce/

Disclaimer
- Please note that JVC KENWOOD shall not be responsible for any damages suffered by the customer or a third party as a result of incorrectly using this product, a failure during use of this product, or other trouble, or due to the use of this product, unless such liability is acknowledged by law.

Copyrights
- Recorded video, image, and audio content cannot be used for other than personal enjoyment without the consent of the copyright holder as specified in the Copyright Act.
- Please note that the recording of an event such as a show, performance, or exhibition may be restricted even when doing so for personal enjoyment.

Dashboard camera Function Guide

This dashboard camera records videos and still pictures and stores them on the microSD card (hereafter referred to as "SD card").
Be sure to insert the SD card into SD card slot 1 before using the camera.
SD card slot 2 is extend storage capacity for normal recording data.

P. 19

About the setup function

The setup menu is displayed the first time the camera's power is turned on.
Follow the instructions on the menu screen to configure the settings and complete the basic setup related to installation. The settings can also be configured in the same way using the setup function from the MENU settings. (➜ P. 31)

About the recording functions

The camera can record images while you are driving (when the camera's power is on) (normal recording).
Furthermore, the camera can record images before and after major impacts to the vehicle or directly after impacts while the vehicle is running or parked (event recording/parked recording).

Continuous recording   P. 21

Recording is performed all the time, from when the power is turned on until it is turned off.

Go

Continuous recording

Arrival
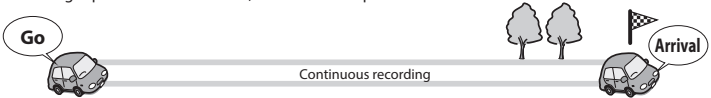
Event recording   P. 21

When the camera detects an impact, the mode switches from continuous recording to event recording, and the video file of the time before and after the impact was detected is saved.

Go

Event recording (for approximately 25 seconds)

Continuous recording

Impact

Continuous recording

Arrival

The time for recording after the impact is detected can be changed.

Approximately 10 seconds before impact   Approximately 15 seconds after impact
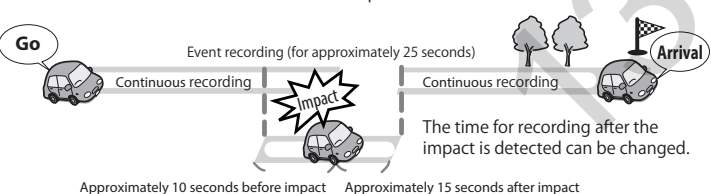
Parked recording   P. 23

When the vehicle is parked, in a parking lot or elsewhere, and the engine key is turned off, the parked recording function is set to standby, and recording starts if an impact to the vehicle is detected.

Parked recording function Standby   Parked recording starts

P

Impact

The CA-DR100 power cable for Dashcam (optional accessory) is required to enable the parked recording function.

* When there was an impact between the start time (when you left the vehicle) and the stop time (when you got into the vehicle), recording is not possible.

■ Other recording functions

Still image recording: When the [▼ ▢] button is pressed during recording, the image being recorded is stored as a still image.
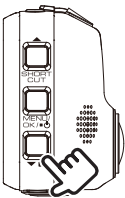
P. 22

Automatic still image capture: When the [▼ ▢] button is pressed and held for over 1 second during recording, the set number of still images is captured automatically at a specific interval.

P. 22

(over 1 second)
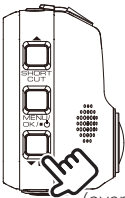
Dashboard camera Function Guide

Manual recording: Images can be stored in a manual recording folder separate from the normal recording folder by pressing the [REC] button during continuous recording.

■ Changing the resolution (recording quality)

The resolution (recording quality) can be selected from among the following: "1280×720 (HDR)", "1920×1080 (HDR) (setting upon purchase)", "2304×1296 (HDR)" and "2560×1440 (HDR)". (➜ P. 33) For a rough estimate of the recording time and number of recordable files, see **Page 46** .

■ Overwriting recorded files

- When "Overwrite" is set to "ON", the old files are overwritten in the event recording, manual recording and parked recording modes. (➜ P. 32) Back up (copy) any necessary files on a computer, etc. When set to "OFF", recording is no longer possible once the maximum number of recorded files for that size of SD card is reached. (➜ P. 46) You are notified of this by a warning sound, a warning message and an indicator. Upon purchase, overwriting is set to "OFF" for event recording and manual recording, "ON" for parked recording.

- Overwriting cannot be switched on and off for continuous recording or still image recording. When there is no more recordable space, old files are overwritten.

Setting the microphone sound during recording

It is possible to set whether or not to record the sound of the microphone during recording by pressing the [🎤 ⤸] button. Upon purchase, this is set to "ON". The setting switches between "ON" and "OFF" each time the button is pressed. When set to "ON", the MIC indicator lights green.

Accessories

Cigarette lighter plug cord (4 m) × 1
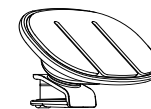
Mount bracket × 1

Precautions for Use

Precautions and notices

Warning! Do not operate the device while driving. Using this product does not change the requirement for a driver to take full responsibility for his or her behavior. This responsibility includes observing all traffic rules and regulations in order to avoid accidents, personal injury or property damage.

- For your own safety, do not operate the controls of the product while driving.
- A window mount is needed when using the recorder in a car. Make sure that you place the recorder in an appropriate place, so as not to obstruct the driver's view or deployment of airbags.
- Make sure that no object is blocking the camera lens and no reflective material is placed near the lens. Please keep the lens clean.
- If the car's windscreen is tinted with a coating, this may impact the recording quality.
- Connect the charger to a proper power source. The voltage requirements are found on the product case and/or packaging.
- Do not use the charger if the cord becomes damaged.
- Do not attempt to service the unit. There are no serviceable parts inside. Replace the unit if it is damaged or exposed to excess moisture.

Caring for your device

Taking good care of your device will ensure trouble-free operation and reduce the risk of damage.

- Keep your device away from excessive moisture and extreme temperatures.
- Avoid exposing your device to direct sunlight or strong ultraviolet light for extended periods of time.
- Do not place anything on top of your device or drop objects on your device.
- Do not drop your device or subject it to severe shock.
- Do not subject your device to sudden and severe temperature changes. This could cause moisture condensation inside the unit, which could damage your device. In the event of moisture condensation, allow the device to dry out completely before use.
- The screen surface can easily be scratched. Avoid touching it with sharp objects. Nonadhesive generic screen protectors designed specifically for use on portable devices with LCD panels may be used to help protect the screen from minor scratches.
- Never clean your device with the power on. Use a soft, lint-free cloth to wipe the screen and the exterior of your device.
- Do not use paper towels to clean the screen.
- Never attempt to disassemble, repair or make any modifications to your device. Disassembly, modification or any attempt at repair could cause damage to your device and even bodily injury or property damage and will void any warranty.
- Do not store or carry flammable liquids, gases or explosive materials in the same compartment as your device, its parts or accessories.
- To discourage theft, do not leave the device and accessories in plain view in an unattended vehicle.
- Overheating may damage the device.
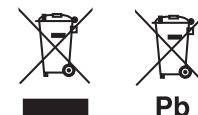
Information on Disposal of Old Electrical and Electronic Equipment and Batteries (applicable for countries that have adopted separate waste collection systems)

Products and batteries with the symbol (crossed-out wheeled bin) cannot be disposed of as household waste.

Old electrical and electronic equipment and batteries should be recycled at a facility capable of handling these items and their waste by products.

Contact your local authority for details in locating a recycle facility nearest to you.

Proper recycling and waste disposal will help conserve resources while preventing detrimental effects on our health and the environment.

Notice: The sign "Pb" below the symbol for batteries indicates that this battery contains lead.

Precautions for Use

Precautions for installation

- Install the device in a position where it will not block the front view of the driver (position where hidden by the rear-view mirror).
- Install the device so that it is within the wiping range of the wiper.
- Install the device in a position where it will not interfere with the movement of the rear-view mirror.
- Take care not to install the device over the vehicle inspection sticker or other sticker.
- Take care not to install the device where it will interfere with driving or airbag operation.
- When installing the device in a vehicle equipped with a driving support system, check the instruction manual of the vehicle and then select an installation location that will not interfere with the driving support system.
- If the device is installed incorrectly, event recording or parked recording may not work correctly. Refer to "How to Install" for the loosening of fixing knob, installation orientation, installation angle, and other information and then install the device correctly.(➜ P. 12)
- Do not install the device near a digital terrestrial television antenna or an electrical component. Doing so may reduce television receiver sensitivity or cause flickering and noise.
- Use a commercially available cleaning cloth or the like to wipe off all dirt and grease on the mounting surface and then fix the mount base in place. If the device is re-affixed or mounted using, for example, general-purpose double-sided tape, the adhesion strength may weaken and cause the device to fall.
- After mounting the device, leave it for 24 hours before use to enable the mounting strength of the mount bracket to improve. Failing to do so may result in the adhesion of the mount bracket becoming weak and the device falling.
- Fix the cord in place with tape or the like so that it does not interfere with driving.

Precautions for use

- Do not block the camera lens, get dirt on it, or place a reflective object near it.
- When LED traffic lights are recorded, video in which they appear to be flickering or flashing may be recorded. JVC KENWOOD assumes no responsibility with regard to the distinguishing or recording of traffic lights.
- If coating is used on the windshield of the vehicle, recording quality may be affected.
- There is no guarantee that the device can record video in all conditions.

Cleaning the device

- When the device is dirty, wipe it with a dry silicone cloth or other soft cloth. If the device is very dirty, remove the dirt with a cloth with neutral cleaner on it then wipe off the cleaner. Wiping the device with a hard cloth or using a volatile substance such as thinner or alcohol may cause scratches, deformation, deterioration or other damage.
- When the lens is dirty, gently wipe it with a soft cloth dampened with water. Rubbing the lens strongly with a dry cloth may cause scratches.

If you notice a problem with the device

If you notice a problem with the device, first refer to "Troubleshooting" ➜ P. 41and check whether there is a way to resolve the problem.

If the device does not return to normal, turn off the power of the device and then contact your dealer or nearest JVC KENWOOD service center.
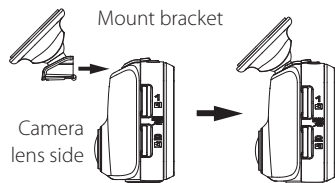
How to Install

Installation Procedure

Check that the vehicle is parked on a level surface.

1. Attach the device to the mount bracket. (accessory)

Insert the mount bracket into the bracket attachment part of the device and attach it to the device.

Mount bracket

Camera lens side

2. Determine where to mount the device.

Determine the mounting position in reference to "Recommended installation position".

3. Clean the mounting surface and then affix the device to the windshield.

Use a commercially available cleaning cloth or the like to wipe off all dirt and grease on the mounting surface. Peel off the release paper of the double-sided tape on the mount bracket and push the bracket against the windscreen to affix it in place. Leave the device for 24 hours before using it to enable the mounting strength of the mount bracket to improve.

Release paper
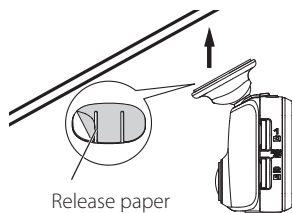
4. Perform the cord wiring work.

Refer to "How to Wire" and perform the wiring work.(➔ P. 14)

5. Adjust the device's mount angle, then fasten it.

When adjusting the mount angle, check that the camera's field of vision is parallel to a flat ground surface and that the sky to ground ratio is equal.

> There is a spirit level at [MENU] – [System settings] – [Mouting support tools] – [Level]. (➔ P. 34)
> Use it to help adjustment of the mount angle. Adjust the angle so that the moving circle is as close as possible to the center of the screen.

Windshield

Rear-view mirror
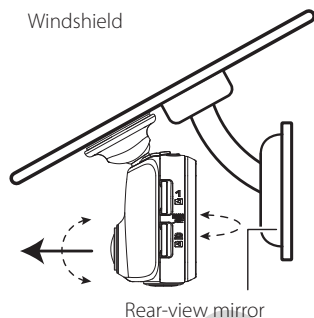
> • The "Adjust according to the vehicle" adjustments must be made in order to use the driving support functions. (➔ P. 17) Do this in a flat place with a line-of-sight distance of approximately 200 meters.

Recommended installation position

- Install the device in a position where it will not block the front view of the driver (position where hidden by the rear-view mirror).
- Install the device so that it is within the wiping range of the wiper.
- Mounting the device to the center of the windshield behind the rear-view mirror will facilitate optimal video recording.

Recommended installation position

Outside vehicle

Windshield

Doublesided tape

Inside vehicle

Rearview mirror

Ceramic part

Clip

Power cord

Front pillar cover

Soft tape*

Power cord

Power cord
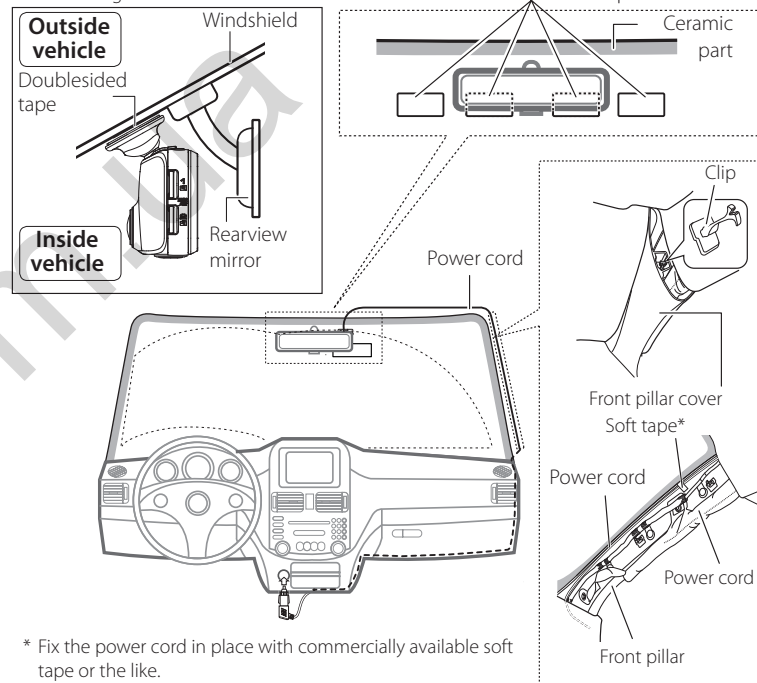
Front pillar

* Fix the power cord in place with commercially available soft tape or the like.

⚠ CAUTION

When passing the power cord through the front pillar or another part, observe the points below when performing the wiring work.
- Wire the power cord farther forward or farther rearward than the airbag so that it does not interfere with the airbag.
- In the case of a vehicle in which the front pillar cover is fixed in place with special clips or the like, the clips may need to be replaced after you remove the front pillar cover. For how to remove the front pillar cover, the availability of replacement parts and other information, contact the vehicle dealer.
- Fix the power cord in place with commercially available soft tape or the like so that it does not interfere with driving.

How to Wire

Connecting the cigarette lighter plug cord (accessory)

Connect the dashboard camera and power cord of the cigarette lighter plug cord.

When disconnecting the power cord, disconnect it while pressing the hook of the connector.

Open the power cord connector terminal's cover and connect the power cord. After connecting the power cord, close the cover.

Cord length (4 m)

Fuse (2 A)

Dashboard Camera

Connect the cigarette lighter plug to the cigarette lighter socket.

Use the Power Cable for Dashcam; CA-DR100 (optional accessory)

⚠ **CAUTION**
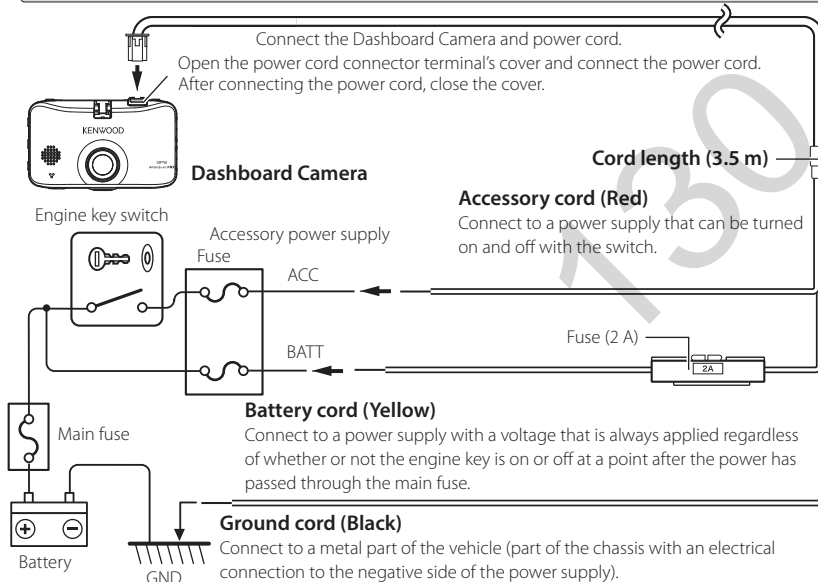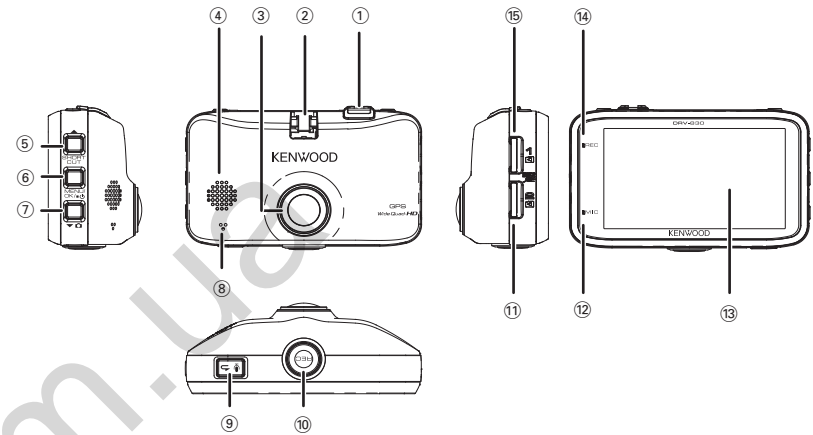Before performing the connection work, first check that the engine key is removed and then be sure to disconnect the negative terminal of the battery to prevent a short-circuit accident.

Connect the Dashboard Camera and power cord.
Open the power cord connector terminal's cover and connect the power cord. After connecting the power cord, close the cover.

Cord length (3.5 m)

Dashboard Camera

Engine key switch

Accessory power supply
Fuse

ACC

Accessory cord (Red)
Connect to a power supply that can be turned on and off with the switch.

Fuse (2 A)

BATT

Battery cord (Yellow)
Connect to a power supply with a voltage that is always applied regardless of whether or not the engine key is on or off at a point after the power has passed through the main fuse.

Main fuse

Battery

GND

Ground cord (Black)
Connect to a metal part of the vehicle (part of the chassis with an electrical connection to the negative side of the power supply).

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Part Names and Functions

① **Power cord connector terminal**
Connect the included cigarette lighter plug cord or the CA-DR100 power cable for Dashcam (optional accessory).

② **Bracket attachment part**
Mount the included mount bracket.

③ **Camera lens**

④ **Speaker**
Outputs audio guidance, warning sounds and the audio when files are played.

⑤ ▲/**SHORTCUT button**
- When pressed while the menu is displayed, moves to the previous item.
- When pressed while recording, displays the shortcut menu.
- When pressed and held while recording, switches the recording mode (normal/low frame rate). ➜ P. 33
- When pressed during playback, plays the previous file.
- Fast-reverses when pressed and held during playback, slow-reverses when pressed and held while paused. Switches to playback when the button is released while fast-reversing, to pause when released during slow-reverse playback.

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How to Wire

⑥ **MENU/OK button**
- Turns the camera's power on and off when pressed and held.
- Displays the MENU screen.
- Functions as the enter button when the menu is displayed.
- During playback, the mode switches between pause and playback each time the button is pressed.
- When pressed and held while pausing, protects the file. (Files created with continuous recording cannot be protected.)
- When pressed and held while playing, changes the volume.
- When pressed while the monitor screen power-saving function is activated, cancels the power-saving function. (➜ P. 34)

⑦ **▼ ◻ button**
- When pressed while the menu is displayed, moves to the next item.
- When pressed and held recording, takes a photo. (It is not possible to take photos during parked recording.)
- When pressed during recording, turns automatic still image capture on and off. (This cannot be set during parked recording.)
- When pressed during playback, plays the next file.
- Fast-forwards when pressed and held during playback, slow-forwards when pressed and held while paused. Switches to playback when the button is released while fast-forwarding, to pause when released during slow-forward playback.

⑧ **Microphone**
Records audio.

⑨ **🎤 ↰ button**
- When the menu is displayed, functions as the cancel, return or stop button.
- When pressed during recording, turns the audio recording setting on and off.
- When pressed and held while pausing, deletes the file. (➜ P. 29)

⑩ **REC button**
- When pressed during continuous recording, starts manual recording.
- When pressed during playback, zooms playback.
- When pressed and held during playback, returns to continuous recording.

⑪ **SD card slot 2**
- Insert an SD card for recording here. (➜ P. 19)
- SD card slot 2 is extend storage capacity for continuous recording data.

⑫ **MIC indicator**
- Lights (green) when the audio recording setting is on while in the recording mode.

⑬ **Monitor screen**

⑭ **REC indicator**
- Lights (blue) during recording.

⑮ **SD card slot 1**
- Insert an SD card for recording here. (➜ P. 19)
- Be sure to insert the SD card into SD card slot 1 before using the camera.
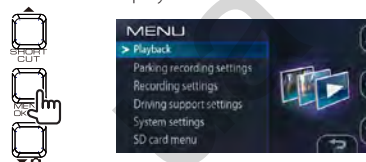
Before Using the Driving Support Functions
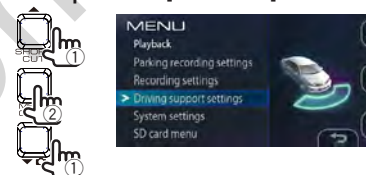
Adjust according to the vehicle

Before using the driving support functions, adjust the mounting height from the road surface to the camera, the horizon, the position of the tip of the engine hood according to the vehicle body, etc.

1. Press the [MENU/OK] button.
The menu is displayed.

2. Operate the [▲] and [▼ ◻] buttons to select <Driving support settings>, then press the [MENU/OK].

3. Operate the [▲] and [▼ ◻] buttons to select <Mounting height>, then press the [MENU/OK] button.

4. Operate the [▲] and [▼ ◻] buttons to select the mounting height from the road surface to the camera, then press the [MENU/OK] button.
Set the mounting height to about 1.2 m for a passenger car or compact SUV, about 1.35 m for a large SUV or minivan, about 2 m for a large truck.

5. Operate the [▲] and [▼ ◻] buttons to select <Detection range>, then press the [MENU/OK] button.

6. Operate the [▲] and [▼ ◻] buttons to fine-adjust the guide line (the white line) so that it is lined up with the horizon, then press the [MENU/OK] button.
Line up the red line in the center of the picture with the center of the driving lane .
The explanations on the screen turn off when a button is operated.
Adjust as shown on the diagram.

Before Using the Driving Support Functions

7. **Operate the [▲] and [▼ ◻] buttons to adjust the guide line (the white line) so that it is lined up with the tip of the engine hood.**

The explanations on the screen turn off when a button is operated.

Adjust as shown on the diagram.

8. **Press the [MENU/OK] button to complete the adjustment.**

- If the engine hood does not appear on the screen, adjust so that the guide line (the white line) is lined up with the road surface at a point about 3 meters forward when the vehicle is stopped.
- The driving support function is set to "OFF" upon purchase. (➔ P. 34)

Before Using

Inserting and ejecting SD cards

Turn the camera's power off, then insert the SD card into SD card slot 1, pressing in until a click is heard. Be sure to insert the card in the proper direction. When inserting an SD card in SD card slot 2, do so in the same way.

To eject the card, first turn the camera's power off, press the SD card in so that it pops out some, then pull it out.

- Be sure to format the SD card on this unit.
- When an SD card is formatted, all the files on it, including protected files, are deleted.
- The camera will not work properly unless an SD card is inserted in SD card slot 1.
- If you remove an SD card without turning the camera's power off, the files recorded on the card could be damaged or lost.

Turning the power on and off

When the vehicle's engine key is turned to "ACC" or "ON", the camera's power turns on and continuous recording starts. When the engine key is set to "OFF", the camera's power turns off.

Turning the power on and off manually

- When the [MENU/OK] button is pressed and held for at least 3 seconds while the camera's power is on, the power turns off.
- When the [MENU/OK] button is pressed and held for over 1 second while the camera's power is off, the power turns on.

- The power cannot be turned on manually when the engine key is set to "OFF".

Formatting SD cards

To use an SD card, first format it on the camera.

1. **Insert the SD card into SD card slot 1 or SD card slot 2.**

2. **Press the [MENU/OK] button.**
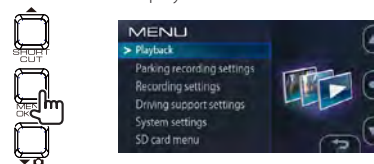
The menu is displayed.

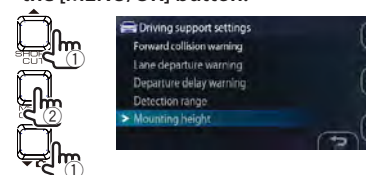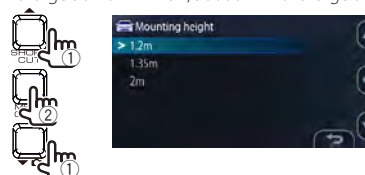**3.** **Operate the [▲] and [▼ ◻] buttons to select <SD card menu>, then press the [MENU/OK] button.**
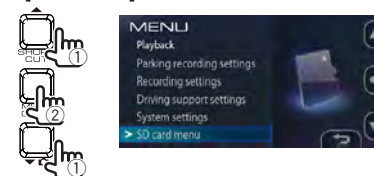
4. **Operate the [▲] and [▼ ◻] buttons to select <Format SD card (Slot1)> or <Format SD card (Slot2)>, then press the [MENU/OK] button.**

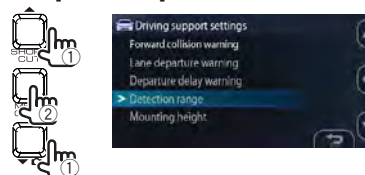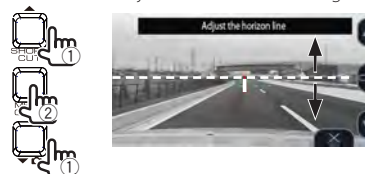**5.** Operate the [▲] and [▼ ▢] buttons to select <OK>, then press the [MENU/OK] button.

The SD card is formatted.

SD1 Format SD card?
×   OK

6. Press the [MENU/OK] button to complete the adjustment.

SD1 SD card formatted
OK

Recording when the power is on

continuous recording

When the camera's power turns on, continuous recording starts.
- The maximum recording time for continuous recording depends on the resolution setting. The resolution is set to "1920×1080 (HDR)" upon purchase. (➜ P. 46)
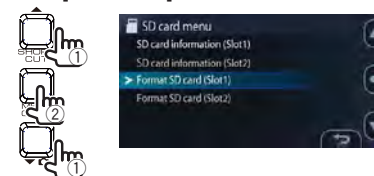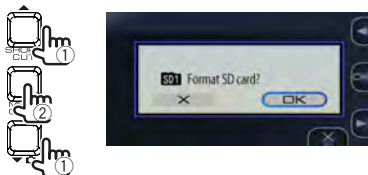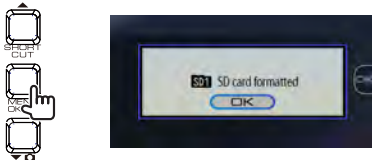- During continuous recording, the video is split and stored in files of a set time. The recording time per file can be selected from among 1 minute (the setting upon purchase), 3 minutes and 5 minutes. (➜ P. 33)
- During continuous recording, when there is no more recordable space on the SD card, the files are overwritten, starting from the oldest files.
- If an SD card is inserted in SD card slot 2, when there is no more recordable space on the SD card in SD card slot 1, continuous recording switches to SD card slot 2 and recording continues.
- When there is no more recordable space on the SD card in SD card slot 2, continuous recording switches to SD card slot 1 and recording continues. The recorded files on the SD card in SD card slot 1 are overwritten, starting from the oldest files, and continuous recording continues.

Recorded file storage location
- Recorded files are stored in the **"NORMAL"** folder on the SD card. (➜ P. 45)

Event recording

When a sudden impact, etc., is detected during continuous recording, continuous recording is interrupted and event recording starts. When event recording ends, continuous recording resumes.
- The recording time for event recording is the 10 seconds before the impact was detected and a set time after the impact was detected, selectable among 15 seconds (the setting upon purchase), 30 seconds and 1 minute. (➜ P. 33)
- If another impact is detected before event recording ends, event recording is extended from there for the set amount of time. The maximum recording time per file is 1 minute. When the recording time reaches 1 minute, the file is split and recording starts on a new file.
- The sensitivity for detecting impacts can be set. (➜ P. 33)

Impact detection

Continuous recording ⟶ Continuous recording

Event recording

10 seconds before impact recorded   15 seconds after impact recorded
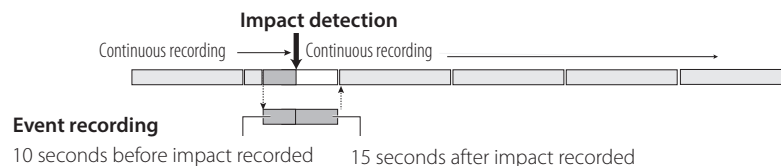
> • Upon purchase, overwriting is set to "OFF". When the upper limit of the recordable number of files is reached, event recording is no longer possible.

Recorded file storage location
- The files are stored in the **"EVENT"** folder on the SD card. (➜ P. 45)

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Before Using

Manual recording

When the camera's **[REC]** button is pressed during continuous recording, continuous recording is interrupted and manual recording starts. When manual recording ends, continuous recording resumes.

- The recording time for manual recording is the 10 seconds before the **[REC]** button was pressed and a set time after the button was pressed, selectable among 15 seconds (the setting upon purchase), 30 seconds and 1 minute. (➔ P. 33)
- If the **[REC]** button is pressed again before manual recording ends, manual recording is extended from there for the set amount of time. The maximum recording time per file is 1 minute. When the recording time reaches 1 minute, the file is split and recording starts on a new file.

Press the **[REC]** button.

Continuous recording ⟶ Continuous recording

Manual recording

10 seconds before button pressed recorded   15 seconds after button pressed recorded

- Upon purchase, overwriting is set to "OFF". When the upper limit of the number of recordable files is reached, manual recording is no longer possible.
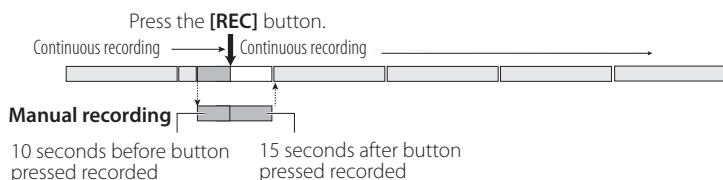
Recorded file storage location

- The files are stored in the **"MANUAL"** folder on the SD card. (➔ P. 45)

Still image recording

When the camera's **[▼ 🅞]** button is pressed during continuous recording, a still image is recorded.

- The resolution of the still images is the same resolution as set at "Resolution". (➔ P. 33)

- Recording is not interrupted when still images are recorded during recording.

Still image file storage location

- The still image files are stored in the "**PICTURE**" folder on the SD card. (➔ P. 45)

Automatic still image capture

This function automatically captures a set number of still images at fixed intervals.
When the **[▼ 🅞]** button is pressed and held for over 1 second, the automatic still image capture function turns on.

- When the **[▼ 🅞]** button is pressed and held for over 1 second or the set number of images are captured, the automatic still image capture function turns off.
- The number of images can be selected from among 10, 30 (the setting upon purchase) and 50. The capture interval can be selected from among 1 minute, 5 minutes (the setting upon purchase), 15 minutes and 30 minutes. (➔ P. 33)
- The resolution of the automatically captured still images is the same resolution as set at "Resolution". (➔ P. 33)

- If the camera's power is turned off while the automatic still image capture function is on, the automatic still image capture function turns off. Capturing does not resume even if the camera's power is turned back on.

- The capture function also turns off if the menu or shortcut menu screen is displayed or if the recording mode is changed during recording.

Automatically captured still image file storage location

- The still image files are stored in the "**PICTURE**" folder on the SD card. (➔ P. 45)

Parked recording when the power is off

- To enable the parked recording function, the power must be connected with the CA-DR100 power cable for Dashcam (optional accessory).
- Parked recording does not work if the power is turned off with the camera's power button before turning the vehicle's engine key off.
- Parked recording may not work if the power supply voltage is low due to deterioration of the vehicle's battery, etc.

Parked recording

When the vehicle's engine key is turned off, the parked recording function is set to standby and the camera monitors the vehicle for impacts. When an impact to the vehicle is detected, the power turns on and parked recording starts. When parked recording ends, the power turns off and the function is set back to standby.

- The recording time for parked recording can be selected among OFF (parked recording not performed), 10 seconds (the setting upon purchase), 20 seconds and 30 seconds. When OFF (parked recording not performed) is set, the parked recording function is turned off. (➔ P. 32)
- With parked recording, recording starts several seconds after the impact is detected.
- The sensitivity for detecting impacts can be set. (➔ P. 32)

Impact detection

Standby

Parked recording for 10 seconds

- No picture is displayed on the monitor screen during parked recording.
- If parked recording has been performed, the user is notified when the power is turned on by audio guidance and a monitor display.
- The overwrite setting is set to "ON" upon purchase. When the upper limit of the number of recordable files is reached, recording continues, overwriting the oldest files.

Disabling parked recording when getting in and out of the vehicle

Parked recording may be activated when the vibrations from the door closing are detected when getting in and out of the vehicle. Parked recording can be disabled temporarily so that it is not performed when the vibrations from the door closing are detected when getting in and out of the vehicle.

- The start time (when getting out) and stop time (when getting in) can be selected among OFF (the setting upon purchase), 30 seconds, 1 minute and 3 minutes. (➔ P. 32)

Parked recording file storage location

- The parked recording files are stored in the "**PARKING**" folder on the SD card. (➔ P. 45)

Recording

Recording manually (manual recording)

Videos can be recorded whenever desired and stored in the manual recording folder by pressing the [REC] button during continuous recording.

1. Press the [REC] button.

Manual recording starts, and once the time set at "Manual recording time" has passed, the mode returns to continuous recording.

- • If you wish to extend the recording time, press the [REC] button again.
- • The recording time for manual recording is the 10 seconds before the [REC] button was pressed and the time set at "Manual recording time". (➔ P. 33)
- • Manual recording is not possible while folders or files are being selected or during the playback, deleting, setting or event recording operations.

Returning to continuous recording

Continuous recording can be started forcibly even while files are playing or a menu is displayed.

1. Press and hold the [REC] button.

File playback or menu display is canceled and the mode returns to continuous recording.

Taking photos (still image recording)

Photos (still images) can be taken at any time by pressing the [▼ ◻] button during recording.

1. Press the [▼ ◻] button.

The camera icon appears in the upper left of the display, the shutter sounds and the photo is taken.

- • If you wish to take multiple photos, press the [▼ ◻] button again.
- • It is not possible to take photos when not recording, such as while files are playing, menu settings are being made, etc.

Taking photos automatically

When the [▼ ◻] button is pressed and held for over 1 second during recording, the continuous capture icon appears in the upper left of the display and photos (still images) are captured automatically at fixed intervals.

1. Press and hold the [▼ ◻] button.

(over 1 second)

- • The number of photos taken and the interval can be set at "Automatic still image capture". (➔ P. 33)
- • Automatic still image capture turns off when the [▼ ◻] button is pressed and held for over 1 second or once the set number of still images has been captured.
- • Automatic still image capture also turns off when the menu is displayed or when the power is turned off.

Indicators on the recording screen

① Recording mode
② Remaining recording time (remaining time for manual or event recording)
③ Still image recording mode (taking photos/taking photos continuously)
This is only displayed during still image capture and continuous capture.
④ HDR recording mode
⑤ Resolution (2560×1440, 2304×1296, 1920×1080, 1280×720)
The underlined number is displayed.
⑥ Low frame rate display (9 fps, 3 fps)
⑦ Current time
⑧ Position captured by positioning satellite
This is displayed when the current position has been established by positioning satellite.
⑨ Button guide (manual recording)
⑩ Button guide (audio recording switching)
⑪ File limit reached (manual recording)
This is displayed when the limit to the number of files that can be recorded with manual recording has been reached.
⑫ File limit reached (event recording)
This is displayed when the limit to the number of files that can be recorded with event recording has been reached.
⑬ File limit reached (parked recording)
This is displayed when the limit to the number of files that can be recorded with parked recording has been reached.
⑭ SD card slot 1 status
[SD1] SD card detected
[SD1] Currently recording on SD card
[SD1] Recording on SD card not possible

⑮ SD card slot 2 status
[SD2] SD card detected
[SD2] Currently recording on SD card
[SD2] Recording on SD card not possible
⑯ Button guide (shortcut menu/recording mode switching)
⑰ Button guide (MENU)
⑱ Button guide (still image capture)

Shortcut menu

This displays setting items related to recording and frequently used setting items.

1. Press the [▲] button during recording.

The shortcut menu appears.
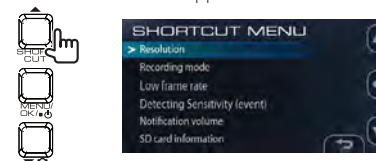
Resolution	Sets the resolution for recording. (➔ P. 33)
Recording mode	Sets the recording mode. (➔ P. 33)
Low frame rate	Sets the image update rate for low frame rate recording. (➔ P. 33)
Detecting sensitivity (event)	Sets the impact detection sensitivity for event recording. (➔ P. 33)
Notification volume	Sets the volume of the notification sound. (➔ P. 34)
SD card information	Use this to check the SD card information. (➔ P. 35)

- • The settings are the same as the setting items with the same names on the menu.
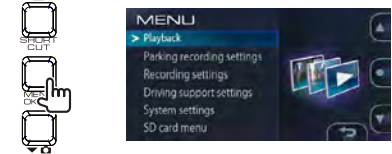- • The shortcut menu items cannot be edited.
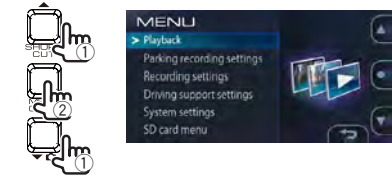
Playback

Playing files

Use the procedure below to select and play recorded files, photos (still images), etc.

1. Press the [MENU/OK] button.
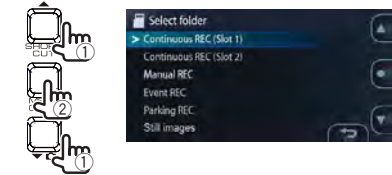
The menu is displayed.

2. Operate the [▲] and [▼ ◻] buttons to select <Playback>, then press the [MENU/OK] button.

3. Operate the [▲] and [▼ ◻] buttons to select the folder you want to play, then press the [MENU/OK] button.

A list of the most recent files or groups in the selected folder is displayed.

📝 • For the continuous recording folder, the files are displayed as a list of groups of 10 files recorded on the same date.

Continuous REC (Slot 1)	This contains the continuous recording files (SD card slot 1).
Continuous REC (Slot 2)	This contains the normal recording files (SD card slot 2).
Manual REC	This contains the manual recording files.
Event REC	This contains the event recording files.
Parking REC	This contains the parking recording files.
Still images	This contains the files of the photos that were taken.

4. Operate the [▲] and [▼ ◻] buttons to select the file or group to be played, then press the [MENU/OK] button.

Playback of the selected file or group starts.
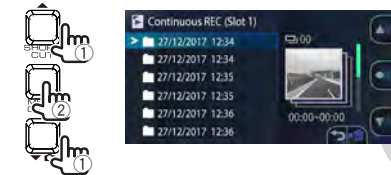
If the [▲] or [▼ ◻] button is pressed during recording, the previous or next file is played.

To return to continuous recording

Press and hold the [REC] button.

📝 • The files are sorted in the order in which they were recorded.
• Files organized in groups are indicated by a folder mark in front of the file date.
• Recording stops while folders or files are being selected or played. Manual recording by pressing the [REC] button is also not possible at this time.

Indicators on the playback screen
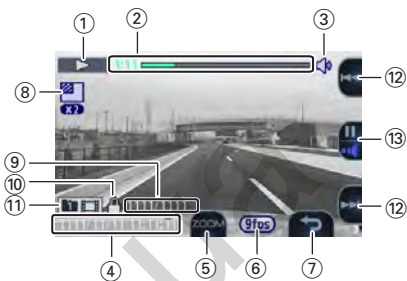
① **Playback status**
② **Time counter/playback progress bar**
③ **Playback volume icon**
④ **Date**
⑤ **Button guide (zoom playback)**
This doubles the playback screen. The displayed position can be changed by pressing the button repeatedly.
⑥ **Recording mode status (9 fps, 3 fps)**
This is only displayed when playing files recorded with a low frame rate.
⑦ **Button guide (return/delete file)**
⑧ **Playback zoom icon**
This is only displayed when playback is zoomed.
⑨ **Number of playing file/total number of files**
⑩ **File protected icon**
This is only displayed when playing files that are protected.
⑪ **Folder type**
⑫ **Button guide**
• Fast-forwards/reverses when pressed and held during playback, slow-forwards/reverses when pressed and held while paused.
⑬ **Button guide**
During playback (pause/playback volume switching)
• When pressed and held, the playback volume changes by 1 step.
When pausing (playback/file protection)

Protecting Files

Recorded video and still image files can be protected and their protection can be canceled.
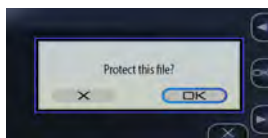
Protecting Files

1. Play the file you want to protect.

If you have played the still image file that you want to protect, skip to step 3.

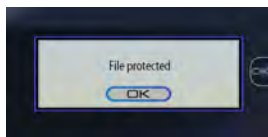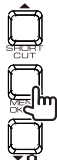**2. Press the [MENU/OK] button to pause.**

3. Press and hold the [MENU/OK] button.

4. Operate the [▲] and [▼] buttons to select <OK>, then press the [MENU/OK] button.

5. Press the [MENU/OK] button to complete the adjustment.

The "🔒" mark is displayed on the file playback screen.

📝 • Continuous recording files cannot be protected.

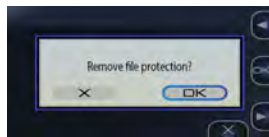## Canceling file protection

1. Play the protected file.

If you have played a still image file, skip to step 3.
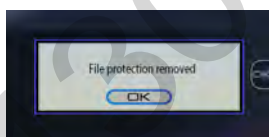
2. Press the [MENU/OK] button to pause.

3. Press and hold the [MENU/OK] button.

4. Operate the [▲] and [▼] buttons to select <OK>, then press the [MENU/OK] button.

Remove file protection?

5. Press the [MENU/OK] button to complete the adjustment.

File protection removed

The "🔒" mark disappears from the file playback screen.

📝 • To delete protected files, first cancel their protection, then delete them.
• When an SD card is formatted, all the files on it, including protected files, are deleted.

Deleting Files

Deleting Files

Recorded video files and still image files can be deleted.

■ **Deleting files**

1. Play the file you want to delete.

If you have played a still image file, skip to step 3.
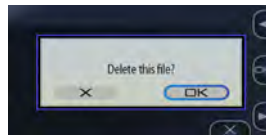
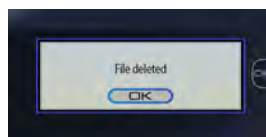**2. Press the [MENU/OK] button to pause.**

3. Press and hold the [🎤 ⏎] button.

(over 1 second)

4. Operate the [▲] and [▼] buttons to select <OK>, then press the [MENU/OK] button.

Delete this file?

The currently playing file is deleted.

5. Press the [MENU/OK] button to complete the adjustment.
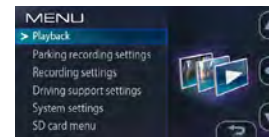
File deleted

■ **Deleting files in a group**

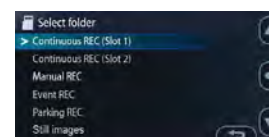Recorded video files in groups of continuous recordings can be deleted.

1. Press the [MENU/OK] button.

The menu is displayed.

2. Operate the [▲] and [▼] buttons to select <Playback>, then press the [MENU/OK] button.

MENU
> Playback
Parking recording settings
Recording settings
Driving support settings
System settings
SD card menu

3. Operate the [▲] and [▼] buttons to select the slot in which the continuous recording group you want to delete is located (slot 1 or 2), then press the [MENU/OK] button.

Select folder
> Continuous REC (Slot 1)
Continuous REC (Slot 2)
Manual REC
Event REC
Parking REC
Still images

4. Operate the [▲] and [▼] buttons to select the group you want to delete, then press and hold the [🎤 ⏎] button.

Continuous REC (Slot 1)
> 27/12/2017 12:34
27/12/2017 12:34
27/12/2017 12:35
27/12/2017 12:35
27/12/2017 12:36
27/12/2017 12:36
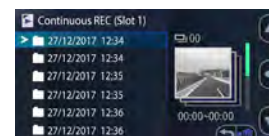
(over 1 second)

Deleting Files

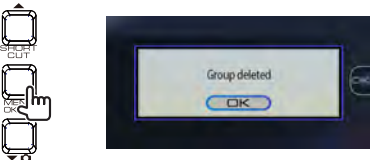**5.** Operate the [▲] and [▼ ▣] buttons to select <OK>, then press the [MENU/OK] button.

Delete this group?
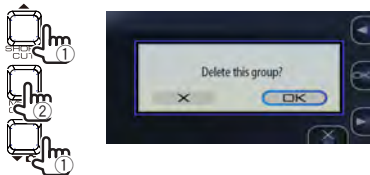
The files in the selected group are deleted.

6. Press the [MENU/OK] button to complete the adjustment.
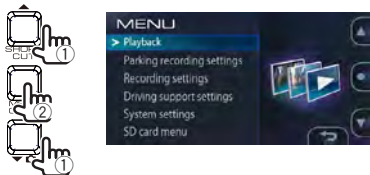
Group deleted

■ **Deleting entire folders**

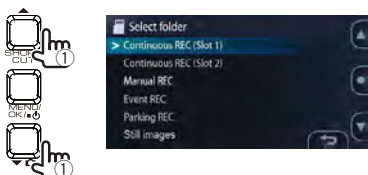**1.** Press the [MENU/OK] button.
The menu is displayed.

2. Operate the [▲] and [▼ ▣] buttons to select <Playback>, then press the [MENU/OK] button.
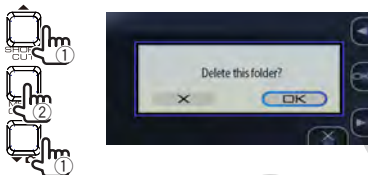
MENU
> Playback
Parking recording settings
Recording settings
Driving support settings
System settings
SD card menu

3. Operate the [▲] and [▼ ▣] buttons to select the folder you want to delete, then press and hold the [🎤 ⤺] button.

Select folder
> Continuous REC (Slot 1)
Continuous REC (Slot 2)
Manual REC
Event REC
Parking REC
Still images

② (over 1 second)

4. Operate the [▲] and [▼ ▣] buttons to select <OK>, then press the [MENU/OK] button.

Delete this folder?

All the files in the selected folder are deleted.

5. Press the [MENU/OK] button to complete the adjustment.

Folder deleted
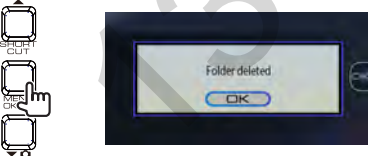
• To delete protected files, first cancel the file protection.
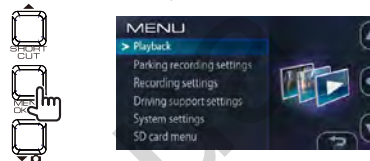
Configuring the Settings

Operating using the menu

Operations for playing files, configuring video recording settings, etc., can be performed from the menu screen.

1. Press the [MENU/OK] button.
The menu is displayed.

MENU
> Playback
Parking recording settings
Recording settings
Driving support settings
System settings
SD card menu

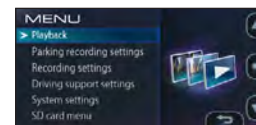**2.** Operate the [▲] and [▼ ▣] buttons to select the item, then press the [MENU/OK] button.
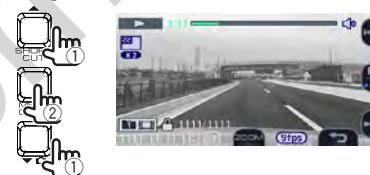
Repeat this procedure as necessary, depending on the selected item.

3. Press and hold the [REC] button to end.
The menu turns off and continuous recording begins.

• There is also a shortcut menu on which you can find setting items related to recording and frequently used setting items. (➜ P. 25)
• You can also turn off the menu screen and return to continuous recording by pressing the [🎤 ⤺] button.

The menu screen in step 2 switches in the order shown below.

MENU
> Playback
Parking recording settings
Recording settings
Driving support settings
System settings
SD card menu
— Playback

MENU
Playback
> Parking recording settings
Recording settings
Driving support settings
System settings
SD card menu
— Parking recording settings

MENU
Playback
Parking recording settings
> Recording settings
Driving support settings
System settings
SD card menu
— Recording settings

MENU
Playback
Parking recording settings
Recording settings
> Driving support settings
System settings
SD card menu
— Driving support settings

MENU
Playback
Parking recording settings
Recording settings
Driving support settings
> System settings
SD card menu
— System settings

MENU
Playback
Parking recording settings
Recording settings
Driving support settings
System settings
> SD card menu
— SD card menu

Configuring the Settings

* Factory default settings

Playback

Continuous REC (Slot 1)	Select the folder and play the desired file. (➜ P. 26)
Continuous REC (Slot 2)	It is also possible to protect or delete the file during file playback. (➜ P. 28)
Manual REC	
Event REC	
Parking REC	
Still images	

Parking recording settings

To use the parking recording function, the power must be connected with the CA-DR100 (optional accessory). (➜ P. 14)
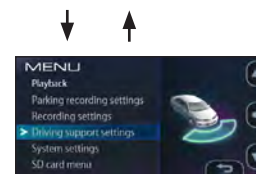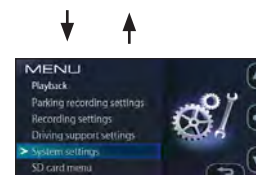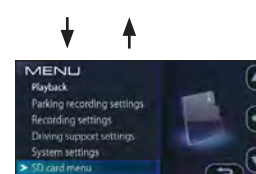
Recording time	OFF (parking recording not performed)/10 sec*/20 sec /30 sec
	Set the time for recording after an impact is detected.
Overwrite	ON*/OFF
	Set whether or not to overwrite old files after the maximum number of recording files has been reached.
Detecting sensitivity	1 (Low Sensitivity)/2/3*/4/5 (High Sensitivity)
	Set the sensitivity for detection of impacts to the parked vehicle.
Exit time after ACC OFF	OFF*/30 sec/1 min/3 min
	Set the time for which parking recording will be disabled after the engine key is turned off.
Entry time before ACC ON	OFF*/30 sec/1 min/3 min
	Set the time for which parking recording will be disabled before the engine key is turned on.

* Factory default settings

Recording settings

Audio recording	ON*/OFF
	Set whether or not to record the sound from the microphone when recording.
Continuous recording file length	1 min*/3 min/5 min
	Set the recording time for continuous recording. The recordings are split according to the recording time set here.
	For low frame rate recordings, the file length is 10 minutes, regardless of the value set here.
Manual recording time	15 sec*/30 sec/1 min
	Set the time for recording after manual recording is started. The recording time before the [REC] button is set is fixed to 10 seconds.
Event recording time	15 sec.*/30 sec./1 min.
	Set the time for recording after an impact is detected. The recording time before an impact to the vehicle is detected is fixed to 10 seconds.
Overwrite (manual)	ON/OFF*
	Set whether or not to overwrite old files after the maximum number of recording files has been reached.
Overwrite (event)	ON/OFF*
	Set whether or not to overwrite old files after the maximum number of recording files has been reached.
Resolution	2560×1440 (HDR)/2304×1296 (HDR)
	/1920×1080 (HDR)*/1280×720 (HDR)
	Sets the resolution for recording.
Recording mode	Normal*/Low frame rate
	Select a recording mode. Selecting low frame rate recording increases the recording time to more than usual.
Low frame rate	9 fps*/3 fps
	Set the image update frequency during low frame rate recording. The smaller the value, the longer the recording time.
Detecting sensitivity (event)	1 (Low Sensitivity) /2/3*/4/5 (High Sensitivity)
	Set the sensitivity for detecting impacts to the vehicle.
Automatic still image capture	Capture interval
	1 min./5 min.*/15 min./30 min.
	Set the interval for capturing images with the automatic still image capture function.
	Number of captured images
	10/30*/50
	Set the number of images to be captured with the automatic still image capture function.
Information stamps	ON*/OFF
	Set whether or not to record subtitles (date and time, position information, etc.).

Configuring the Settings

Driving support settings

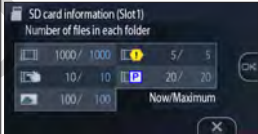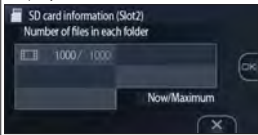|	
Forward collision warning	ON/OFF* This function detects the distance between you and the vehicle in front, and sounds a warning if the distance is not safe in order to prevent a collision with the vehicle in front. This functions at speeds of approximately 30 km/h and higher.
Lane departure warning	ON/OFF* This function detects the lane in which you are driving and sounds a warning if you veer out of that lane. This functions at speeds of approximately 60 km/h and higher.
Departure delay warning	ON/OFF* This function sounds a warning if, while you are stopped, the vehicle in front of you has taken off and your departure is too slow. With this function, a warning is also sounded if you are backing up.
Detection range	Adjust the horizon, position of the front tip of the engine hood, etc., before using the driving support functions. (➔ P. 17)
Mounting height	1.2 m*/1.35 m/2 m Set the height from the road surface to the position at which the camera is mounted. (➔ P. 17)

System settings

Date/time	Automatic*/Manual Set whether to record the date and time automatically or manually. (➔ P. 36) You must set the "Time Zone"
Daylight saving time	OFF*/+1 hr./+30 min Set daylight saving time.
Notification volume	The volume of the notification sound can be set in 6 steps (mute to maximum). The notification sound is the sound issued as guidance during event recording, when operating buttons, etc.
Playback volume	Set the volume of the sound when playing recorded files in 6 steps (mute to maximum).
Monitor	Time settings 10 sec.*/1 min./3 min. Set the time after which the monitor screen switches to the power-saving mode during recording.
	Operation settings Always on*/OFF/Dim Set the monitor screen's power-saving operation during recording. When the **MENU/OK** button is pressed, the power-saving operation is temporarily canceled.
Mounting support tool	Level Use this to check whether the camera is level.
	Satellite reception level This displays the positioning satellite reception strength screen.
Select units	km/h/mph* Switch to kilometer or mile display.
Factory reset	Restores the settings to the values set upon purchase. When executed, the power turns off then back on and the setup screen appears. Follow the instructions on the screen to configure the settings.
Setup	Configure the settings related to installation of the camera in a specific order.
Update system	Update the camera's firmware.
System version	Display the camera's firmware version.

About updating the system
This function updates the camera's system firmware. For information and instructions on updating, see the Kenwood website. **http://www.kenwood.com/cs/ce/**

SD card menu

|	
SD card information (Slot 1)	Display the information screen for the SD card in slot 1.
SD card information (Slot 2)	Display the information screen for the SD card in slot 2.
Format SD card (Slot 1)	Formats the SD card in slot 1, deleting all the files on the card.
Format SD card (Slot 2)	Formats the SD card in slot 2, deleting all the files on the card.

Configuring the Settings
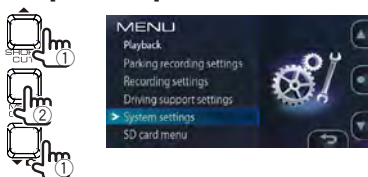
Setting the date and time
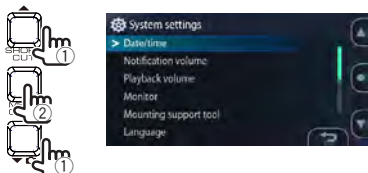
Set the date and time.

1. Press the [MENU/OK] button.

The menu is displayed.
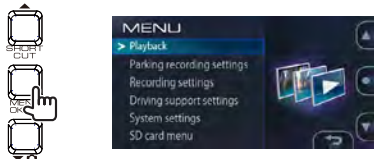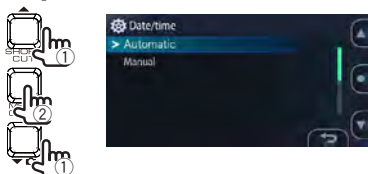
2. Operate the [▲] and [▼ ☐] buttons to select <System settings>, then press the [MENU/OK] button.

**3.** Operate the [▲] and [▼ ☐] button to select <Date/time>, then press the [MENU/OK] button.

4. Operate the [▲] and [▼ ☐] buttons to select the item, then press the [MENU/OK] button.

Automatic	Set the time zone. The date and time are set automatically according to the date and time received from the positioning satellite.
Manual	After setting the time zone, set the date and time manually..

> • If "Automatic" was selected, the is completed.

5. Operate the [▲] and [▼ ☐] buttons to input the date and time, then press the [MENU/OK] button.

To return to the previous step, press the [🎤 ⏎] button.

27 / 12 / 2017   12 : 01 : 30 AM
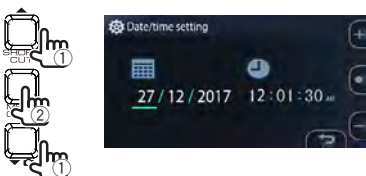
6. Press the [MENU/OK] button while the cursor is set to the seconds' position to finish the procedure.

27 / 12 / 2017   12 : 01 : 30 AM
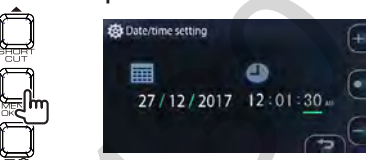
> • If "Automatic" was selected, the correct date and time will not be set until the signal from the positioning satellite can be properly received.

Using the Viewer Software

KENWOOD DRIVE REVIEWER is viewer software for computers, allowing images recorded on the camera to be displayed.

The application can be downloaded from the Kenwood website.

Please visit **http://www.kenwood.com/cs/ce/**.
For the operating environment, please see Page 45.

Installing the software

1. After downloading the application onto the computer, double-click the installer, then follow the instructions on the screen to install **KENWOOD DRIVE REVIEWER**.

Playing files

1. Eject the SD card from the camera, insert it into the included SD card converter/ adapter, then connect it to the computer using a card reader (commercially available).

2. Launch **KENWOOD DRIVE REVIEWER**.

3. Select the SD card drive from the list of drives.

To play a file stored on the computer, select the folder in which the file is stored using the <SELECT FOLDER (S)> command in the FILE (F) menu.

4. Select the file you want to play from the [FILE], [EVENT] or [PHOTO] tab and play the file.

FILE	Displays all the files.
EVENT	Displays the event recording, manual recording and parked recording files.
PHOTO	Displays the photos (still images) taken with the camera.

5. To quit, either press the [x] button or select <EXIT (X)> from the FILE (F) menu.

KENWOOD DRIVE REVIEWER screen

Using the Viewer Software

① **File operations**

Perform the file operations, such as file selection, backing up files from the SD card to the computer, and so on.

SELECT FOLDER (S)	Select the SD card drive or the folder that was backed up on the computer.
EXPORT kmz/kml (E)	Outputs a travel information file (kml/kmz) usable with the Google Earth map service.
BACKUP (B)	Backs up the files on the SD card onto the computer's hard disk, etc., as necessary.
EXIT (X)	Closes the computer application.

[▢▾] (list of drives)

Use this to play files stored on the SD card.

② **DISPLAY**

LANGUAGE (L)	Select the language.
SELECT UNITS (S)	Switch to kilometer or mile display.
DISPLAY DRIVING-WARNING (D)	Turns the drive warning indicators on and off. When turned on, the icon is displayed in the playback bar.

③ **HELP**

Displays the viewer's software version.

④ **Selection of the image playback screen**

Enlarges the image being played.

[icon]	When pressed while the image is enlarged, sets the screen back to the normal screen.
[icons]	These enlarge the center, upper left, upper right, lower left or lower right of the screen.
[🔍 icon]	The frame displayed can be moved and any position can be enlarged to a maximum of 5 times the original size. When [RESET] is pressed, the image returns to original size (1×).

⑤ **File list**

A list of the files and thumbnails selected with the selection tab is displayed here.

⑥ **Image screen**

The image of the selected file is displayed here. The playback bar can be operated to move to the desired position. Also, the image can be displayed in full screen by double-clicking the image screen during playback. When the image is displayed in full screen, click it to return to the normal screen.

⑦ **Playback bar/playing time/total playing time/drive warning indicators**

[icon]	Frontal collision warning icon
[icon]	Lane departure warning icon
[icon]	Departure delay warning icon

⑧ **Operation buttons**

These are buttons for performing such operations as playing images, stopping, etc.

[◀‖ ‖▶]	Displays the previous or next frame.
[◀◀ ▶▶]	Returns to the beginning of the currently playing file. Plays the next file.
[■]	Stops playback.
[‖]	When pressed during playback, sets the pause mode. When pressed while paused, resumes playback.
[▶]	
[📷]	Captures the image at the point where the button is pressed.
PLAY / PAUSE	Displays operations (play status, etc.).
×1	Changes the playing speed.
[🔊]	Adjusts the volume.

⑨ **G sensor chart**

Displays the acceleration of the movement of the vehicle in the front/back (GX), left/right (GY) and upward/downward (GZ) directions and the vehicle speed in waveforms.

⑩ **Path of currently playing file**

⑪ **Speedometer**

Displays the vehicle's speed.

> • The vehicle's speed displayed here differs from the actual speed. It is only an approximation.

⑫ **Map display button**

When the file list is clicked, the position information of the selected video file is displayed on the map. If no map is displayed, click [MAP ▲].
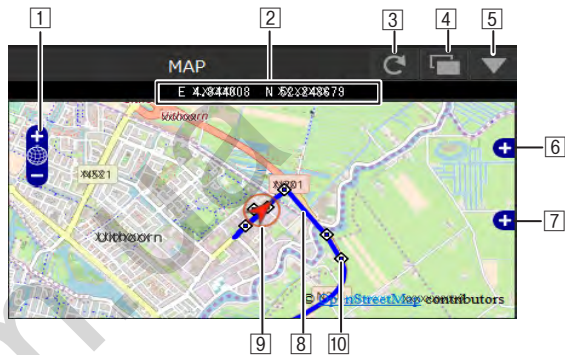
1. Enlarges/reduces the map.
2. Displays the latitude and longitude.
3. Reloads the map.
4. Opens the map in a separate window.
5. Turns the map display off. When [MAP ▲] is clicked, the map is displayed.
6. Used to turn the display of routes and icons on the map on and off.
7. Displays a wide area map.
8. Route

   When 2 or more days of routes are displayed, different days are displayed in different colors.

1st day	2nd day	3rd day	4th day	5th day	6th day	7th day
Blue	Red	Green	White	Pink	Light blue	Yellow

9. Displays your position on the currently selected file.
10. Beginning of each file

   When the cursor is placed at the icon, an image of the beginning position of the file is displayed. When clicked, that file is played.

> • Files are deleted depending on the capacity of the SD card (normal recording) or the "Overwrite" setting (manual recording, event recording and parked recording). Erased sections are not displayed on the map.
> • The built-in positioning satellite antenna is used to determine your current position on the map. If you are located in a place where the positioning satellite signal reception conditions are poor, such as amid tall buildings, in tunnels, under bridges, etc., your current position may not be displayed properly and the displayed trajectory may differ from the actual trajectory.

Using the Viewer Software

Outputting still pictures from the images

Any point in the currently playing video can be captured and output as a still image.

1. Select the file whose image you want to capture and play it.

2. Press the [📷] button at the point you want to capture.

3. Select the folder in which you want to store the file and give the file a name.

4. Press the [SAVE] button.

Outputting travel information

Outputs a travel information file (kml/kmz) usable with the Google Earth map service.

1. Select <EXPORT TO kmz/kml (E)> from the FILE (F) menu.

2. Select the folder in which you want to back up the information, then select "KML/KMZ" as the file type and give the file a name.

3. Press the [SAVE] button.

📝 • For usage instructions, see the Google Earth map service's help.

Backing up files

Back up the files on SD cards onto a computer's hard disk, etc., as necessary.

1. Select <BACKUP (B)> from the FILE (F) menu.

2. Select the folder in which the files are to be backed up.

3. Check the files you want to save and select the files to be stored.

4. Press the [EXECUTE] button.

Troubleshooting

Find the corresponding symptom on the table below and take the appropriate measures. If you cannot find a solution, contact your store of purchase or a Kenwood service center.
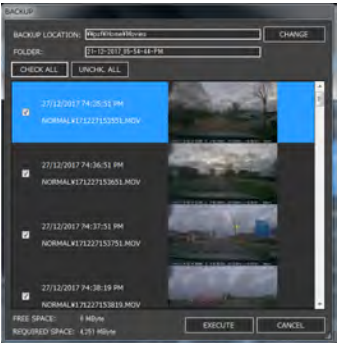
Common

Symptom	Cause/Countermeasures
The power does not turn on.	• The power to the vehicle's cigarette lighter socket is not turned on. ✔ Turn on the vehicle's accessory (ACC) power switch or start the engine. ✔ Check that the cigarette lighter plug is properly connected. • The fuse is blown. ✔ After checking that no cords are short-circuited, replace with a fuse of the same capacity. Contact your store of purchase. • The power cord is improperly connected. ✔ Have the connection checked at your store of purchase.
• Recording is not possible. • [◢◣] is displayed on the screen.	• No SD card is inserted. • An SD card other than one of size 8 to 128 GB is inserted. • An SD card not conforming to SDHC or SDXC standards is inserted. • The SD card has not been formatted. ✔ Insert an SD card usable on this camera into the SD card slot. ✔ If necessary, format the SD card on the camera. (➜ P. 19) • The temperature inside the camera is too high. ✔ Lower the temperature in the vehicle. This will deactivate the protection circuit, and recording will then be possible.
The monitor screen turns off after a while.	• The monitor screen power-saving setting is set to off. (➜ P. 34) ✔ Change the setting. • The temperature inside the camera is too high. ✔ Lower the temperature in the vehicle. The protection circuit will be deactivated and forced turn-off of the monitor screen will be canceled.
The camera's power does not turn off even when the engine is turned off.	• For some vehicles, etc., power to the cigarette lighter socket is supplied even when the power is turned off. ✔ Disconnect the cigarette lighter plug cord when leaving the vehicle.
The power cover has come off.	• The cover has been pulled up strongly. ✔ Insert the cover back into the original holes, then continue using the camera as such.

Troubleshooting

Display messages and audio guidance

If any of the messages below should be displayed, take the countermeasures indicated on the table. For messages marked ◀)), audio guidance is also provided.

Message	Cause/Countermeasures
No SD card inserted Please insert SD card ◀))	• The power was turned on with no SD card in SD card slot 1. ✔ Refer to "Main specifications" (➜ P. 47)and insert an SD card that is usable on this camera into SD card slot 1. This camera will not be functional without the SD card inserted in the SD card slot 1
SD card error SD card error ◀))	• An SD card that cannot be identified is inserted. ✔ Refer to "Main specifications"(➜ P. 47) and insert an SD card that is usable on this camera into the SD card slot.
SD card requires formatting This SD card needs formatting ◀))	• The SD card has not been formatted in a format that the camera can identify. ✔ Refer to "Formatting SD cards" and format the SD card on the camera. (➜ P. 19)
Uncompatible SD card This SD card is not compatible ◀))	• An SD card with a capacity of less than 8 GB or more than 128 GB is inserted. ✔ Refer to "Main specifications"(➜ P. 47) and insert an SD card that is usable on this camera into the SD card slot.
Recording has stopped Recording has stopped ◀))	• Recording is no longer possible due to a faulty SD card. • Some sort of problem has occurred and recording has been interrupted. • Recording may be interrupted if an SD card with an incompatible speed class is used. ✔ Eject then reinsert the SD card. ✔ Replace the SD card with a new one. ✔ Replace the SD card with a compatible one. (➜ P. 47)
No space on the SD card	• There is not enough space on the SD card to start normal recording. • There is not enough space to record the maximum number of manual or event recording files. ✔ Refer to "Deleting files" and delete unnecessary files. (➜ P. 29) ✔ Back up the necessary files on a computer, etc., then refer to "Formatting SD cards" and format the SD card on the camera. (➜ P. 19)
Event recording failed (file limit exceeded)	• The maximum number of recordable files for event recording has been reached with "Overwrite (event)" set to "OFF". ✔ When "Overwrite (event)" is set to "ON", old files are overwritten when recording new files. (➜ P. 33) ✔ Refer to "Deleting Files" and delete unnecessary files. (➜ P. 29)
Manual recording failed (file limit exceeded)	• The maximum number of recordable files for manual recording has been reached, with "Overwrite (manual" set to "OFF". • When "Overwrite (manual)" is set to "ON", old files are overwritten when recording new files. (➜ P. 33) ✔ Refer to "Deleting Files" and delete unnecessary files. (➜ P. 29)

Message	Cause/Countermeasures
Playback has stopped	• For some reason a file that cannot be played was recorded. • The file can no longer be read due to a faulty SD card. ✔ Back up the necessary files on a computer, etc., then refer to "Formatting SD cards" and format the SD card on the camera. (➜ P. 19)
Recording stopped due to high temperature	• Recording was not possible because the camera's temperature is too high. ✔ Lower the temperature in the vehicle. This will deactivate the protection circuit, and recording will then be possible.
System will turn off due to high temperature	• The power has been turned off for safety because the camera's temperature is too high. ✔ Lower the temperature in the vehicle. This will deactivate the protection circuit, and it will then be possible to turn the power on.
No update file available	• There is no update file on the SD card. ✔ Place the file for updating the camera on the SD card. • The update file on the SD card is for the same or an older version than the current firmware version. ✔ Place the latest update file on the SD card. ✔ If the latest update file is on the SD card, the camera's firmware is already the most recent version and there is no need to update it.
System update failed	• The update file could not be properly read from the SD card. • The update file is corrupt. ✔ After formatting the SD card on the camera, copy the update file onto the SD card again and perform the update procedure once more.

Appendix

About the driving support functions

- The driving support functions are intended to support the driver's driving, not to prevent accidents. In addition, the system does not warn against all dangers.
- When driving, respect traffic rules, pay attention to the distance between yourself and the vehicle in front, the surroundings and the driving environment, brake as necessary, and in general make an effort to drive safely. Furthermore, we do not guarantee perfect operation, even when the camera is used properly as described in this manual. Please note that Kenwood will accept no responsibility for any damages incurred thereby.
- The lane departure warning is not linked to the turn signals, so because of the camera's specifications, the warning will be sounded when changing lanes as well.
- The driving support functions may not work properly in the cases below.
  - **In places where the positioning satellite signals cannot be received properly, such as in tunnels, amid tall buildings, etc.**
  - **When the lane lines cannot be identified properly due to poor pavement conditions, reflections due to rainwater, etc.**
  - **When the vehicle in front cannot be identified as a vehicle due to its shape, color, the light conditions, etc.**
  - **Changes due to climatic conditions (rain, snow, thick fog, etc.), time period (morning, evening, night, etc.), backlighting, traffic conditions (traffic jams, pedestrians), etc.**
- If objects are placed on the dashboard, they may reflect in the windshield and cause the camera to not operate properly. Do not place objects on the dashboard.

About the monitor screen

- Do not subject the screen section to strong shocks. Doing so could damage it.
- Do not let direct sunlight shine on the screen. Leaving the screen with direct sunlight shining on it for long periods of time will increase the temperature and could damage the screen.
- Extremely high or low temperatures could cause the display to operate slowly or darken, or result in residual images. This is due to the properties of liquid crystal displays and is not a malfunction. Normal operation will return once the temperature

in the car returns to normal.
- There may be small dots on the screen. This is a phenomenon typical of liquid crystal displays and is not a malfunction.
- Due to the properties of liquid crystal displays, the display may be hard to see depending on the angle at which it is viewed, but this is not a malfunction.

About positioning satellite (GPS) reception

- When the camera's power is turned on, satellite positioning starts. Depending on the satellite positioning conditions, it could take about 5 minutes for positioning to be completed.
- Satellite signals cannot pass through solid objects (other than glass). Positioning is not possible in tunnels or between buildings. Signal reception may be influenced by such conditions as poor weather or a concentration of obstacles overhead (for example trees, tunnels, bridges, high-rise buildings, etc.). The speed, position information, etc., will not be displayed properly if satellite signals cannot be properly received.
- The positioning data is for reference purposes only.

Important Notices RegardingTrademarks and Software

- Microsoft, and Windows are registered trademark or trademark of Microsoft Corporation in the US and other countries.
- Macintosh, Mac are trademarks of Apple Inc., registered in the U.S. and other countries.
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- microSDXC logo is a trademark of SD-3C LLC.
- ©2017 Google LLC All rights reserved. Google Maps™ and Google Earth™ are registered trademarks of Google LLC.
- This product is licensed only for the following applications based on the AVC Patent Portfolio License.
  1) Consumers recording video (hereinafter referred to as AVC Video) compliant with the MPEG-4 AVC standard for personal use and non-profit purposes.
  2) Playing AVC Video (video consumers recorded for personal use and non-profit purposes or video recorded by a provider that has obtained a license from MPEG LA)

For details, refer to the MPEG LA, LLC website. http://www.mpegla.com/.

Folder/file structure

Files recorded on the SD card are saved in separate folders for the different items. The files are automatically given names corresponding to the date and time at which they were recorded.

> Do not change or delete files on the SD card using a computer, etc. Doing so may make it impossible to properly play the files on the camera or using computer applications.

SD card recorded in slot 1

Root folder (JVCKENWOOD)

	Folder	File
EVENT (event recording)		YYMMDDhhmmss.MOV
		YYMMDDhhmmss.MOV
MANUAL (manual recording)		YYMMDDhhmmss.MOV
		YYMMDDhhmmss.MOV
NORMAL (continuous recording)		YYMMDDhhmmss.MOV
		YYMMDDhhmmss.MOV
PARKING (parked recording)		YYMMDDhhmmss.MOV
		YYMMDDhhmmss.MOV
PICTURE (still image recording)		YYMMDDhhmmss.JPG
		YYMMDDhhmmss.JPG
SYSTEM (position information)		
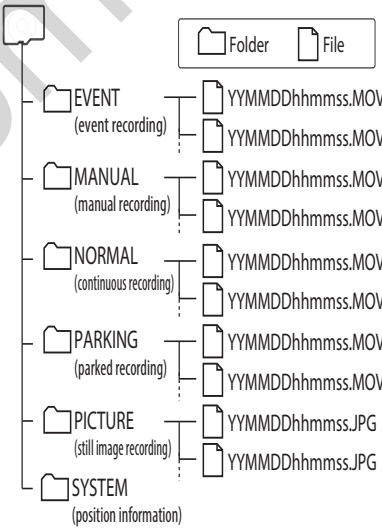
SD card recorded in slot 2

(Extend storage capacity for normal recording data.)

Root folder (JVCKENWOOD)

	Folder	File
NORMAL (normal recording)		YYMMDDhhmmss.MOV
		YYMMDDhhmmss.MOV
SYSTEM (position information)		
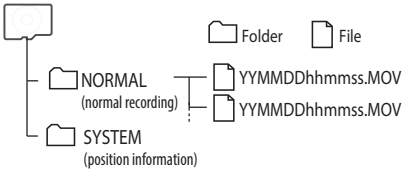
About file name

YYMMDDhhmmss.MOV or .JPG
Year Month Day Hours Min. Sec.

KENWOOD DRIVE REVIEWER operating environment

Windows version

Supported OSs	Windows 7 Service Pack 1 (32-bit/64-bit) Windows 8.1/8.1Pro (32-bit/64-bit) Windows 10 (32-bit/64-bit) Not included Windows 10 mobile
CPU	Intel Core i3 2 GHz or greater
Memory	2 GB or greater
Display	1280×800 or greater
Sound	PCM sound playback function usable on Windows
Others	An internet connection environment is required.

Mac OS X version

Supported OSs	Apple Mac OS X 10.11 (El Capitan) or greater

Appendix

Recording times

Resolution (recording quality) (frame rate)	SD card capacity				
	8 GB	16 GB	32 GB	64 GB	128 GB
2560×1440					
27 fps	40 minutes	80 minutes	160 minutes	320 minutes	640 minutes
9 fps	130 minutes	260 minutes	520 minutes	1040 minutes	2080 minutes
3 fps	350 minutes	700 minutes	1400 minutes	2800 minutes	5600 minutes
2304×1296					
27 fps	50 minutes	100 minutes	200 minutes	400 minutes	800 minutes
9 fps	160 minutes	320 minutes	640 minutes	1280 minutes	2560 minutes
3 fps	390 minutes	780 minutes	1560 minutes	3120 minutes	6240 minutes
1920×1080					
27 fps	70 minutes	140 minutes	280 minutes	560 minutes	1120 minutes
9 fps	200 minutes	400 minutes	800 minutes	1600 minutes	3200 minutes
3 fps	440 minutes	880 minutes	1760 minutes	3520 minutes	7040 minutes
1280×720					
27 fps	100 minutes	200 minutes	400 minutes	800 minutes	1600 minutes
9 fps	270 minutes	540 minutes	1080 minutes	2160 minutes	4320 minutes
3 fps	580 minutes	1160 minutes	2320 minutes	4640 minutes	9280 minutes

- The above recording times are the total (maximum) for continuous recording, manual recording, event recording and parked recording.
- The recording times are approximate. The recording times may be shorter, depending on the scenes that are recorded.
- The recording times with low frame rates (9 or 3 fps) can fluctuation greatly, depending on the scenes that are recorded.

Number of recordable files

Recording function	SD card capacity				
	8 GB	16 GB	32 GB	64 GB	128 GB
Event recording	5	10	20	40	80
Manual recording	10	20	40	80	160
Parked recording	20	40	80	160	320
Still image recording	100	200	400	800	1600

- The number of normal recording files will differ according to the number of recorded event recordings, manual recordings and parked recordings.
- For event recording, manual recording and parked recording, old files are overwritten if "Overwrite" is set to "ON". (➜ P. 32) Back up any necessary files on a computer, etc. (➜ P. 40)

Main Specifications

Screen size
3.0inches full color TFT

Operating voltage
DC 12V

Current Consumption
210mA (Max.450mA)

GPS Receiver
Built-in

G-sensore
Built-in

Collision sensitivity
-4.0G to +4.0G (0.1G Step)

Image sensor
1/3 Color CMOS sensor

Number of Pixel
3.7M Pixels(2560 x 1440)

Angles of view
Horizontal : 132°
Vertical : 70°
Diagonal :144°

Lens
F2.0

Operating temperature
−10 ℃ to +60 ℃

Recording resolution
2560 x 1440 Full HD (Max.3.7M)

Frame rate
27fps / 9fps / 3fps

Recording preservation timing
Full Time / Event / Manual / Parking*
*:need optional cable

Recording time for collision detection
maximum 70sec
Before
previous 10sec
After
after 15/30/60sec

Recording Mode
1 / 3 / 5 min.

Video format
H.264 / MPEG-4 AVC

Audio format
Linear PCM

Picture format
JPEG (Max.1920 x 1080)

Recording media
microSDXC/SDHC card 8GB to 128GB
Class10

Dimensions WxHxD (Main unit)
87mm x 55mm x 35mm

Weight Main unit
110g

Accessories
Car charger cord (3.5 m) x 1
Mounting bracket (double-sided tape) x 1

・The specifications and design are subject to change due to technological developments.

・The microSDXC logo is a trademark of SD-3C LLC.

Important Notice Concerning the Software

MD5 utility

/* crypto/md5/md5.h */
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This package is an SSL implementation written by Eric Young (eay@cryptsoft.com).
The implementation was written so as to conform with Netscape's SSL.

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CRC utility

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First, the polynomial itself and its table of feedback terms. The polynomial is $X^{32}+X^{26}+X^{23}+X^{22}+X^{16}+X^{12}+X^{11}+X^{10}+X^8+X^7+X^5+X^4+X^2+X^1+X^0$

Note that we take it "backwards" and put the highest-order term in the lowest-order bit. The X^{32} term is "implied"; the LSB is the X^{31} term, etc. The X^0 term (usually shown as "+1") results in the MSB being 1.

Note that the usual hardware shift register implementation, which is what we're using (we're merely optimizing it by doing eight-bit chunks at a time) shifts bits into the lowest-order term. In our implementation, that means shifting towards the right. Why do we do it this way? Because the calculated CRC must be transmitted in order from highest-order term to lowest-order term. UARTs transmit characters in order from LSB to MSB. By storing the CRC this way we hand it to the UART in the order low-byte to high-byte; the UART sends each low-bit to high-bit; and the result is transmission bit by bit from highest- to

lowest-order term without requiring any bit shuffling on our part. Reception works similarly.
The feedback terms table consists of 256, 32-bit entries. Notes

The table can be generated at runtime if desired; code to do so is shown later. It might not be obvious, but the feedback terms simply represent the results of eight shift/xor operations for all combinations of data and CRC register values.

The values must be right-shifted by eight bits by the "updcrc logic"; the shift must be unsigned (bring in zeroes). On some hardware you could probably optimize the shift in assembler by using byte-swap instructions polynomial $edb88320 CRC32 code derived from work by Gary S. Brown.

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