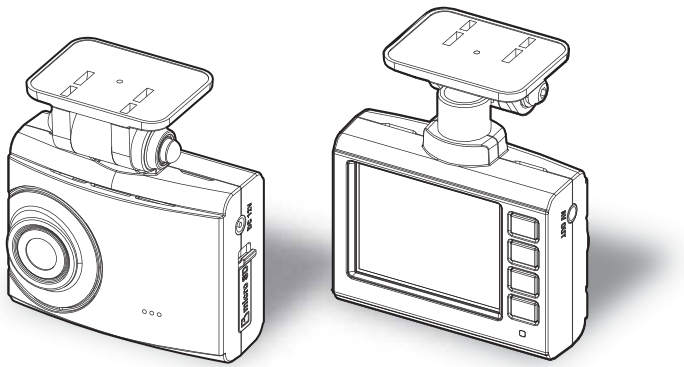
Drive recorder

ZDR-024CE

Installation manual / operation manual / warranty



By default, the display on the LCD will disappear when the vehicle is driven at a speed of 10 km/h after startup to avoid unsafe driving. (=> P 53)

Thank you for purchasing this product. This manual describes the installation and operation procedures. Before use, please read this manual thoroughly for proper use. After you have read this manual, please keep it in a place where you will be able to refer to it at any time.
Note that the warranty is attached at the end of this manual. Enter necessary items and please keep it safe.

⚠ Caution

Do not insert/remove the micro SDHC card while this product is under operation (including during parking surveillance mode). Doing so may damage the card or the recorded data in the card. Before inserting/removing the card, always turn off the vehicle key switch, and then check that the LED of this product is completely turned off.
***If the parking surveillance mode is active, inactivate the parking surveillance mode by referring to page 59, and then remove the card.**

Advice

When an accident occurs, be sure to remove and store the micro SDHC card to avoid overwriting the recorded data.

COMTEC

Table of Contents

Safety precautions

Before using the device, be sure to read the "Safety precautions" for proper use. Follow the precautions and matters described in this manual to prevent harm and damage to persons using the device and others.
The degree of harm and damage as a result of improper handling has been categorized into three groups: "Danger," "Warning," and "Caution."

⚠ Danger **This indicates content for which it is predicted that there will be imminent danger that the user will die or suffer serious injury.**

⚠ Warning **This indicates content for which it is predicted that the user could die or suffer serious injury.**

⚠ Caution **This indicates content for which it is predicted that the user could suffer injury or damage to property.**

Regarding the symbols used in this manual	
	This symbol indicates "prohibited" content that you must not do.
	This symbol indicates "compulsory" content that you must do.
	This symbol indicates "cautionary" content that you should be aware of.
=> P XX	A referent has been listed. (Page xx)
 Advice	Supplementary information is described in relation to this product.
Press and hold	Indicates that a switch should be pressed and held for approximately 3 seconds.

⚠ Warning	
	The product should not be operated while driving. Traffic accidents can occur owing to not paying attention to or taking your eyes off the road. If you are driving, ensure that you stop the vehicle in a safe area, and then use the product.
	Do not immerse the product into water or splash water on it, or touch it with wet hands. Doing so may cause fire, electric shock, and failure.
	Do not disassemble or modify the product. Doing so may cause fire, electric shock, and failure.

Introduction

⚠ Warning

In case this product is damaged or fails, immediately stop using it, and return it to a distributor for inspection or repair. Continued use may lead to fire, electric shock or breakdown of your car.

Do not use this product nearby medical devices as it may affect proper function of those medical devices.

Do not insert a pin or wire in pits or gaps of the product. Doing such may lead to electric shock or failure.

Do not use the product in abnormal conditions such as insertion of debris, smoking, or foul odor. Continued use may lead to ignition and result in a fire.

Keep microSDHC cards away from babies and children. They may swallow those cards by mistake.

Inspect the product periodically to see if there is any loosened screw or peeling off of double-sided adhesive tape as it may disturb operation or lead to an accident.

⚠ Caution

There is a chance of condensation inside the product if it is moved from a cooler location to hotter one. Do not operate the product at the condition of condensation as it may cause failure or heat production.

Do not keep this product in locations as shown below. It may lead to failure such as discolor, deformation of the main unit.

- A place of extreme high temperature such as under direct sunlight or under the blazing sun in the summer.
- A place of high temperature or air full of dusts.

Do not mistake the slide direction when inserting a microSDHC card to the main unit, as error in the insertion may lead to failure or damage of the main unit.

As this product consists of precise electronics parts, it may lead to data damage or failure if you handle it in a way as mentioned below.

- When electrostatic or electric noise has been inflicted on the main unit.
- When immersing into water, dropping or adding strong physical shock.
- When unused for long periods of time.

When using this product outside Japan, follow the applicable laws and regulations of a country/state/region of your use. Further, we shall bear no responsibility in regard to your use of this product outside Japan.

Precautions for use

- Please note that this product does not guarantee to record all video footage.
- This product is aimed to be used as a reference material at the time of accidents. It does not guarantee validity as a complete proof.
- This product is designed as a car-mount drive recorder. Do not use it for any purpose other than that. We shall bear no responsibility in regard to any trouble during your use other than that purpose.
- Be careful as this product may infringe other people's rights including privacy according to how you use it. Do not use it for mischievous purpose. We shall bear no responsibility in regard to any trouble for all these occasions.
- When an accident occurs, be sure to remove and store the micro SDHC card to avoid overwriting the recorded data.
- Be sure to remove the microSDHC card only after turning off your car switch and confirming that the LED of this product is completely turned off. If you remove the card during writing or reading data on the card, it may cause broken or deleted data and failure of the card.
- Do not save any data other than those related with this unit to the microSDHC card as doing so may lead to unstable operation of the unit.
- We shall bear no responsibility in regard to any guarantee of your data in cases where it is deleted during operation of this product.
- You are recommended to save all necessary data on your personal computer in case of data loss.
- This product may not function properly or record video footage smoothly if used outside the range of operational temperatures.
- This product may not function properly when used under the blazing summer sun, displaying "Heat Alert" on the LCD. As the temperature inside vehicles becomes very high particularly in summer time, use the product after lowering the inside temperature by opening windows and by other means.
- This product may record video footage of flickering traffic signals as their LED's flicker very rapidly. There are also cases where the product is unable to distinguish the color of traffic signals owing to their backlight or a lower brightness of the signal itself. In such occasions, view the before and after conditions in the video footage to make a determination, or check the other vehicles around you. Please note that we shall bear no responsibility in regard to distinguishing the traffic signal colors, or with regard to the recording of the traffic signal colors in your video footage.
- This product uses a wide angle lens and may present a portion of the video footage with distortion or shadows. Furthermore, the perspective seen in the video footage is not identical to reality. These are characteristics of the wide angle lens and do not indicate abnormalities.

Introduction

- For cars with types of heat insulation glass (such as metal coated or metal powder filled glass), heat absorption glass, or mirror-film, it may be impossible to receive radio waves from the GPS satellites.
- A one year warranty is provided with this product from the date of purchase.
  (However, the warranty shall not apply to all consumables including the microSDHC cards and double-sided adhesive tape.)
- This product is dedicated for DC12V vehicles.
- Please contact your retailer for exchange, repair, or purchase of parts.
- We do not lend out substitutes in case of any failure of this product.
- Please note that the specifications and appearance of this product are subject to change without prior notice for improvement.
- Regarding the built-in battery for retention of date information
  This product is equipped with a battery to retain time and date information. When using the product for the first time or when it has been unused for long time (three months or longer), first drive for about one hour to sufficiently recharge the battery before using the product. The built-in battery is a consumable. When the device is unable to retain the date information even after recharging, please contact our service center as described on the warranty. We will exchange the built-in battery at our service center.

Please note that we shall bear no responsibility in regard to non-recording of video footage at the time of an accident, or damage relating to recorded video footage regardless of whether or not the product worked properly.

For your knowledge

- **What is GPS?**

  'Global Positioning System' means a system to measure a current position on the ground by utilizing satellites of the Department of Defense of the United States.

- **What is the 'Michibiki' quasi zenith satellite system (QZSS)?**

  The "Quasi Zenith Satellites System" is a system to measure the current position over Japan using satellites of the Japan Aerospace Exploration Agency (JAXA). By receiving signals from the Michibiki satellites, it has become possible to measure more accurate positions over conventional GPS-only measurements, even within mountain areas or under high rising buildings in the center of cities.

- **What is GLONASS?**

  The "GLObal'naya NAvigatsionnaya Sputnikovaya Sistema" is a system to measure current positions on the ground by using the satellites of the Russian Space Force.

- **Satellite data**

  This product computes and memorizes the motion trajectory of GPS satellites after receiving signals successfully. This is to expedite processing to re-receive signals from the satellites in cases where the product becomes unable to receive signals when running inside a tunnel, etc. However, there may be rare cases when it becomes unable to receive the signals from the GPS satellites for a long time.

- **Receiving GPS satellite signals and car-mounted electronics**

  There are some occasions when the unit becomes unable to receive GPS satellite signals when receiving (or setting to receive) UHF channel 56 by a car-mounted television or owing to radio wave leakage from car-mounted electronics such as the main unit of car navigation systems, terrestrial digital broadcasting tuners or satellite broadcasting receivers. In such a case, you are requested to mount this product by keeping it away from other car-mounted electronics devices to ensure there is no interference in receiving signals from GPS satellites.

- **Regarding measurement errors of GPS**

  The GPS functions of this product may produce measurement errors by as much as 50 m depending on conditions of the received signal.

- **Regarding speed indications by GPS**

  · There are cases where the displayed speeds differ between GPS-measured ones and ones measured by the speedometer in your car, as the method employed to measure speed by GPS is different from the one in your car.
  · There are some occasions when the product indicates a speed that is not 0 km/h even during your car is completely stopped. However, please note that this is not a failure of the product, as it is due to a measurement error in the GPS signal.
  · This product displays the speed only in 'km/h.'

Introduction

● Regarding the LCD

· The LCD has a valid pixel rate of over 99.99%. However, there might be a chance of finding some pixels that don't emit light or those that are constantly lit. Please understand that these are not regarded as faulty.

· Owing to its properties, the images of the LCD may appear darker as a whole when the ambient temperature exceeds approximately 75 degrees Celsius, or the display may delayed when it goes lower than about -10 degrees Celsius. However, these occurrences are not failures of the display. In either case, it resumes the original display state as the ambient temperature becomes within a range of stable operation.

● Regarding microSDHC cards

· The included microSDHC card is exclusively for the use of this unit.

· The use of this unit calls for a microSDHC card.

· A microSDHC card is a consumable accessory and has a service life such as the number of times it can have data written to it. Replacing it every 2-3 years is recommended. Depending on the use conditions, the microSDHC card's service life may be reduced.

*MicroSDHC cards that have reached their service life become unable to operate properly including being read by a PC.

· For the stable use of microSDHC cards, it is recommendable to reformat the cards periodically at the configuration menu of the main unit.

· Formatting of a microSDHC card will erase all of the recorded data.

· When using this product, use only the included microSDHC card. We shall bear no responsibility in regard to any erroneous operation of the product due to incompatibility with microSDHC cards other than the one that is included.

● Regarding the file system of this product

· This product uses its own specially developed file system. Compared with normal file systems used in PCs such as FAT, this exclusive system has fewer chances for damaging saved data, and ensures a higher chance to recover the saved data when it is damaged.

· The exclusive file system of this product significantly reduces the chances of formatting the SD card for use as its file system reduces fragmentation of the SD card under repeated saving and deletion.

· Even if this unit's saved data is deleted using a PC, the data can be recovered with this unit. When you wish to delete saved data, you can reformat the SD card from the configuration menu of the main unit.

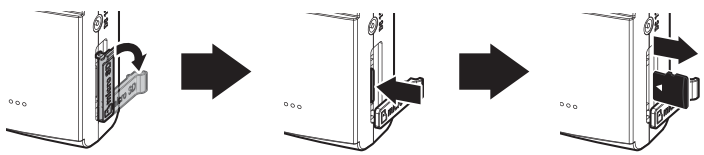
· When inserting another microSDHC card into this unit that has been formatted by a PC, an SD card reformatting screen will be displayed. Reformat it if you wish to use the card as it is.

When using a brand new microSDHC card

Whenever using a brand new microSDHC card and other microSDHC cards other than the one that comes included, you need to format the SD card from the configuration menu of the main unit. (=> P 56)

Regarding ejecting a microSDHC card

When you want to take a microSDHC card out, push the card gently once, then take it out as it pops out a little. When inserting the card, press it in until a 'click' sound is heard.



Pull the cover forward and fold it horizontally.

Lightly push the microSDHC card.

then pull it out when it pops out slightly.

* Insert the card by following the steps for ejecting in reverse order. Ensure that you insert the microSDHC card so its logo can be seen at the side of the camera. If you try to insert it upside down by force, it will break.

⚠ Caution

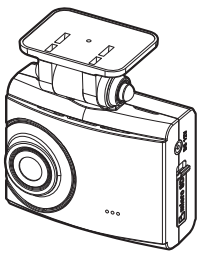
Do not insert/remove the micro SDHC card while this product is under operation (including during parking surveillance mode). Doing so may damage the card or the recorded data in the card. Before inserting/removing the card, always turn off the vehicle key switch, and then check that the LED of this product is completely turned off.

***If the parking surveillance mode is active, inactivate the parking surveillance mode by referring to page 59, and then remove the card.**

Introduction

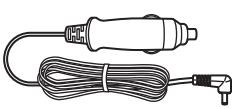
Packing content

ZDR-024CE main unit



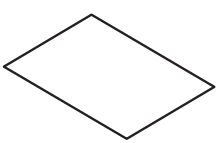
Accessories

Cigar plug cord
(About 4 m, 1A fuse contained)



Double-sided adhesive tape to fix the mounting stay (1 pcs)

Degreasing cleaner (1 pcs)

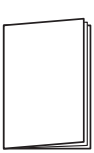


Hexagon wrench
(for adjusting angles for the stay)
(2.5 mm/1 pcs)

microSDHC card (8GB/1 pcs)

*It is installed to the main unit by default.

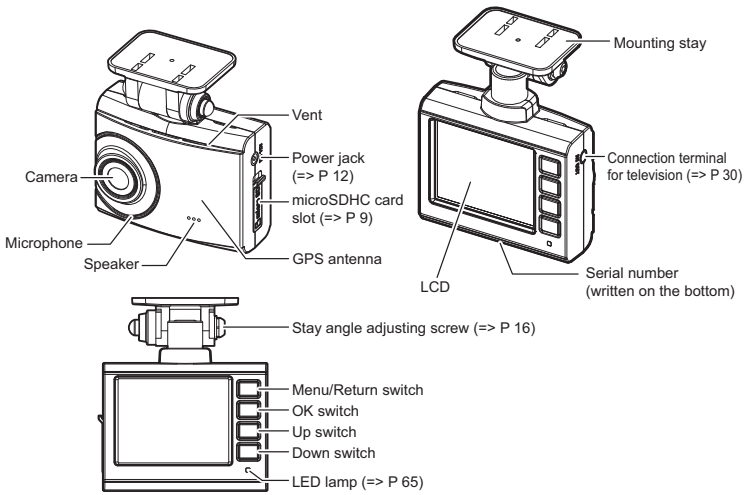
Operation Manual (this document/1 pcs)



Advice

Whenever using other microSDHC cards other than the one included, you need to reformat the SD card from the configuration menu of the main unit. (=> P 56)

Main unit section names



⚠ Caution

- **A microSDHC card is a consumable accessory. Replacing it every 2-3 years is recommended.**
- **A microSDHC card has a service life, such as the number of times it can have data written to it, owing to the properties of the card.**
- **If you use a microSDHC card other than the one included, its operation cannot be ensured.**
- **Do not block the vent of the main unit, as accumulated heat may cause failure.**

Options (sold separately)

Part name	Purpose of use	Part number
Direct wiring cord for parking surveillance mode	By connecting to a supported drive recorder, power is supplied and recording continues even after turning off the vehicle key switch; as power is supplied by this option, there is no need to connect a cigar plug cord or other direct wiring cord in addition.	HDROP-09
AV cable	A cable for playing video footage from this unit on your television.	VC-100
AC adapter	Power can be supplied from your household electrical power outlet (AC100 V).	SS-065

Installation method

Confirming the installation method

Carry out the installation while referring to the procedure below.

Connect the cigar plug cord to the vehicle. (P 12)

↓

Install this product to the vehicle. (P 13 to P 17)

↓

Check the operation. (P 18)

↓

Check the video footage with the LCD of the main unit. (P 27 to P 29)

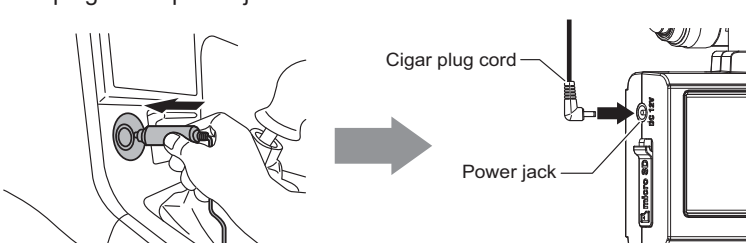
Check the video footage with a personal computer. (P 31 to P 35)

↓

End

Connecting the cigar plug cord

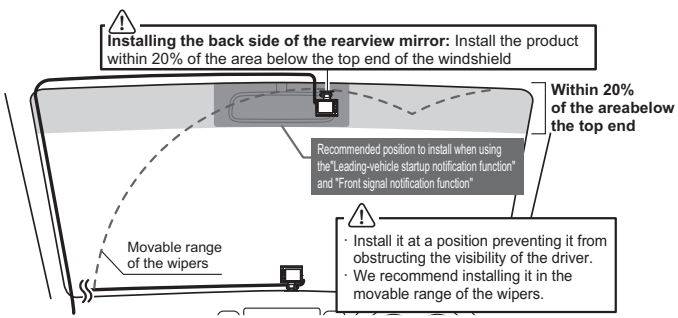
Insert the attached cigar plug cord to the vehicle's cigar socket, and then the power plug to the power jack of the main unit.



Checking the installation position

This product can be installed to the windshield or the dashboard. To conform to the Safety Standards, install this product after making confirmation of the drawing below and the precautions.

To use the "leading-vehicle startup notification function" or the "front signal notification function", it is necessary to place the hood within 25% of the bottom area of the recorded video footage. Therefore, we recommend installing the product to the upper area or the center of the windshield. (=> P 39)



⚠ Caution

- **The Installation location on the windshield is restricted by the Safety Standards based on the Road Transport Vehicle Act. Install the product to the back side of the rearview mirror within 20% of the area below the top end of the windshield to avoid disturbing the driver's field of view. Install it to a location that does not interfere with the mirror.**
  *** Article 195 and Attachment 37 of Detail Notice of Article 29 (window glass), Safety Standards of Road Transportation Vehicles**
- **When installing the product to the dashboard, install it at a location that does not disturb the vehicles driving operation and field of vision in order to conform to the Safety Standards based on the Road Transport Vehicle Act.**
  *** Article 27 and Attachment 29 of Detail Notice of Article 21 (Driver's seat), Safety Standards of Road Transportation Vehicles**
- **We recommend installing it in the movable range of the wipers.**
- **The recorded video footage may become difficult to watch due to stains and raindrops, etc. on the windshield when the product is installed outside the range.Do not install it near the antenna for terrestrial digital broadcasting or ETC, etc.**
- **When there is a camera for a collision damage reduction braking system or a sensor for an anti-glare mirror, etc. behind the rearview mirror, install the product outside the prohibited area described in the vehicle operation manual, or install it to the dashboard.**
- **Do not install a product with GPS functionality or a VICS receiver near this product. Doing so may cause malfunction.**
- **Do not stick this product on the vehicle inspection sticker.**
- **Stains on the vehicle windshield or on the camera of this product may prevent sufficient recording of video footage.**
- **Make sure to review the G sensor settings when changing the installation location of the main unit because the degree of impacts vary depending on the installation location (windshield or dashboard).**
- **The radio wave from GPS satellites cannot be received when there is a shield on the camera side of the main unit. Be very careful about the installation location.**

Installation method

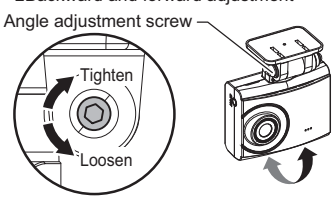
Installing the main unit

* This manual explains the installation procedure using an installation to a windshield as an example.

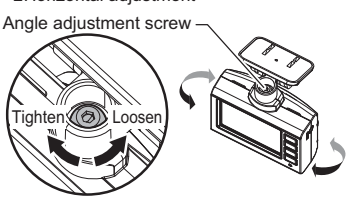
1) Temporarily fix the product with the stay angle adjusting screw loosened, and then adjust the installation angle of the main unit. Tighten the screw with the attached hexagonal wrench after adjustment.

- Temporarily attach the stay of the main unit to the windshield, and adjust the angle to make the main unit perpendicular to the ground surface by checking the video footage on the LCD.
- To make adjusting the angle easier, adjust the angle before sticking the mounting stay to the windshield.

■Backward and forward adjustment



■Horizontal adjustment



⚠ Caution

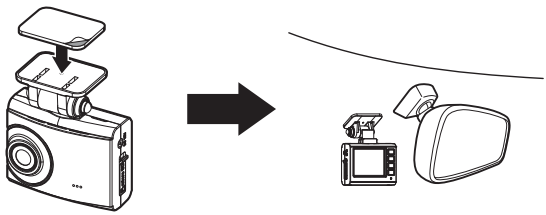
- Be sure to adjust the angle with the angle adjusting screw loosened. Failure to do so may cause damage.
- Make sure you tighten the angle adjusting screw after adjusting the angle. Loose screws may detach while the vehicle is running.
- Be aware that overtightened stay angle adjusting screws may cause damage.
- Periodically check that there is no loosened screws.

Be aware that adjusting the angle with the power source connected may cause accidental recording of the video footage by detection of impacts or by pressing the switch.

Advice

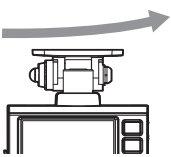
- If the display on the LCD disappears owing to the settings of the screen display, shortly pressing the [Menu/Return] switch allows the LCD to turn on for 30 seconds. (=> P 53)
- If the recorded video footage is dark, change the settings of the camera brightness adjustment or adjust the angle of the product to move it slightly downward.
- Since touching the camera lens causes the lens to become foggy which results in to out-of-focus video footage, be careful not to touch the lens when installing the product.

2) Clean the mounting stay and windshield with the attached degreasing cleaner. After drying them, use double-sided adhesive tape to stick the mounting stay to the windshield.



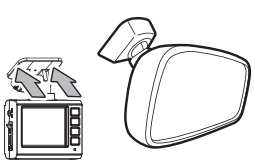
Advice

- When sticking the stay, start sticking it from one side little by little in order to achieve proper adhesion with less air bubbles.
  * Sticking the stay in one go allows air bubbles to get in, leading to easy detachment of the stay.

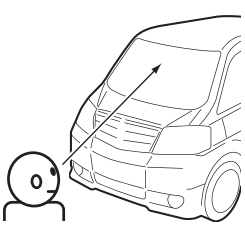


Stick it from one side, little by little

- Firmly press the stay on the back side of the sticking face by hand to avoid uneven adhesion. In addition, check that the sticking face is even by looking at it from the outside of the vehicle after sticking it.



Press the sticking face of the stay from



Check from the outside of the vehicle

◇**Stay sticking face**

Sticking entirely

Bubbles and color unevenness found

Installation method

⚠ Caution

- **Install the product so as not to obstruct the functions of the vehicle (airbags, etc.). Failure to do so may cause an accident and injury.**
- **There are some cases sticking is difficult depending on the shape and material of the dashboard. In addition, care is required when peeling off the double-sided adhesive tape because the sticking face may be damaged due to aging deterioration. If such a situation can be anticipated, install the product to the windshield of the back side of the rearview mirror.**

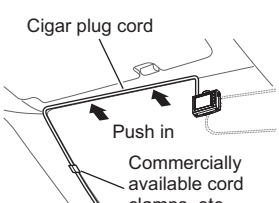
Always check the following details. Failure to check them may cause peeling off.

- Make sure you clean any stains (oil, water drops, etc.) on the sticking face and the mounting stay with the included cleaner. Install the product after drying them.**Do not use a parts cleaner and glass cleaner, etc.** Doing so may cause peeling off.
- When using a shade such as a sunshade, be careful not to place the main unit between the windshield and the sunshade. Doing so can cause heat to easily accumulate and may cause the double-sided adhesive tape to peel off.
- The adhesive power of the double-sided tape will become weak when the air temperature is extremely low. Warm up the adhesive face with a dryer, etc. to attach the product. Also, be careful not to allow the heat of the dryer to come into direct contact with the product.
- Do not reuse the double-sided adhesive tape because the adhesive power of the used tape becomes weak.
- Be careful not to pull nor apply unreasonable pressure to the product after installing it until the double-sided adhesive tape is firmly adhered. Failure to do so may cause the product to come off.
- The product may come off when the center section of the double-sided adhesive tape is not adhered or when all of the double-sided tape is not adhered to the windshield or the dashboard.

3) Arrange the wiring of the cigar plug cord.

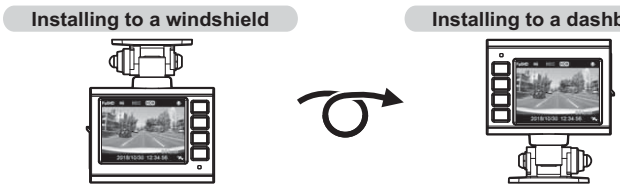
* Use a commercial cord clamp, etc. to arrange the wiring in order to avoid interference with driving.

* Do not bundle the cords for terrestrial digital broadcasting and ETC, etc. together.



When installing on the dashboard

This product judges the up/down direction of the product automatically using the built-in G sensor to inverse the LCD display.



Advice

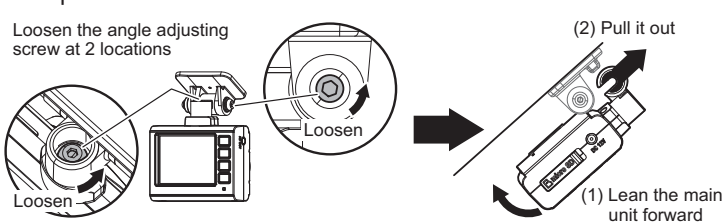
The up/down direction of the screen is judged when the product is started up. Therefore, inverting the main unit does not cause the screen to be inversed while being active. When the screen is inverted, restart the product.

⚠ Caution

Installing the product on the dashboard causes the product to heat up owing to heat transferring from the dashboard. Therefore, "High temperature caution: Recording is stopped until the temperature of the main unit decreases." be displayed to call for attention. Installing the device to the windshield is recommended if the display above appears frequently.
*** Recording stops while the attention screen is being displayed. Please wait until the temperature of the main unit decreases.**

Removing the main unit

Loosen the angle adjusting screws at 2 locations with the attached hexagonal wrench to pull it out and then remove the main unit.



⚠ Caution

- **Make sure you remove it with the angle adjusting screw loosened. Failure to do so may cause damage.**
- **Make sure you tighten the angle adjusting screw with the hexagonal wrench after re-installation. Loose screws may be detached while the vehicle is running.**
- **Be aware that overtightened stay angle adjusting screws may cause damage.**
- **Periodically check that there is no loosened screw.**

Installation method

Checking the operation

1. Checking the GPS reception

1) Turn the vehicle key switch on. Start up the main unit and then check that the GPS icon is displayed.

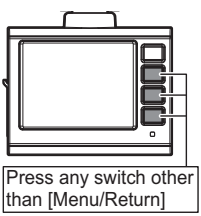
* Receiving GPS sets the date and time in the main unit.

Advice

The GPS function of this product does not operate at places listed below, where a signal from satellites cannot be received. This will cause the display of the GPS function to not operate properly. Move to another location and check if the GPS function is working. (Places include: tunnels, underpasses, the inside of buildings, places surrounded by buildings, etc., places under elevated railway tracks, forests, etc.)

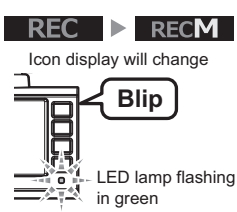
2. Checking the operation of manual recording

1) Press the switch **other than the [Menu/Return]** switch while the green LED lamp is lit and the radio or audio on.



2) A beep sound will be generated. [REC] display turns to [REC M] and recording of the sound and video starts.

* The green LED is lit during manual recording.
* Sound is automatically recorded.



Advice

The setting for recording is [ON] as the default. This can be switched to [OFF]. (=> P 49)

3. Checking the recorded video footage

Check the video footage recorded by the main unit.hexago(=> P 27 and 28)

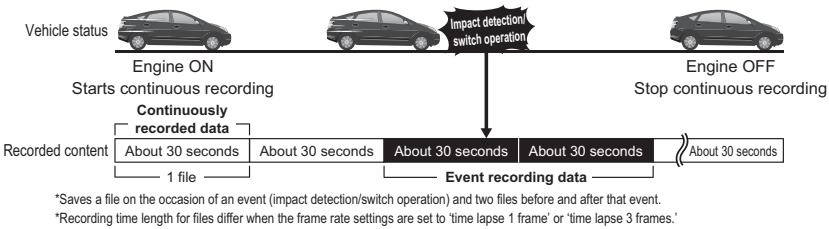
<<Check items>>

- The video footage that was recorded from the time of Power ON to Power OFF should be properly recorded in the folder based on the present date and time in "Continuous Recording."
- The video footage recorded by the switch operation should be recorded properly in the folder based on the present date and time in "Manual Recording."
- The sound should be recorded in the recorded data.

Shooting video footage

Regarding recording of video footage

This product has two ways of recording: "continuous recording" and "event recording."



*Saves a file on the occasion of an event (impact detection/switch operation) and two files before and after that event.
*Recording time length for files differ when the frame rate settings are set to 'time lapse 1 frame' or 'time lapse 3 frames.'

If a weak impact occurs at the time of an accident, there are cases where recording of video footage may not be performed even though an impact has occurred. Check the video footage of the continuous recording in such cases.

Advice

- By default, when the capacity of the micro SDHC card is fully occupied, the oldest data in the respective recording area for continuous recording or event recording will be overwritten to record new data.Operations while overwriting can be changed through the settings.(=> P 50)
- Video footage may not be recorded by means of operating the switch or after receiving an impact immediately after starting up the main unit.
- When saving recorded data by operating the switch or when an impact occurs, new video footage will not be recorded even when the switch is being operated or an impact is detected.
- Video footage cannot be recorded when the LED lamp is lit or blinking in orange. Finish setting or clearing the error.

Regarding continuous recording

- Automatic continuous recording is performed as a sequence from the time after the engine is turned on (vehicle key switch is set to ACC or ON) to the time when the engine is turned off (vehicle key switch is set to OFF) as continuously recorded data in the micro SDHC card.
- By default, when the maximum data capacity is reached, the oldest video footage is deleted in chronological order, and then new video footage is continued to be recorded.
- Changing the setting to [Overwriting prevention] does not delete the old video footage and allows stopping the recording as well. (=> P. 50)

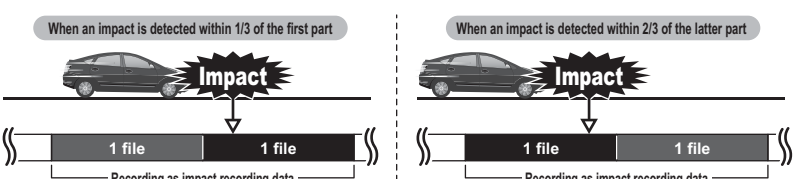
Regarding event recording

- There are three data types of event recording: "impact recording data" to record a file at the time when detecting an impact, "manual recording data" to record a file at the time when the switch is operated, and "parking surveillance impact recording data" to record a file at the time when an impact is detected under the parking surveillance mode.
- By default, when the maximum data capacity is reached, the oldest video footage is deleted in chronological order, and then new video footage is continued to be recorded.
- Changing the setting to [Overwriting prevention] does not delete the old video footage and allows stopping the recording as well. (=> P 50)

The event recording allows the previous file to be recorded as event recorded data when an impact is detected or the switch is operated within 1/3 of the first part of one file, and the next file when an impact is detected or a switch is operated within 2/3 of the latter part of the file.

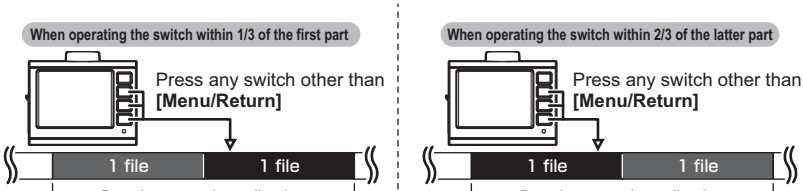
■ Impact recording data

- When the G sensor detects an impact which is equal to or more than the set value, this product records a file at the time when the impact is detected and the previous or next file as "impact recording data."
- The sensitivity of the G sensor can be adjusted individually for the front/back, left/right, top/bottom by 0.1 G via the settings.(=> P 51)



■ Manual recording data

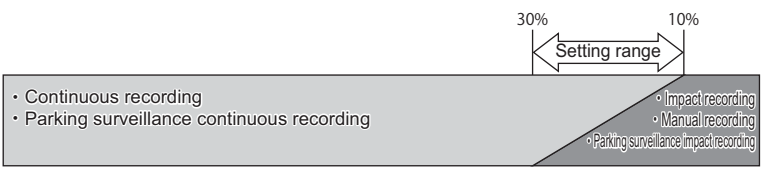
Pressing a switch **other than the [Menu/Return]** switch of this product records a file at the time when the switch is operated and the previous or next file as "manual recording data."



Shooting video footage

Regarding recording area

- By default, 80% of the entire microSDHC card is set as the continuous recording area and 20% of it is set as the event recording (impact recording/ manual recording) area.
- The ratio of the data saving capacity for event recording can be selected from [10% / 20% / 30%].(=> P 50)
- Changing the settings of the event recording area changes the ratio of the saving capacity of the continuous recording together.
- The parking surveillance continuous recording is included in the continuous recording area; and the parking surveillance impact recording is included in the event recording area. Therefore, when the maximum data capacity is reached under parking surveillance mode, the oldest video footage of the normal continuously-recorded data or event recorded data is deleted in chronological order, and new video footage is continued to be recorded.

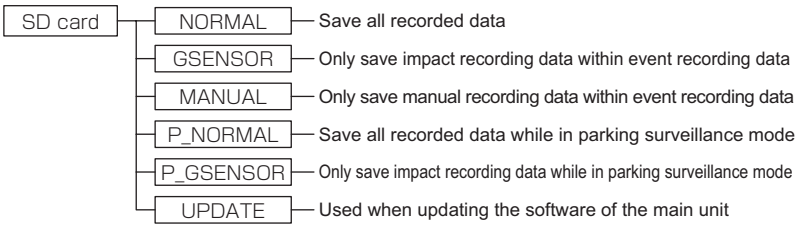


* To change the recording area, reformatting of the SD card is required, and all of the recorded data will be deleted when reformatted. If you are changing the recording area settings, backup the data to a personal computer as needed before doing so.

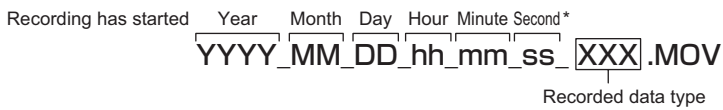
Regarding the saving destination folder name/file name

The data recorded by this product is stored as a file name based on the date when it is started to be recorded and the type of the recorded data into the folder of each item.

● Folder configuration

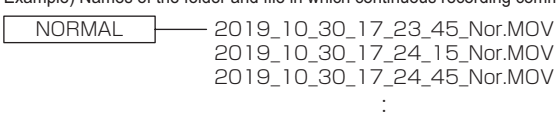


● The folder name is saved with the content below



* Recording is based on the time zone settings including date and time, and daylight saving time settings (the time and date information displayed on the main unit.)

Example) Names of the folder and file in which continuous recording commenced on 2019/10/30 17:23:45



■ Regarding display of recorded data types

Display	Content	Display	Content
Nor	Continuously recorded data	**Gsn**	Impact recorded data
Man	Manually recorded data	**P_Nor**	Parking surveillance continuously recorded data
P_Gsn	Parking surveillance impact recorded data		

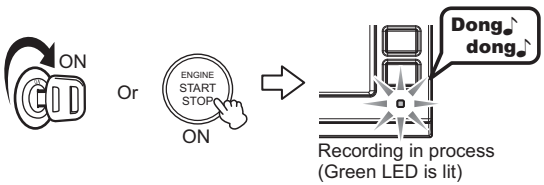
* In addition, the following items may be added depending on the recording situation.

Display	Content	Display	Content
Restore	Restored data	**c**	Data for which recording was finished owing to an error caused by high or low temperature
SDExit	Data for which the power source was turned off while recording	**s**	Data for which recording is finished by the emergency recording stop function

Shooting video footage

Turning the power ON

Set the vehicle key switch to ACC or ON.



Advice

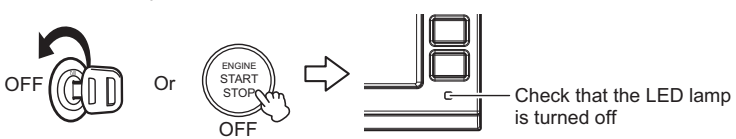
microSD card check function

This product checks the microSDHC card when starting up, and can prevent a shooting miss by indicating an error on the LCD when the card is damaged.

* For the countermeasures, refer to P 64.

Turning the power OFF

Set the vehicle key switch to OFF.



LCD display

Recording screen

Displays the running speed of your car
* Displays only when receiving GPS

Displays current date and time

	Icon	Display content
(1)	FullHD HD SD	Displays the settings for the recording size. (=> P 47)
(2)	Hi Lo	Displays the settings for image quality (Hi: high definition, Lo: low definition). (=> P 48)
(3)	REC REC G REC M REC T1 REC T3	Displays the recording type REC: Continuous recording / REC G: Impact recording REC M: Manual recording REC T1: Time lapse 1 frame / REC T3: Time lapse 3 frames
(4)	HDR	Displays the settings for the image correction function. (=> P 49)
(5)	ALL EVENT	Displays the settings for overwriting prevention. (=> P 50)
(6)		Displays the settings for audio recording. (=> P 49)
(7)		Displays the receiving status of GPS.

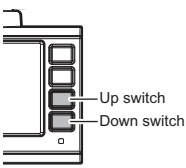
Shooting video footage

Adjust the sound volume of the main unit

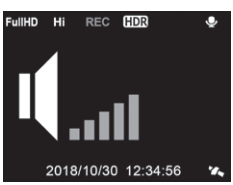
- The volume for the checking sound, announcing sound, and sound when recorded video footage is played can be selected from eleven different volume levels [OFF/1 to 10].
- The sound effect for the occurrence of an error is generated even when the volume is set to OFF.
- The default setting is [5].

Adjustment method

1) **Press and hold [Up] or [Down]** to display [Sound adjustment screen].



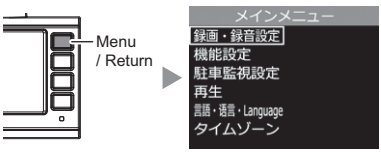
2) Adjust the sound volume using [Up] and [Down].
   - Pressing and holding [Up] or [Down] increases/decreases the sound volume one level at a time.



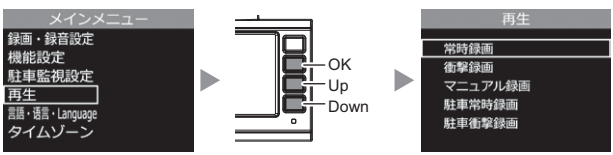
3) Pressing [Menu/Return] sets the sound volume level to the adjusted level and returns to the recording screen.
   - It automatically returns to the recording screen if no operation is performed for a certain time period. (The adjusted sound volume is saved.)

Playing video footage with the main unit

1. **Press and hold** [Menu / Return] and display the main menu.

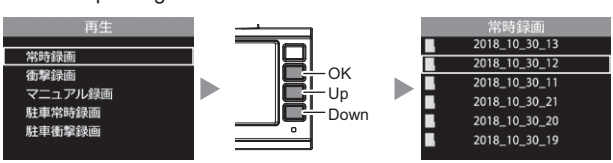


2. Select [Play] by pressing [Up] or [Down], and then press [OK].



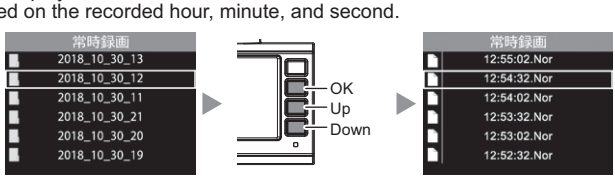
3. Select the video footage type by pressing [Up] or [Down], and then press [OK].

- [Continuous recording]...Displays the continuously recorded data.
- [Impact recording].....Displays the data recorded by impact detection.
- [Manual recording].....Displays the data recorded by switch operation.
- [Parking continuous recording]...Displays the data recorded by parking surveillance mode.
- [Parking impact recording]...Displays the data recorded by impact detection during parking surveillance mode.



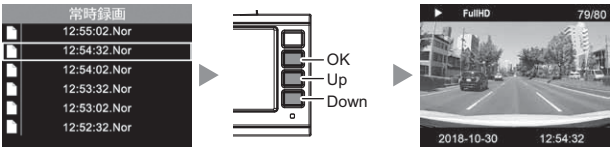
4. Select a folder by using [Up] or [Down], and then press [OK].

* The main unit displays a folder name based on the recorded date and time and a file name based on the recorded hour, minute, and second.



Watching video footage

5. Select the desired file by using [Up] or [Down], and then press [OK] to start playing the video footage.



6. Press [Menu/Return] after finishing playing the video footage. Exiting from the setting screen returns to the recording screen.

Playback screen

Displays the operation status

Displays the recording size

Displays the recording type

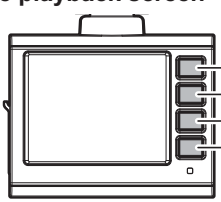
Not displayed: Continuously recorded data
G: Impact recording data
M: Manual recording data
P: Parking surveillance continuously recording data
PG: Parking surveillance impact recording data

Displays playback number and total played number for video footage
* Displays the number of images inside the play folder

Displays the shooting date

Displays the shooting time

■ Operation on the playback screen



Menu/Return switch
OK switch
Up switch
Down switch

Operation switch	Press	Press and hold
Menu/Return switch	Returns to the previous screen	Returns to the main menu.
OK switch	Performs playing / pausing	Plays from the beginning of the currently playing data
Down switch	Advances to the previous data	Turns down the volume
Up switch	Returns to the next data	Turns up the volume

Watching video footage

Play video footage on a television

Connecting this product to a television or a navigation device equipped with a video input terminal using a separately sold optional AV cable can display the LCD display of the main unit on a television or navigation device.

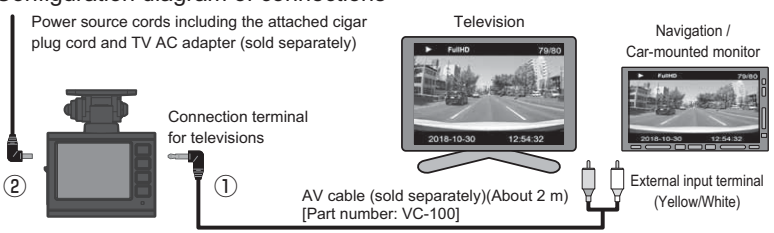
* This product outputs video footage using the NTSC system.

⚠ Caution

Do not insert/remove the AV cable with the power source turned ON. Doing so may lead to unstable operation of the main unit such as restarting. Always check that the LED lamp is turned off after the power source is turned OFF to insert/remove the AV cable

Video footage playing method

■Configuration diagram of connections



■Video image playing method

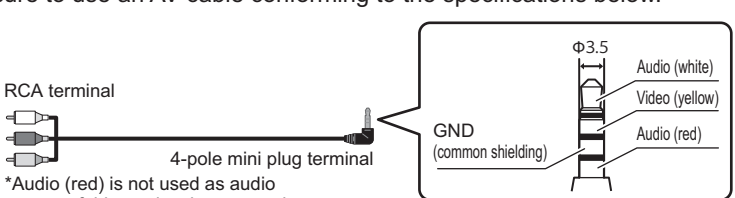
1) Connect the AV cable (part number VC-100) (sold separately) to the main unit's television connection terminal (Fig. 1)

2) Connect the power source cords including the attached cigar plug cord and TV AC adapter (sold separately) to the power jack of the main unit. (Fig. 2)

3) Operate the main unit by following the procedures on pages 27-28 to play the recorded video footage. (The video footage will be displayed on the connected monitor. *No screen is displayed on the LCD of the main unit)

When using a commercial AV cable

The specifications of a 4-pole mini plug terminal for AV cables which can be used with this product are as shown in the illustration below.
Be sure to use an AV cable conforming to the specifications below.



*Audio (red) is not used as audio output of this product is monaural.

Playing video footage on a personal computer

The video footage recorded by this product can be watched together with information such as vehicle acceleration by installing dedicated viewer software which can be downloaded from our website. In addition, since the recorded data is stored as a MOV file, it can be played using Windows Media Player, etc.

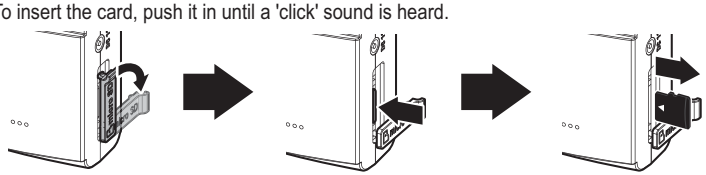
Advice

- We recommend a personal computer that meets the following specifications when using the viewer software.
  OS: Japanese version of Windows 7 / 8.1 / 10
  CPU: Core 2 Duo processor 2.8 GHz or higher recommended
  Memory: 4 GB or higher recommended
  Monitor resolution: SXGA (1280 x 1024 pixels) or higher recommended
  * Except a tablet-type personal computer
- When the viewer software does not operate properly owing to the PC's operating system being updated, download and try the latest version of the viewer software from our website.

Before using viewer software

Remove the microSDHC card from the main unit. When removing the card, turn off the main unit's power source switch, and then check that the LED of the main unit is turned off to remove the card.

- To take a microSDHC card out, push the card gently once, then take it out as it pops out a little.
- To insert the card, push it in until a 'click' sound is heard.



Pull the cover forward and fold it horizontally.

Lightly push the microSDHC card,

then pull it out when it pops out slightly.

* Insert the card by following the steps for ejecting in reverse order. Ensure that you insert the microSDHC card so its logo can be seen at the side of the camera. If you try to insert it upside down by force, it will break.

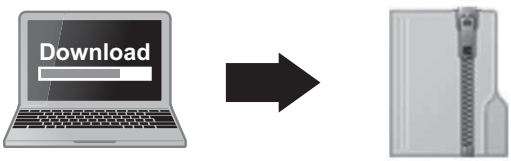
⚠ Caution

Do not insert/remove the micro SDHC card while this product is under operation (including during parking surveillance mode). Doing so may damage the card or recorded data in the card. Before inserting/removing the card, always turn off the vehicle key switch, and then check that the LED of this product is completely turned off.
***If the parking surveillance mode is active, inactivate the parking surveillance mode referring to page 59, and then remove the card.**

Watching video footage

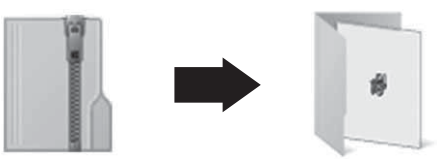
Using the viewer software

1) Download the dedicated viewer software from our website (http://www.e-comtec.co.jp/).



PCVIEWER.zip
(downloaded file)

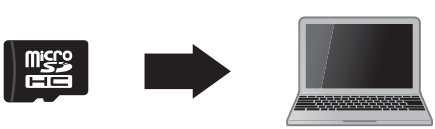
2) Open the downloaded file.



PCVIEWER.zip
(Downloaded file)

PCVIEWER folder
(File created after deployment)

3) Insert the microSDHC card removed from the main unit into the personal computer

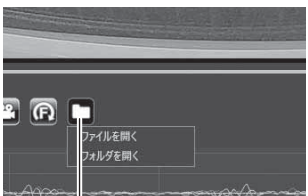


4) Double-click the viewer software in the folder opened in 2).

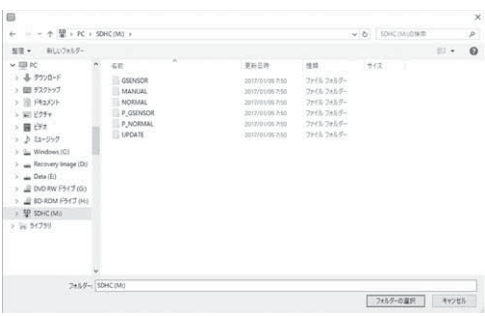
5) Click the [Load] button and then [Open folder].

Advice

Clicking [Open file] allows you to select desired video footage to play, and can be selected by one file at a time.



6) Select “SDHC.”



Watching video footage

7) Selecting the desired file to play and pressing the [Play] button plays the video footage.

■Playback screen

Advice

Regarding notice of firmware updates

An update notice will be displayed when there is an update for the firmware data of this product when the viewer software is started up (only when connected to the Internet). At that time, update the firmware according to the details displayed on the screen and the procedure shown on our website.

(1)	Displays filmed video footage ・Double-clicking displays the video footage in full screen mode, and double-clicking again returns to the normal display ・Dragging enlarges of the video footage	(15)	Displays the currently playing position of the video footage
		(16)	Adjusts the volume and sound playing speed of the viewer software
		(17)	Displays the range of the maximum acceleration display. In addition, pressing [▲ / ▼] enables changing the range of the display
(2)	Displays Google maps * Nothing is displayed for the recorded video footage while GPS is not being received or when not connected to the Internet	(18)	Displays the acceleration graph and various detection icons Green line: Forward/backward acceleration (X axis) Red line: Left/right acceleration (Y axis) Blue line: Upward/downward acceleration (Z axis)  ..... Location where the impact is detected  ..... Location where the switch operation is detected  ..... Location where the emergency recording stop is detected
(3)	Displays the playing time of the current video footage		
(4)	Displays the travelling speed of your car * Displays only when receiving GPS		
(5)	Displays the recorded date and time of the data being played		
(6)	Displays the acceleration with numeral values In addition, checking/unchecking the check box allows the graph to be displayed/hidden	(19)	Displays the data in the continuous recording folder
(7)	[Previous] button Returns to the file before the currently playing file	(20)	Displays the data in the impact recording folder
(8)	[Cue] button Returns to the beginning of the currently playing video footage	(21)	Displays the data in the manual recording folder
(9)	[Play / Pause] button Starts playing * The button is switched to the pause button while playing	(22)	Displays the data in the continuous recording folder during parking surveillance mode
(10)	[Next] button Advances to the next file from the currently playing file	(23)	Displays the data in the impact recording folder during parking surveillance mode
(11)	[Still image] button Saves the video footage at the time from when the button is pressed as only one still image (jpeg) to a personal computer, or prints out the still image	(24)	Displays a file list of recorded data
(12)	[Video] button Saves the recorded data to a personal computer with the check box of the file list checked	(25)	Minimization button
(13)	[Rotate] button Rotates the video footage 180 degrees	(26)	Changes the display size of the video footage
(14)	[Load] button Specifies the folder and file to be loaded to the viewer software	(27)	Exits the viewer software

Watching video footage

Saving the recorded data to the personal computer

Pressing the [Video] or [Still image] button in the viewer software enables saving the recorded data as a video or still image.

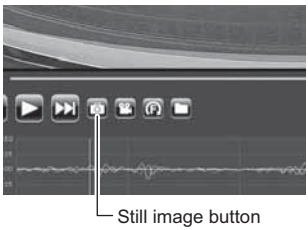
Saving the recorded data as a video

1) Check the check box of the desired file to save.

2) Press the [Video] button in the viewer software. Select the save destination for the video, and then press [Select a folder].

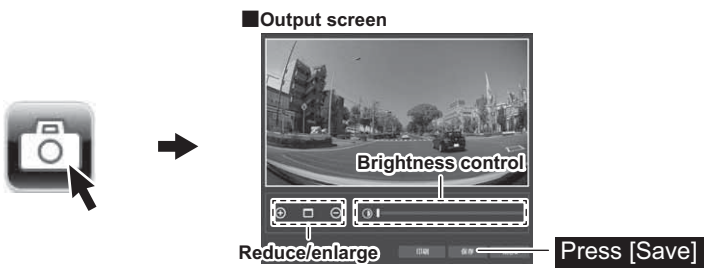
Saving the recorded data as still images

1) Press the [Still image] button in the viewer software.

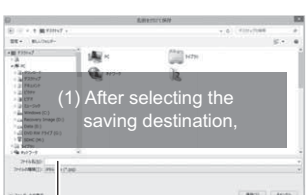


2) After the output screen is displayed, press [Save].

- Moving the slide bar enables adjusting the brightness of the image to be saved.
- The scaling button is for how the image is displayed. For printing or saving, the image is saved/printed out at the original size. Pressing the button located at the center changes the size to the original size.



3) Enter the file name after selecting the save destination for the still image, and then press [Save].



Advice

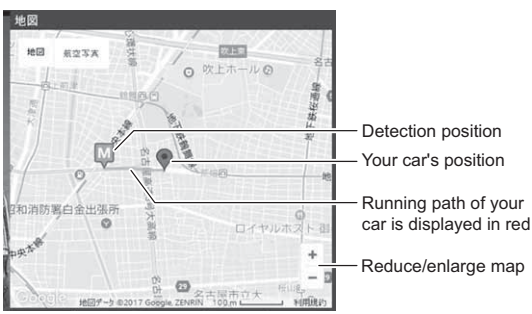
- Pressing the [Still image] button and then [Print] allows direct printing of the still image.
- Only video footage is saved or printed out. The date, time, and acceleration are not printed out.

Watching video footage

Regarding map display

- The travel speed and Google maps are displayed when there is GPS information present. In addition, Google maps is not displayed when there is no Internet connection.
- The map displays the running path and the locations where an impact, manual recording, and emergency recording stop was detected for each file.

The map display is valid only in Japan. The operation of this product is not guaranteed outside Japan.



<<Display content>>

Icon	Content	Icon	Content
G	Impact detection icon	M	Manual recording detection icon
E	Emergency recording stop detection icon		

* Google, the Google logo, Google maps, the Google map logo, and Street View are the trademarks or registered trademarks of Google Inc.

Regarding the driving support function

- This product has a built-in driving support function that supports safe and comfortable driving.
- Make sure you perform calibration (correction) (=> P 42, 43) when using this function.
- This product's driving support function has the following four functions built-in.

Item	Content
Leading-vehicle startup notification function	Detects and notifies when the leading vehicle starts moving.
Front signal notificationfunction	Detects and notifies that the traffic signal ahead of your car is green.
Drive support function	Detects and gives notifications regarding the fixed "G (acceleration/deceleration)," being exceeded such as when there is sudden acceleration and deceleration, etc.
Vehicle speed alarmfunction	Notifies when the pre-set speed has been exceeded.

Read the details below before using the driving support function.

- The driving support function aims to reduce the burden on drivers by providing supplementary information through notifications regarding changes in surrounding circumstances and the driving status. It cannot make judgements on all changes in surrounding conditions and the driving status. Drivers must always check the conditions and statuses, regardless of the notifications.
- There are cases where the function does not operate properly, owing to the main unit's installation location, angle, stains on the windshield, etc.
- The function's operation is based on image information, and therefore there may be cases where it makes notifications based on changes of scenery and surrounding objects, etc. that are unrelated to leading vehicles and traffic signals.
- For the "Leading-vehicle startup notification function," and "Front signal notification function," they can be set only when the framerate is set to [19.1 fps/29.1 fps] and the recording size is set to [HD/FullHD]. When these functions cannot be selected on the setting screen, check the framerate and recording size settings.

Using the driving support function

Leading-vehicle startup notification

When your car is stopped and it detected that a leading vehicle starts moving, it will make an indication on the screen, and give a notification either by voice or alarm if your vehicle does not start moving after a while.

Your car is in a stop state

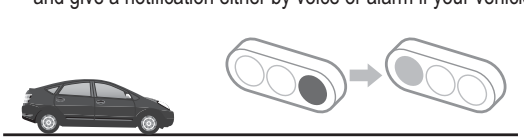
A leading vehicle has started moving

“Ding-dong; Check the leading vehicle”

- Operates when it judges that your car is stopped.
- There are cases where the function does not operate properly depending on the distance from the leading vehicle, the location and surrounding circumstances, brightness, weather conditions, etc.
- The function's operation is based on image information, and therefore there may be cases where it makes notifications based on changes of scenery and surrounding objects, etc. other than for leading vehicles.
- There are cases where the function does not operate properly, depending on the leading vehicle's shape and color.
- When the screen setting is [OFF] or [Linked to vehicle speed], there will be no screen display.

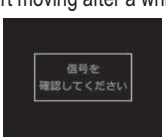
Front signal notification function

When your car is stopped and the traffic signal is green, it will make an indication on the screen, and give a notification either by voice or alarm if your vehicle does not start moving after a while.



Your car is in a stop state

Front traffic signal turns green



“Ding-dong; Check the signal”

- Operates when it judges that your car is stopped.
- There are cases where the function does not operate properly based on the distance from the traffic signal, the location and surrounding circumstances, brightness, weather conditions, etc.
- The function’s operation is based on image information, and therefore there may be cases where it makes notifications based on changes of scenery and surrounding objects, etc. other than for traffic signals.
- When there are several traffic signals within the image information, there may be cases where there are notifications for traffic signals other than the ones in the moving direction of your car.
- There are cases where the function does not operate properly, depending on the traffic signals’ type, color, and brightness.
- Arrow signals cannot be detected.
- When the screen setting is [OFF] or [Linked to vehicle speed], there will be no screen display.There are cases where the function does not operate properly, depending on the traffic signals' type, color, and brightness.

Drive support function

- Gives notifications either by voice or alarm when it is detected that the fixed "G (acceleration/deceleration)" has been exceeded, such as when there is sudden acceleration and deceleration, etc.
- Announcements will vary depending on the driving circumstances.

Driving circumstances	Content
Sudden acceleration	Beep, beep; Detected sudden acceleration
Sudden deceleration	Beep, beep; Detected sudden braking
Abrupt steering	Beep, beep; Detected abrupt steering

Example) A case of sudden braking

Detected G at a certain level or higher after sudden braking

"Beep, beep; Detected sudden braking."

Advice

- Levels of detection changes based on the G sensor settings.
- Driving in a manner that does not set off the alarm, such as accelerating, decelerating, can be used as a guide for driving.
- Drive support may not operate when video footage is being recorded owing to switch operation or an impact.

Vehicle speed alarm function

- Makes a notification by voice or alarm when the pre-set speed has been exceeded.
- The alarm is not repeated for one minute after the alert.

Exceeds a preset speed

"Bing-bong, bing-bong, bing-bong"

Using the driving support function

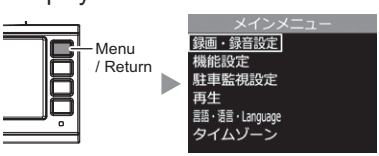
Performing calibration

Make sure to perform a calibration when using the driving support function. There are cases where the driving support function does not function properly.

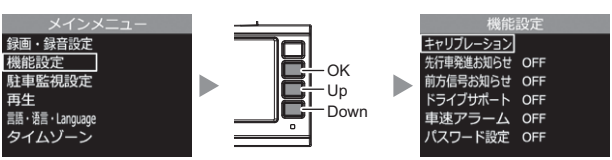
- **Perform the calibration at a safe location where it does not become an obstruction for other vehicles. In addition, it is preferable to perform the calibration at a flat location.**
- **Drivers should never operate the main unit while driving. Always stop the vehicle to operate the main unit.**

Calibration method

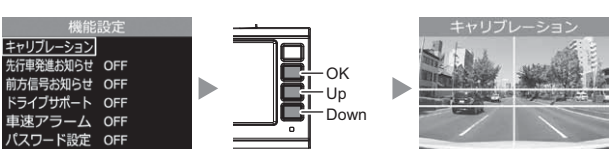
1. **Press and hold** [Menu/Return] and display the main menu



2. Select [Function settings] by [Up] or [Down], and press [OK]

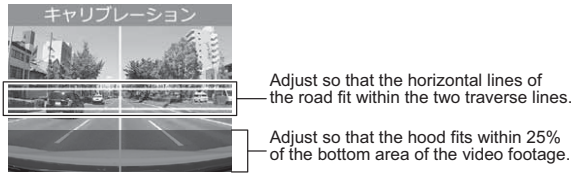


3. Select [Calibration] by [Up] or [Down], and press [OK]



4. Adjust the angle of the main unit (=> P 14). Make upward and downward adjustments for it to fit within the stated range below.

- Road horizon fits between the yellow top and bottom horizontal lines
- Vehicle hood fits within 25% of the lower part of the video footage



5. After the adjustment of procedure 4, press [OK] to complete.

Setting method

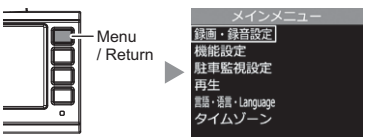
The settings of this product can be changed from the main menu of the main unit.

The entire microSDHC card contents will be reformatted when the [Automatic recording], [Recording size], [Frame rate], [Image quality], [Event recording area] settings are changed. Make sure that the necessary data is saved on your computer.

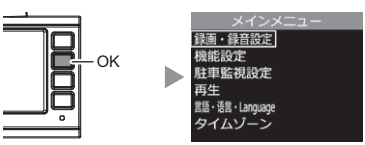
Operation method on the settings screen

Example: How to change the recording size settings to [FullHD (1920 x 1080)]

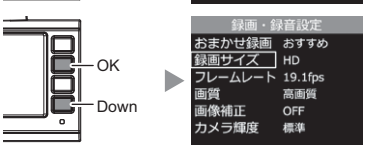
1. **Press and hold** [Menu/Return] to display the [Main menu] of the settings screen



2. As [Picture/sound recording settings] has been selected, click [OK]

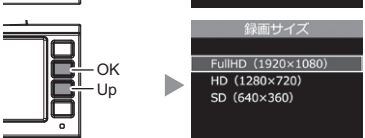


3. Press [Down] once to select [Recording size] followed by clicking [OK]



4. The reformatting confirmation screen of the SD card is displayed. Click [OK] if you would like to reformat it

5. Press [Up] once to select [FullHD (1920x1080)] and click [OK]



6. **Pressing and holding** [Menu/Return] will go back to the recording screen after going through the settings screen.

- It is also possible to set other items without going back to the recording screen.

List of settings

List of picture/sound recording settings

Item	Settings content	Default settings	Notes
Automatic recording	Recommended / Fine / Longer	Recommended	Your microSDHC card will be reformatted
Recording size	Full HD (1920×1080)/HD (1280×720)/ SD (640×360)	HD (1280x720)	
Frame rate	9.1 fps / 19.1 fps / 29.1 fps / Time lapse 1 frame /Time lapse 3 frames	19.1 fps	
Image quality	High image quality / Low image quality	High image quality	
Image correction	OFF / HDR-ON	OFF	
Camera luminance	Bright / Standard / Dark	Standard	
Mirror image	True image / Mirror image	True image	
Sound recording	OFF / ON	ON	
Event recording area	10% / 20% / 30%	20%	Your microSDHC card will be reformatted
Overwriting prevention	OFF / Event recording / All recording	OFF	

List of function settings

Item	Settings content	Default settings	Notes
G sensor	OFF / 0.1G to 1.0G	0.6G	Front-Back / Left-Right / Top-Bottom Configurable separately
Time stamp	OFF / ON	OFF	
Emergency recording stop	OFF / 1.1G to 2.0G	1.5G	
LCD brightness	Bright / Standard / Dark	Standard	
Screen display	OFF / Speed-linked / ON (continuously) / Clock (small) / Clock (large)	Speed-linked	
Recording notification	OFF / Alarm / Voice	Alarm	[Voice] can be set only when selecting [Japanese] for the language
Calibration	-	-	
Leading-vehicle startup notification	OFF / Alarm / Voice	OFF	[Voice] can be set only when selecting [Japanese] for the language
Front signal notification	OFF / Alarm / Voice	OFF	
Drive support	OFF / Alarm / Voice	OFF	
Vehicle speed alarm	OFF / 30-140 km/h	OFF	Configurable in 10 km/h increments
Password settings	Invalid / Valid / Password registration	Invalid	
SD card formatting	-	-	
Reset to factory setting status	-	-	

Setting

List of parking surveillance settings

Item	Settings content	Default settings	Notes
Parking surveillance mode	OFF / ON	OFF	See P 58 for the details
Parking surveillance recording methods	Impact quick recording / Continuous-impact recording / Time lapse recording	Continuous / Impact recording	
Night vision	OFF / ON	OFF	
Parking surveillance impact sensitivity	High-sensitivity / Medium sensitivity / Low sensitivity	Medium sensitivity	
Parking surveillance recording time	30 min / 1-3-6-9-12 hrs. / Continuous ON	30 min	
Parking surveillance recording stop voltages	11.9 V / 12.0 V / 12.1 V / 12.2 V	12.2 V	
Parking surveillance recording Get-off cancel	1 minute / 3 minutes	1 minute	
Parking surveillance recording Get-on cancel	1 minute / 3 minutes	1 minute	

Language settings

Item	Settings content	Default settings	Notes
言語 · 语言 · Language	日本語 / 简体中文 / English	Japanese	

List of time zones settings

Item	Settings content	Default settings	Notes
Daylight saving time	OFF / ON	OFF	
Time zone	Japan / China-Hong Kong-Taiwan / USA EST/ USA CST/ USA MST/ USA PST/ USA AKS/ USA HAST	Japan	

* This unit does not support US Virgin Islands, Guam and Saipan time zones.

Picture/sound recording settings

Automatic recording settings *By changing the settings, the microSDHC card will be reformatted.

- The [Recording size], [Frame rate] and [Image quality] settings can be changed quickly and easily.
- Settings can be selected from [Recommended / Fine / Longer].
  * When having changed the settings individually, it will show [User settings].

- If you set it to [Long], you cannot set [Leading-vehicle startup notification function] and [Front signal notification function].
- If you set it to [Leading-vehicle startup notification function] and [Front signal notification function], you cannot select [Long].

■Content of settings

Settings	Recommended	Fine	Long
Recording size	HD	FullHD	SD
Frame rate	19.1fps	29.1fps	9.1fps
Image quality	High image quality	High image quality	Low image quality

Recording size settings *By changing the settings, the microSDHC card will be reformatted

- Recording footage size can be selected from [Full HD (1920x1080) / HD (1280x720) / SD (640x360)].
- By default, it is set to [HD (1280x720)].

- If you set it to [SD (640x360)], you cannot set [Leading-vehicle startup notification function] and [Front signal notification function].
- [If you set it to [Leading-vehicle startup notification function] and [Front signal notification function], you cannot select [SD (640x360)].

Frame rate settings *By changing the settings, the microSDHC card will be reformatted

- Frame rate of video footage to record can be selected from [9.1 fps / 19.1 fps / 29.1 fps / time lapse 1 frame / time lapse 3 frames].

  [9.1 fps / 19.1 fps / 29.1 fps] ..... Records video footage by the selected frame rate.
  [Time lapse 1 frame] ..... Takes one picture in a second and records the video footage by reducing those pictures to a 15 fps moving picture.
  [Time lapse 3 frames] ..... Takes three pictures in a second and records the video footage by reducing those pictures to a 15 fps moving picture.

- By default, it is set to [19.1 fps].

⚠ Caution

- When setting it to [Time lapse 1 frame] or [Time lapse 3 frames], it will record one frame per second as a maximum, so there may be cases where the exact moment of an accident is not recorded depending on the timing.
- There may be cases where LED light sources including signals, brake lights, turn signals or tail lamps are not recorded.

- If you set it to [9.1 fps], [Time lapse 1 frame] or [Time lapse 3 frames], you cannot set [Leading-vehicle startup notification function] and [Front signal notification function].
- If you set it to [Leading-vehicle startup notification function] and [Front signal notification function], you cannot select [9.1 fps], [Time lapse 1 frame] or [Time lapse 3 frames].

Advice

Regarding frame rate

Frame rate means the number of recorded frames per second and it is measured by the unit of frames per second (fps). The larger the fps value, the smoother the video footage is played back, however the data's file size also increases and fewer recordings can be stored on a microSDHC.

Regarding [Time lapse 1 frame] and [Time lapse 3 frames] settings

- When changing the settings to [Time lapse 1 frame] or [Time lapse 3 frames], the change confirmation screen will be displayed.
- Regardless of the settings for [Sound record setting], it will not record sound.

Image quality settings *By changing the settings, the microSDHC card will be reformatted

- You can select the video footage image quality from [High quality / Low quality].
- By default, it is set to [High quality].

Image correction settings

- This product is installed with High Dynamic Range (HDR) as an image correction function.
- By turning the HDR function on, you can record video data by correcting overexposure and underexposure.

  [OFF] Recording the video data as it is, without image correction.
  [HDR-ON] Recording finer video footage with image correction.
- By default, it is set to [OFF].

Advice

What is overexposure/underexposure?
Overexposure refers to a state of showing a brighter spot in all white.
Underexposure refers to a state of showing a darker spot in all black.

Camera brightness settings

- The brightness of the video footage can be selected from [Bright/ Standard/Dark].
- By default, it is set to [Standard].

Mirror image settings

- Video footage can be selected from [True image/Mirror image].
- By setting it to [Mirror image], you can record video footage with the left and right inverted.
- By default, it is set to [True image].

■True image settings

■Mirror image settings

*Records mirrored video footage

Sound recording settings

- You can select [ON/OFF] for sound recording.
- By default, it is set to [ON].

Setting

Event recording area settings **By changing the settings, the microSDHC card will be reformatted

- As for event recording (impact recording, manual recording and parking surveillance impact recording), you can select the ratio of data storage from [10% / 20% / 30%] (=> P 22)
- By changing event recording area settings, the ratio of data storage for continuous recording will be changed accordingly.
- By default, it is set to [20%].

Advice

By default, the recording areas of a microSDHC card have been set as follows: 80% for continuous recording, and 20% for event recording (impact recording, manual recording, and parking surveillance impact recording).

■A reference for the number of event recording files according to the capacity of a microSDHC card

Settings	micro SDHC card capacity			
	4GB	8GB	16GB	32GB
10%	About 10 files	About 20 files	About 40 files	About 80 files
20%	About 20 files	About 40 files	About 80 files	About 160 files
30%	About 30 files	About 60 files	About 120 files	About 240 files

- The event recording file numbers shown above are for reference and may differ.

Overwrite prevention settings

- When recorded data reaches the upper limit of a microSDHC card, you can select the next action from [OFF / Event recording / All recording].
- By default, it is set to [OFF].

Settings		When reaching upper limit	
		Continuous recording	Event recording
OFF	Overwrites all recorded data.	Continues recording by overwriting	Continues recording by overwriting
Event recording	Event recording data only Does not overwrite.	Continues recording by overwriting	Stops recording
All recording	Does not overwrite any recorded data.	Stops recording	Stops recording

Advice

An image as shown on the right will be displayed to call your attention, when recorded data reaches the upper limit of the microSDHC card while the overwriting prevention setting is set as [Event Recording] or [All recording].

Function settings

G sensor settings

- Sensitivity to detect an impact can be selected from [OFF / 0.1G (sensitive) to 1.0G (insensitive)] for front-back / left-right/ top-bottom respectively.
- It does not record when detecting an impact with the [OFF] setting.
- By default, it is set to [0.6G] respectively.

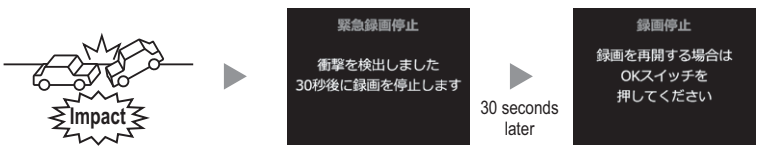
Time stamp settings

- By turning this setting ON, you can include the time and date of the recording in recorded data.
- By default, it is set to [OFF].

As the time stamp function includes the time and date while recording video footage, there may be a small time-lag owing to its state of processing.

Emergency recording stop settings

- The emergency recording stop function refers to a function that automatically stops recording about 30 seconds after detecting a strong impact of an accident, for example, in order to prevent overwriting of critical data.
  * It stops recording when an impact goes beyond any of the set values for front-back / left-right / top-bottom.
- Sensitivity to detect an impact can be selected from [OFF / 1.1G (sensitive) to 2.0G (insensitive)].
- By default, it is set to [1.5G].



During manual recording (=> P 21), if the emergency recording stop function has been activated, its video footage will be saved to the microSDHC card as manual recording data.

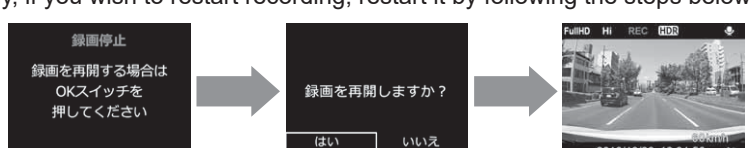
Advice

If you have an accident...

This product overwrites older data and records new data for continuous, impact and manual recording respectively when the storage of the microSDHC card is full.
For this reason, if you move your vehicle after an accident or if the power supply of this product is turned on during repair work at a workshop without removing the microSDHC card, it is possible that critical data will be overwritten by accident.
It is recommended that you keep this function enabled if you think it would be difficult to calmly take actions to turn off the power and eject the microSDHC card in the case of an accident.

■When restarting video recording

When your recording has been stopped by the emergency recording stop function, recording will be still paused even if you restart this product. Accordingly, if you wish to restart recording, restart it by following the steps below.



(1) Press [OK]

(2) Select [Yes] by pressing [Up] or [Down], and then press [OK]

(3) Recording resumes

LCD brightness settings

- The brightness of video images can be selected from [Bright/Standard/Dark].
- By default, it is set to [Standard].

Screen display settings

- Display settings for the LCD can be selected from [OFF/Speed-linked/ON (continuous)/Clock (small)/Clock (large)].
- By default, it is set to [Speed-linked].

■Settings content

[OFF]..... Does not show the LCD. Each time the [Menu/Return] switch is pressed, the display is switched on or off. The display will turn off after 30 seconds.

[Speed-linked]..... When travelling at 10km/h or faster after receiving a GPS signal, the LCD will be switched to non-display mode.
The LCD will still be in non-display mode after stopping your car. However, by pressing the [Menu/Return] switch, the LCD will show video footage until your car once again reaches a speed of over 10 km/h.

[ON (continuous)]..... The LCD is displayed continuously.

[Clock (small)]..... At start up and after operating the main unit, it will show the recording screen for 30 seconds before switching to a display of a clock.

[Clock (large)]..... At start up and after operating the main unit, it will show the recording screen for 30 seconds before switching to a display of a clock/calendar.

Recording notification settings

- You can select the sound at startup from [OFF/Alarm/Voice].
- By default, it is set to [Alarm].

You cannot select [Voice] when [Language] has been set to a language other than [Japanese]. (=> P 57)

Leading-vehicle startup notification settings

- As for detection and notifications for cars ahead of you that start moving when your car is stopped, you can select from [OFF/Alarm/Voice].
- By default, it is set to [OFF].

You cannot select [Voice] when [Language] has been set to a language other than [Japanese]. (=> P 57)

Front signal notification settings

- As for detection and notifications of green traffic signals ahead of your car while stopped, you can select from [OFF/Alarm/Voice].
- By default, it is set to [OFF].

You cannot select [Voice] when [Language] has been set to a language other than [Japanese]. (=> P 57)

Drive support settings

- As for detection and notifications of "G (acceleration/deceleration)" when accelerating and decelerating too abruptly, etc., you can select from [OFF/Alarm/Voice]. You can use this function as a guide for eco-driving. The long-drive announcement function will be turned ON/OFF by linking it to this function.
- By default, it is set to [OFF].
  * It does not notify you when the G sensor has been set at 0.3G or less.

You cannot select [Voice] when [Language] has been set to a language other than [Japanese]. (=> P 57)

Advice

- Levels of detection will change in accordance with the settings of the G sensor.
- By driving without activating the alarm, you can avoid accelerating/decelerating too abruptly.
- Drive support may not work when you are recording video footage owing to switch operation or an impact.
- You cannot turn on only the long-drive announcement function.

◇ Long-drive announcement function

When you have been driving for two hours without a rest, the following announcement will be made.

* The message will be announced even when the main unit has been set to [Alarm].

“It has been two hours since you started driving. It is about time for a break.”

Vehicle speed alarm settings

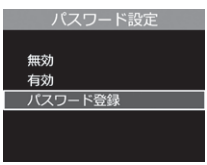
- It makes an announcement when you exceed a preset speed. It does not repeat the alarm for one minute after the alert.
- You can select from [OFF/30 to 140 km/h]
- By default, it is set to [OFF].

Password settings

- By setting a password, you can strengthen privacy protection and security by making it impossible for any other persons to see your recorded data.
- After setting a password, the menu screen will not be displayed unless the password is input at the settings menu.
- By default, it is set to [Disabled].

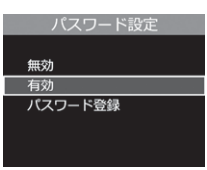
■Setting method

1) Select [Password registration] using the [Up] and [Down] buttons, then press [OK]



2) Select numbers using the [Up] and [Down] buttons, finalize by [OK] to make your four-character password, and press [OK] to register it.

3) Select [Enabled] using the [Up] and [Down] buttons, and press [OK] to finish setting it. From the next time, you need to input your password when you enter the settings menu.



- Please do not forget your password.
- If you enter a wrong password, it displays "Passwords do not match. Enter the correct password again" prompting you to re-enter the password.
- When removing the password, enter your current password and go to the settings menu to select [Disabled] at the password settings screen.

[If you have forgotten your password]

The password input setting can be cleared by failing to enter the correct password six times. However, note that all recorded data will be erased as well.

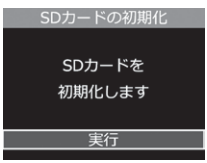
Setting

SD card formatting (internal data deletion)

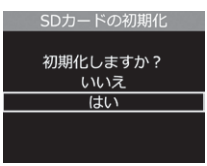
- Deletes and initializes the internal data of the microSDHC card (Settings data of the main unit will be retained in spite of formatting).
- Whenever using a brand new microSDHC card and other microSDHC cards other than the one included, you need to format the SD card.

■Reformatting method

1) Press [OK] and select [Execute]



2) Select [Down] and [Yes], and then press [OK] to start reformatting the microSDHC card



Advice

- All data within the microSDHC card will be deleted. Make sure you backup the internal data in advance.
- For stable use, it is recommended to reformat the cards periodically.

Reset to factory setting status (Resetting all)

Deletes all of the product's **recorded data and settings data**

⚠ Caution
Deleted data cannot be restored.

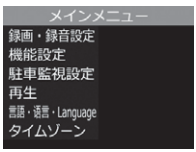
Ver. information

The software version of this product is displayed.

Language settings

For this product, you can switch a display language of the settings screen from Japanese to English or Chinese (Simplified Chinese).

■ Examples of languages used in the settings screen



[Japanese]

[English]

[Chinese]

- Switching is only applicable for the display languages found in settings screen. Various voice announcements are all output by alarm sounds.
- You cannot select [Voice] for the [Recording notification], [Leading vehicle startup notification], [Front signal notification] and [Drive support] settings when [Language] has been set to a language other than [Japanese].

Time zone settings

You can select one of the following preset areas as the standard time for the time display of this product. It is also possible to set the daylight saving time.

* This unit does not support US Virgin Islands, Guam and Saipan time zones.

■Content of settings

[Japan] ..... Use Japanese Standard Time (UTC+9).
[China, Hong Kong, Taiwan]..... Use the standard time for China, Hong Kong and Taiwan (UTC+8).
[USA EST]..... Use Eastern Standard Time of USA (UTC-5).
[USA CST]..... Use Central Standard Time of USA (UTC-6).
[USA MST]..... Use Mountain Standard Time of USA (UTC-7).
[USA PST]..... Use Pacific Standard Time of USA (UTC-8).
[USA AKS]..... Use Alaska Standard Time of USA (UTC-9).
[USA HAST]..... Use Hawaii-Aleutian Standard Time of USA (UTC-10).

Daylight saving time settings

By turning on this setting, it will display the time in the selected time zone by adding an hour.

Using parking surveillance mode (optional)

Regarding parking surveillance mode

- Using the HDROP-09 "Parking Surveillance / Direct Wiring Cord," which is an optional item sold separately, it allows a power source to be supplied after the vehicle key switch is turned off, and enables recording.
- The power source is supplied from this product; there is no need to connect an additional cigar plug cord or other direct wiring cord.
- After connecting the HDROP-09 "Parking Surveillance / Direct Wiring Cord," make sure to change the [Parking surveillance mode] settings from the setting mode. You cannot use parking surveillance mode just by connecting the cord.

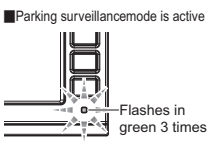
⚠ Caution

- Parking surveillance mode uses the vehicle's constant power source, and a load is applied to the vehicle batteries. Inspect the vehicle batteries periodically.
- Please refrain from using the device in the following cases as they may be the cause for the vehicle batteries to discharge. (Not driving the vehicle daily / driving for less than one hour per day / vehicle batteries are in use for over a year)
- After using parking surveillance mode, the voltage of the vehicle battery will be decreased. Make sure to start the engine and charge the vehicle batteries. Not doing so can cause the vehicle batteries to discharge.
- Please note that we shall bear no responsibility in regard to vehicle batteries being discharged.
- Please be aware that there are cases where recorded data may be overwritten when recording for a long period of time depending on the microSDHC card capacity and the main unit's settings.

Regarding parking surveillance mode operation

Changing to parking surveillance mode

- After connecting the HDROP-09 "Parking Surveillance/ Direct Wiring Cord," change the [Parking surveillance mode] setting to something other than OFF. When the vehicle key switch is turned OFF, it will change to parking surveillance mode.
- When parking surveillance mode is in operation, the LED lamp repeatedly flashes three times.
  * When the [Parking surveillance recording method] setting is set as [Impact quick recording], the LED lamp is turned off at all times.
- Continuously recorded data in parking surveillance mode is recorded as "parking surveillance continuous recording" data, and impact recording data is saved as "parking surveillance impact recording" data.



Advice

After the vehicle key switch is turned off and within the [Parking surveillance get-off cancel] set time, impacts will be considered as vibration caused when exiting the vehicle and will not be recorded as parking surveillance impact recording data.

Ending parking surveillance mode

- Parking surveillance mode can be ended at the point when the vehicle key switch is turned ON or ACC, or by **pressing and holding** the OK button.
- Parking surveillance mode ends after the time set in [Parking surveillance recording time] has elapsed, and in cases where the voltage goes below the set value.

Advice

Announcement for impacts detected when the vehicle is parked

- When an impact is detected during parking surveillance mode, an announcement will be made at the time when the vehicle is started up next to notify you of an impact that occurred during parking surveillance mode. After the announcement, **recording will not start** until the [OK] switch is pressed.
- After the vehicle key switch is turned ON or ACC, and within the [Parking surveillance get-on cancel] set time, impacts will be considered as vibrations caused when exiting the vehicle, and the above mentioned notification will not be given.

Using parking surveillance mode (optional)

One time parking surveillance mode function

- When the parking surveillance mode setting is OFF, parking surveillance mode can be turned on temporarily by **pressing and holding** the OK button.
- From the point when the OK button is **pressed and held**, parking surveillance mode will start, even after the vehicle key switch is turned off.
- Recommended for use when using parking surveillance mode only when you are outside.

Advice

- The detailed settings for normal parking surveillance mode are reflected for parking surveillance mode in "one time parking surveillance mode".
- "One time parking surveillance mode" is cancelled by turning on the vehicle key switch and the main unit power source. It then returns to the settings which are set in "parking surveillance mode setting".

Parking surveillance mode pass function

- Even when the parking surveillance mode setting is [ON], **pressing and holding** the OK button will turn off parking surveillance mode temporarily. In addition, operating while parking surveillance mode is in operation will allow parking surveillance mode to end.
- Recommended for use when parking at locations where this product may detect impacts, such as mechanical multistory parking garages and at locations where there are many vibrations, and on days with strong wind.

In cases where the [Parking surveillance recording method] setting is set as [Impact quick recording], the parking surveillance mode pass function **cannot be used** because operation is stopped (sleep) when the vehicle key switch is turned off.
* Parking surveillance mode pass function can be used while recording a detected impact.

Advice

"Parking surveillance mode pass function" is cancelled by turning ON the vehicle key switch and the main unit power source. It then returns to using the settings in "parking surveillance mode setting".

Various settings for parking surveillance mode

Parking surveillance mode setting

- This product's parking surveillance mode can be selected from [OFF/ON].
- By default, it is set to [OFF].

Parking surveillance recording method setting

This product's parking surveillance recording method setting can be selected from [Impact quick recording / Continuous-impact recording / Time lapse recording].

[Impact quick recording] ..... It starts up when an impact is detected and records video footage. Parking surveillance mode can be in operation for a long period of time as it stops (sleeps) at normal times, and thus power consumption is restricted.

[Continuous-impact recording] ..... Performs continuous recording and impact recording during parking surveillance mode.

[Time lapse recording] ..... Records one still image per second during parking surveillance mode. By saving them as videos shorter than the actual time, it allows continuous recording and impact recording for a long period of time.

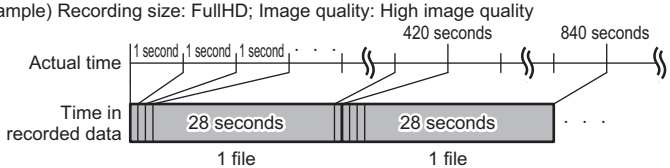
Advice

Regarding time lapse recording

- When time lapse recording is set, the actual time and recorded data length per file will vary, as it depends on the recording size setting (=> P 47), frame rate setting (=> P 48), and image quality setting (=> P 48).For example, a 420 second recording can be checked by 28 seconds of video footage, when the recording size is set as [FullHD], the frame rate is set as [29.1 fps], and the image quality is set as [High image quality].

■ An image of a time lapse recording

Example) Recording size: FullHD; Image quality: High image quality



* Please refer to page 66 for the actual time and length of recorded data itself based on different settings.

- Unlike normal impact recording (=> P 21), when an impact is detected within 10 seconds of the first part of the actual time, then the first file will be recorded as "parking surveillance impact recording" data, together with the file from the point the impact was detected. And when an impact is detected within 20 seconds of the latter part of the actual time, then the latter file will be recorded as "parking surveillance impact recording" data, together with the file from the point the impact was detected.
- In cases where the power source unexpectedly turns off, there may be cases where shorter recorded data (a maximum 1 second) is saved, such as when the power source plug gets unplugged during parking surveillance mode, or the constant power source line being disconnected.

Using parking surveillance mode (optional)

Night vision setting

- Turning this setting ON will allow comparably clearer video footage to be recorded during parking at night time where there are not many lights. However, in circumstances where there are no lights in the surroundings, it may not be possible to film clearly.
- Regardless of [Frame rate setting], the frame rate for the recorded video footage is fixed at 15 fps.
- By default, it is set to [OFF].

Impact sensitivity setting

- The sensitivity to detect an impact during parking surveillance mode can be selected from [High-sensitivity / Medium sensitivity / Low sensitivity].
- By default, it is set to [Medium sensitivity].

Recording time setting

- The operation time for parking surveillance mode can be selected from [30 minutes / 1 hour / 3 hours / 6 hours / 9 hours / 12 hours / Always ON].
- When set as [Always on], it operates until the vehicle battery voltage is reduced to the voltage set by [Parking surveillance recording stop voltage setting].
- By default, it is set to [30 minutes].

Recording stop voltage setting

- The vehicle battery voltage to stop parking surveillance mode can be selected from [11.9 V / 12.0 V / 12.1 V / 12.2 V].
- By default, it is set to [12.2 V].

Get-off cancel setting

- The time set for not recording impacts or vibration as parking surveillance impact recording data, which is detected at the time of exiting the vehicle, can be selected from [1 minute / 3 minutes].
  * Continuous recording will continue during the get-off cancel time (excluding when impact quick recording is set).
- By default, it is set to [1 minute].

Get-on cancel setting

- The time set for not announcing "Announcement for impact detected when vehicle is parked" (=> P 59) when an impact or vibration is detected at the time of exiting the vehicle can be selected from [1 minute / 3 minutes].
  * Parking surveillance impact recording data will be saved; only the announcement will be canceled.
- By default, it is set to [1 minute].

Questions about parking surveillance mode

Q. Will the product always record video during parking surveillance mode?

A. During this product's parking surveillance mode, continuous recording and impact recording are performed after the power source is turned off, based on the settings. However, when the set time for "Parking surveillance recording time" has elapsed, or when the vehicle battery voltage is below the "Parking surveillance recording stop voltage" set value, then parking surveillance mode will end, regardless of if parking surveillance mode has been set.

* Please be advised that on hot summer days, or on cold winter days, when the main unit's operating temperature range is exceeded during parking surveillance mode, there are cases where recording stops.

Q. The product does not shift to parking surveillance mode, with it often stopping

A.
1. Check to see if the [Parking surveillance mode] setting is not set to **[OFF]**.
2. To protect the vehicle's batteries, this product has parking surveillance recording stop voltages set. There are cases where parking surveillance mode does not operate, such as when the vehicle batteries have deteriorated, or when the vehicle's battery voltage after the engine has been turned off is below the [Parking surveillance recording stop voltage] set value, or in similar cases.
3. The product does not shift to parking surveillance mode when the constant power source line (yellow) of the HDROP-09 "Direct wiring cord for parking surveillance mode" is not connected, or is connected to the vehicle's ACC line.
4. When the [Parking surveillance recording method] setting is set as [Impact quick recording], this product will be turned off (sleep) when impacts are not detected.

Q. I want to record only during driving, and not use parking surveillance mode.

A. Set the [Parking surveillance mode] setting to [OFF].

Q. How can I check the operation of parking surveillance mode?

A. When parking surveillance mode is in operation, the main unit's LED lamp repeatedly flashes, as detailed below.

Status	LED lamp
Parking surveillance mode in operation	Flashes in green three times
Detects an impact when parking surveillance mode is in operation	Flashes in green

* When the [Parking surveillance recording method] setting is set as [Impact quick recording], the LED lamp will not light up nor flash.

Q. Does the product record side video footage?

A. This product records only in the direction the camera is facing.

Q. Can the product film in dark locations such as at night time where there are no street lights?

A. There are no light sources such as head lights during parking surveillance mode; depending on circumstances, there may be cases where clear video footage cannot be recorded. Setting the [Night vision setting] to ON will enable comparably clearer video footage to be recorded. However, in circumstances where there are no lights in the surroundings, it may not be possible to film clearly.

Appendix

FAQ

Listed are frequently asked questions. Please read the following details.

Symptoms	Points to check	Reference page
LED lamps are not lighting up.	• Could the cigar plug cord fuses be blown? • Could there be contact failures or disconnections? • Could the power source cord be connected to connection terminals for televisions?	- P 12 P 11,12
Does not receive GPS satellite.	• Could the windshield be an insulating glass? • Could there be objects on the main unit camera side that may be blocking radio waves?	P 6 P 15
How can the recorded footage be deleted?	• Reformatting the SD card will delete the footage. *Cannot select and delete.	P 56
Video footage of an impact from an accident is not saved.	• Depending on the impact at the time of the accident, there are cases where impact recording does not take place. To be sure, recording by switch control is recommended.	-
How can the recording time be changed?	• Changing the [Recording size], [Frame rate] and [Image quality] settings will allow you change the recording time. *Changing the above settings will reformat the SDHC card.	P 47, 48
What happens if the microSDHC card capacity is full?	• When the microSDHC card capacity is full, video footage is deleted in chronological order, and new video footage is continued to be recorded. • For impact recording data and manual recording data, an error will be displayed when [Event recording] or [All recording] is set for the overwriting prevention setting, and they will not be overwritten. To restart recording, set the overwriting prevention setting to [OFF].	P 20 P 50
Recorded data is not saved on the microSDHC card.	• A microSDHC card is a consumable accessory and it has a product service life, such as the number of times it can have data written to it. Replacing it every 2-3 years is recommended. Depending on the use conditions, the microSDHC card's service life may be reduced.	P 8
Does not start up, or operation becomes unstable.	• Could there be data stored on the microSDHC card that may not be for this unit? • Reformat the microSDHC card on this unit after saving any necessary video footage on a personal computer.	P 5 P 8
Is recorded video footage accepted as proof for accidents?	• This product is aimed to be used as a reference material at the time of accidents. It does not guarantee validity as a complete proof.	-
The microSDHC card is not recognized on the computer.	• Does the SD card reader support SDHC? The included card is a microSDHC card; the card reader needs to support SDHC.	-

LED lamp check list

This is a check list for the LED lamps when the main unit is in operation

LED lamp display	Main unit operation	Details
Lights up in green	Recording in process	Recording in process
Flashes in green	Recording in process	Impact recording in process or manual recording in process
Lights up in orange	Recording stopped	• Starting up • Setting mode in process • Play mode in process • Operation has stopped owing to thetemperature of the main unit being too high or low
Flashes in orange	Recording stopped	• Showing errors • Emergency recording stop
Flashing in green and orange, alternately	Recording stopped	Updating main unit software

Error check list

When the following messages appear, check the handling methods.

Messages	Handling methods
Please check the microSD card	• In cases where a microSDHC card has not been inserted, turn off the power, then insert a microSDHC card and turn on the power. • The microSDHC card may be damaged. Turn off the power, remove the card, and check if the terminal parts are dirty. Then insert the card again and restart the unit. If the symptoms do not improve, try reformatting the card on a personal computer. In cases where there is no improvement, the microSDHC card's service life may have come to an end. Replacing the card is recommended.
Caution for high temperatures The recording and play functions have been stopped owing to the temperature of the main unit being too high	Main unit operating temperature range has been exceeded; unable to operate properly.To resume use, please wait a while for the temperature of the unit to reach the operating temperature range.
Caution for low temperatures The recording and play functions have stopped owing to the temperature of the main unit being too low	
Event recording stopped Recording area is full	This is an error displayed when overwriting prevention setting is set as [Event recording] or [All recording] and recording that exceeds the microSDHC card capacity is attempted. Set the overwriting prevention setting to [OFF] or reformat the SD card and delete the recorded data.
Recording stopped Recording area is full	

* Where there is an error, it will be displayed with the above message and the LED lamps will flash in orange.

Appendix

Reference for recording time

Reference for recording time based on microSDHC card capacity

Recording time will fluctuate based on the microSDHC card capacity, the recording size setting, and the image quality setting, etc. Refer to the following table.

* Supported microSDHC cards:4GB to 32GB (class 10 or above is recommended)
* microSDHC card included with the main unit: 8GB (class 10)

Recording size	Frame rate	Image quality	microSDHC card capacity		
			8GB	16GB	32GB
Full HD	29.1 fps	High image quality	About 90 minutes	About 180 minutes	About 360 minutes
		Low image quality	About 100 minutes	About 200 minutes	About 400 minutes
	19.1 fps	High image quality	About 100 minutes	About 200 minutes	About 400 minutes
		Low image quality	About 120 minutes	About 240 minutes	About 480 minutes
	9.1 fps	High image quality	About 120 minutes	About 240 minutes	About 480 minutes
		Low image quality	About 180 minutes	About 360 minutes	About 720 minutes
	Time lapse 1 frame	High image quality	About 1740 minutes	About 3480 minutes	About 6960 minutes
		Low image quality	About 1740 minutes	About 2600 minutes	About 5200 minutes
	Time lapse 3 frames	High image quality	About 1740 minutes	About 2600 minutes	About 5200 minutes
		Low image quality	About 1740 minutes	About 2600 minutes	About 5200 minutes
HD	29.1 fps	High image quality	About 100 minutes	About 200 minutes	About 400 minutes
		Low image quality	About 120 minutes	About 240 minutes	About 480 minutes
	19.1 fps	High image quality	About 120 minutes	About 240 minutes	About 480 minutes
		Low image quality	About 150 minutes	About 300 minutes	About 600 minutes
	9.1 fps	High image quality	About 180 minutes	About 360 minutes	About 720 minutes
		Low image quality	About 180 minutes	About 360 minutes	About 720 minutes
	Time lapse 1 frame	High image quality	About 1740 minutes	About 3480 minutes	About 6960 minutes
		Low image quality	About 1740 minutes	About 3480 minutes	About 6960 minutes
	Time lapse 3 frames	High image quality	About 1740 minutes	About 3480 minutes	About 6960 minutes
		Low image quality	About 1740 minutes	About 3480 minutes	About 6960 minutes
SD	29.1 fps	High image quality	About 120 minutes	About 240 minutes	About 480 minutes
		Low image quality	About 150 minutes	About 300 minutes	About 600 minutes
	19.1 fps	High image quality	About 150 minutes	About 300 minutes	About 600 minutes
		Low image quality	About 180 minutes	About 360 minutes	About 720 minutes
	9.1 fps	High image quality	About 180 minutes	About 360 minutes	About 720 minutes
		Low image quality	About 250 minutes	About 500 minutes	About 1000 minutes
	Time lapse 1 frame	High image quality	About 1740 minutes	About 3480 minutes	About 6960 minutes
		Low image quality	About 1740 minutes	About 3480 minutes	About 6960 minutes
	Time lapse 3 frames	High image quality	About 1740 minutes	About 3480 minutes	About 6960 minutes
		Low image quality	About 1740 minutes	About 3480 minutes	About 6960 minutes

* The thick bordered box indicates the included microSDHC card.

Recording time when time lapse recording is set

- In cases where the parking surveillance mode setting is set for [Time lapse recording], the recording time will vary depending on the details of recording size, frame rate, and image quality settings.
- Refer to the following table for the actual time recorded per file and the length of the recorded data itself.

Recording size	Frame rate	Image quality	Actual time that will be recorded	The length of the recorded data itself
Full HD	29.1 fps	High image quality	About 420 seconds	About 28 seconds
		Low image quality	About 360 seconds	About 24 seconds
	19.1 fps	High image quality	About 360 seconds	About 24 seconds
		Low image quality	About 300 seconds	About 20 seconds
	9.1 fps	High image quality	About 240 seconds	About 16 seconds
		Low image quality	About 180 seconds	About 12 seconds
	Time lapse 1 frames	High image quality	About 420 seconds	About 28 seconds
		Low image quality	About 420 seconds	About 28 seconds
	Time lapse 3 frames	High image quality	About 420 seconds	About 28 seconds
		Low image quality	About 420 seconds	About 28 seconds
HD	29.1 fps	High image quality	About 360 seconds	About 24 seconds
		Low image quality	About 300 seconds	About 20 seconds
	19.1 fps	High image quality	About 300 seconds	About 20 seconds
		Low image quality	About 240 seconds	About 16 seconds
	9.1 fps	High image quality	About 180 seconds	About 12 seconds
		Low image quality	About 120 seconds	About 8 seconds
	Time lapse 1 frames	High image quality	About 420 seconds	About 28 seconds
		Low image quality	About 420 seconds	About 28 seconds
	Time lapse 3 frames	High image quality	About 420 seconds	About 28 seconds
		Low image quality	About 420 seconds	About 28 seconds
SD	29.1 fps	High image quality	About 300 seconds	About 20 seconds
		Low image quality	About 240 seconds	About 16 seconds
	19.1 fps	High image quality	About 240 seconds	About 16 seconds
		Low image quality	About 180 seconds	About 12 seconds
	9.1 fps	High image quality	About 180 seconds	About 12 seconds
		Low image quality	About 120 seconds	About 8 seconds
	Time lapse 1 frames	High image quality	About 420 seconds	About 28 seconds
		Low image quality	About 420 seconds	About 28 seconds
	Time lapse 3 frames	High image quality	About 420 seconds	About 28 seconds
		Low image quality	About 420 seconds	About 28 seconds

Appendix

List of announcements/alarms

When the announcement [Language] setting for this product is set as [Simplified Chinese] or [English], it will switch to alarms. See the following table for alarm sounds that correspond to each announcement and the announcement details.

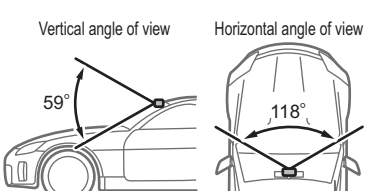
Conditions		When set to Japanese	When set to Simplified Chinese or English
When an event occurs	At the start of normal recording	Dong, dong; Starting continuous recording.	Dong, dong
	At the start of impact recording	Beep, beep; Starting impact recording.	Beep, beep
	At the start of manual recording	Beep, beep; Starting manual recording.	Beep, beep
	Emergency recording stop 1	Beep, beep; Detected strong impact. In 30 seconds, recording will stop.	Beep, beep Beep beep beep
	Emergency recording stop 2	Beep, beep; In emergency recording stop status. Press the OK switch to resume recording.	Beep, beep Beep beep beep
At parking surveillance mode	Parking surveillance recording Setting time elapsed	Dong; Ending parking surveillance mode owing to elapsed setting time.	Dong Beep beep
	Parking surveillance recording When the voltage is lower than the set value	Dong; Ending parking surveillance mode owing to the voltage going lower than the set value.	Dong Beep beep beep
	Parking surveillance recording When overwriting is prevented	Dong; Ending parking surveillance mode due to the recording area being full.	Dong, beep
	Parking surveillance mode When the pass function is operating	Dong; Ending parking surveillance mode.	Dong
	At the start of one-time parking surveillance mode	Dong; Starting one-time parking surveillance mode.	Dong, beep
	When one-time parking surveillance mode is set	Dong; Setting one-time parking surveillance mode.	Dong, beep
	When one-time parking surveillance mode is canceled	Dong; Canceled parking surveillance mode	Dong
	Parking surveillance impact notification 1	Dong; Detected impact while parked. Check the recorded data Press the OK switch to start recording	Dong, beep beep
Safety driving support function	Sudden braking	Beep, beep; Detected sudden braking	Beep, beep, beep, beep
	Sudden start	Beep, beep; Detected sudden acceleration	Beep, beep, beep, beep
	Abrupt steering (left-right)	Beep, beep; Detected abrupt steering	Beep, beep, beep, beep
	Notice for 2 hours passing	Ding-dong; It has been two hours since you started driving. It is about time for a break.	Ding-dong Ding-dong
	Leading vehicle startup notification	Ding-dong; Check the leading vehicle	Ding-dong
	Front signal notification	Ding-dong; Check the traffic signals	Ding-dong
Related to errors	High temperature caution notification	Bzz; Main unit temperature is high; stopping record/play functions	Bzz, bzzzzzzz
	Low temperature caution notification	Bzz; Main unit temperature is low; stopping record/play functions	Bzz, bzzzzzzz

Product specifications

Power supply voltage		DC12 V	
Maximum current consumption		400 mA or less	
Operating environment temperature range		-10℃ to 60℃	
Camera	Imaging device	1/2.7 model CMOS sensor	
	Total number of pixels	2 megapixels	
	Valid number of pixels	Maximum 2 megapixels	
	Lens angle of view	Horizontal 118 degrees, vertical 59 degrees (diagonal 150 degrees)	
	F value	F2.2	
	Lens material	Glass	
Recorded video footage size		FullHD (1920×1080)	
		HD (1280×720)	
		SD (640×360)	
Image quality for recording	FullHD	High image quality (8 Mbps average)	Low image quality (6 Mbps average)
	HD	High image quality (6 Mbps average)	Low image quality (4 Mbps average)
	SD	High image quality (4 Mbps average)	Low image quality (3 Mbps average)
GPS		○	
G sensor		○ (0.1G to 1.0G: Can be set in units of 0.1G)	
Recording method		Continuous recording / Event recording / Manual recording	
Recording file configuration		Unit of 30 seconds	
Sound recording		ON/OFF possible	
Frame rate		9.1 fps / 19.1 fps / 29.1 fps / Time lapse 1 frame/ Time lapse 3 frames	
Video footage file format		MOV (MPEG-4 AVC ／ H.264)	
Method to play recorded video footage		Dedicated viewer software *Specialized for Windows 7/8.1 (excluding tablet personal computers)	
		Video output (sold separately: AV cable) *NTSC method	
		Main unit LCD	
Recording media		microSDHC card (included: 8GB/class 10)	
LCD size / resolution		2.0 inch full color TFT LCD / 320×240	
Body size		63 (W) × 49 (H) × 26.9 (D) /mm	
		When wearing mounting stay: 63 (W) ×72 (H) × 26.9 (D) /mm	
Weight		83 g	

* Please be advised that this product's specifications and exterior appearance are subject to change without notice in order to improve performance.

■Image of camera angle of view



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ZDR-024CE Warranty

Warranty period	**One year from the day of purchase**
Target parts	**Main unit * Excluding other accessories**

Warranty Statement (please read)

1. Warranty contents

In cases where defects occur by using the main unit in ways that follow the contents of the operation manual, repairs are provided free of charge (warranty repair) in accordance with the conditions and warranty period stated.
(This free-of-charge repair is hereinafter referred to as "Warranty Repair").

The Warranty Repair is made by replacing parts or products; our company will have the ownership of the replaced parts/products.
On the basis of this Warranty Statement, the coverage of Warranty Repairs is limited only to target parts mentioned in this document.
Note that this product does not guarantee to record all video footage.

2. Receiving a Warranty Repair

To receive a Warranty Repair, show this warranty to the retailer where this product was purchased and request for a Warranty Repair.
A Warranty Repair cannot be received in cases where the warranty is not presented.
In cases where the retailer has not provided proof for the date of purchase on the warranty, please attach documents (such as receipts) to confirm the purchase date.

In cases where the products are sent to the retailer, this warranty should be attached to the product.
In cases where products are sent, they should be sent in a way that delivery receipts can be kept, such as by using a courier service.
Note that other expenses such as shipping fees, and travel expenses for pick-ups shall be borne by the customer. In cases where products are sent by cash on delivery, we will send them back to the customer by cash on delivery. Please be aware of this before sending your unit for repair.

3. Items not covered by warranty

1) Warranty Repairs are not provided even within the warranty period for the following cases:
   (1) Damage or failure which has occurred as a result of not complying with the "Warning, Caution, Precautions for use" and other contents set forth in the operation manual;
   (2) Damage or failure which has occurred as a result of using the main unit other than as an automotive drive recorder (for example, in housing, ships, construction machinery, etc.);
   (3) Damage or failure which has occurred as a result of using a power source other than the one specified (DC 12 V), and reverse connection of the power source, etc.;
   (4) Inspected, repaired, relocated, disassembled, or modified by anyone other than our company or a handling retailer specified by our company;
   (5) Damage or failure which has occurred as a result of condensation, water leakage, shock, fall, etc., occurring after the purchase;
   (6) Damage or failure which has occurred as a result of fire, earthquake, storm and flood damage, lightning strike, other natural disasters, or pollution, salt damage, abnormal voltage, accidents, etc.;
   (7) Damage or failure which has occurred as a result of using parts other than those specified by our company;
   (8) Recorded data that is lost or corrupted as a result of using an SDHD card with data recorded for use for any purpose other than this main unit, or an SDHC card not specified by our company;
   (9) Recorded data lost or corrupted as a result of car accidents;
   (10) Recorded data lost or corrupted as a result of using an SDHC card that has exceeded the recommended expiry date;
   (11) Data lacking in clarity, owing to the footage being recorded through a dirty camera lens, or a windshield that has dirt, water spots, a high intensity light source, etc.;
   (12) Damage to and failure of the main unit, or lost or corrupted recorded data triggered by a malfunction, etc. of products other than this product;
   (13) Changes in the external appearance, such as fading of color, aesthetic properties, external appearance, which has occurred as a result of use;
   (14) Damage and failure which has occurred as a result of using the main unit in an environment where it exceeds the temperature range mentioned in the operation manual.

2) Expenses will not be borne by us for the following stated items.
   (1) Inconvenience and loss as a result of not being able to use the merchandise;
   (2) Consumable parts (microSDHC card, 1A glass fuse) and accessories other than the above stated target parts;
   (3) Compensation for secondary damage (shipping fees for repair, desorption fees) in association with use, failure, and repair of this product.

4. Warranty taking effect

The warranty will take effect after stamping the seal and filling out the necessary items on the warranty.
Keep this document safe. Do not lose this document as it will not be re-issued.

5. Application of the warranty

This warranty is applied only for use in Japan.
(This warranty is valid only in JAPAN)

6. Others

This warranty guarantees a Warranty Repair based on the conditions and period stated in this document.
This warranty does not limit customers' legal rights against ones who issue the warranty (person in charge of warranty) and any other business operators.

Should there be questions regarding repairs, etc. after the expiration of the warranty period, contact the retailer where the product was purchased.

ZDR-024CE Warranty

Copying is prohibited

This document guarantees repairs under warranty, free of charge, based on the conditions mentioned in the warranty statement (refer to the reverse side). In the case a failure occurs upon normal condition of use, show this document to the retailer where the product was purchased and request for a repair.

Part number	**ZDR-024CE**	**Serial number**	
Purchase date	Purchase date:		
Warranty period	**1 year from the date of purchase**		
Target parts	**Main unit *Other accessories excluded**		
Customer	Name Address Phone number ( )	★ Retailer	Name of the store/address/telephone number/seal **Seal** * In case this field is not filled out or is missing seals, make sure to attach the proof of purchase date, and the name of the store, etc., such as receipts issued by the retailer.

Product-installed vehicle	Manufacturer	Vehiclename	Model year	Model	Grade
Failure content					

* In cases where the warranty is missing proof of a retailer name, purchase date, or proof of purchase (statement of delivery, receipts), the unit in question will not be subject to warranty. Shipping fees charged upon shipping are not covered by the warranty.

Inquiry

For inquiries regarding the product installation method, repairs, etc., contact the retailer where the product was purchased, or our service center shown below.
We do not give support for installations conducted by the customers themselves.
* Support is given in Japanese .

FREE **0800-200-5654** *Available only in Japan

Service hours: 10:00-17:00

* Excluding Saturdays and Sundays, national holidays, year-end/New Year holidays, summer holidays, Golden Week as specified by the company.
* This service is not available from mobile phones, PHS, public telephones and IP phones with numbers starting from 050.
The service may not be available from some kinds of optical fiber IP phones as well. In that case, please call the following number.

+81-561-56-1814 (charged calling)

株式会社コムテック
Ikegami 1-1, Morowa, Togo Town, Aichi County, Aichi Prefecture 470-0151
Homepage: http://www.e-comtec.co.jp

First edition 618091-EM

List of abbreviations

The abbreviations displayed on the setting screen of this product are as shown in the table below.

DISPLAY TEXT	ORIGINAL

Main menu	Main menu
Pic/sd rc sets	Picture/sound recording settings
Func settings	Function settings
Prkng srv sets	Parking surveillance settings
Play	Play
言語 · 语言 · Language	言語 · 语言 · Language
Time zone	Time zone
Information	Information

Pic/snd recding settings	Picture/sound recording settings
Auto settings	Automatic settings
Recommendatn	Recommendation
Beautiful	Beautiful
Long	Long
User setting	User setting
Rec'ing size	Recording size
FullHD	FullHD
HD	HD
SD	SD
Frame rate	Frame rate
9.1fps	9.1fps
19.1fps	19.1fps
29.1fps	29.1fps
T. lapse 1 fr	Time lapse 1 frame
T. lapse 3 fr	Time lapse 3 frame
Image quality	Image quality
Hi img qualty	High image quality
Lo img qualty	Low image quality
Image offset	Image offset
OFF	OFF
HDR-ON	HDR-ON

DISPLAY TEXT	ORIGINAL
Cam brightns	Camera brightness
Bright	Bright
Standard	Standard
Dark	Dark
Mirror image	Mirror image
Normal image	Normal image
Mirror image	Mirror image
Snd recording	Sound recording
OFF	OFF
ON	ON
Evnt rec area	Event recording area
Ovrwrt prohib	Overwriting prohibited
OFF	OFF
Evnt rec'ing	Event recording
Whole rec'ing	Whole recording

Function settings	Function settings
G sensor	G sensor
Time stamp	Time stamp
OFF	OFF
ON	ON
Emerg rec stop	Emergency recording stop
OFF	OFF
1.1G~2.0G	1.1G~2.0G
LCD brightns	LCD brightness
Bright	Bright
Standard	Standard
Dark	Dark
Scrn disp	Screen display
OFF	OFF
Intloc w/ spd	Interlocked with speed
ON (always)	ON (always)
Clock (sm)	Clock (small)
Clock (lg)	Clock (large)

List of abbreviations

DISPLAY TEXT	ORIGINAL
Rec notific	Recording notification
OFF	OFF
Alarm	Alarm
Calibration	Calibration
Prec v st ntf	Preceding vehicle start notification
OFF	OFF
Alarm	Alarm
Fr trf lt ntf	Front traffic light notification
OFF	OFF
Alarm	Alarm
Drive support	Drive support
OFF	OFF
Alarm	Alarm
Vh spd alarm	Vehicle speed alarm
OFF	OFF
30km/h~2.0G	30km/h~2.0G
Pwd setting	Password setting
SD card fmting	SD card formatting
Rst to fac stg	Reset to factory setting

Parking srv settings	Parking surveillance settings
Prkg srv mode	Parking surveillance mode
OFF	OFF
ON	ON
Rec meth	Recording method
Imp qck rec	Impact quick recording
Aws / impt rec	Always / impact recording
Time lapse rec	Time lapse recording
Night vision	Night vision
OFF	OFF
ON	ON
Imp snsy	Impact sensitivity
Hi snsy	High sensitivity
Med snsy	Medium sensitivity
Lo snsy	Low sensitivity

DISPLAY TEXT	ORIGINAL
Recording time	Rec time
30 minutes ~ Always ON	30 minutes ~ Always ON
Rec stop volt	Recording stop voltages
11.9V ~ 12.2V	11.9V ~ 12.2V
Get-off cnl	Get-off cancel
1 minutes	1 minutes
3 minutes	3 minutes
Get-on cnl	Get-on cancel
1 minutes	1 minutes
3 minutes	3 minutes

Play	Play
Play	Play
Cont recording	Continuous recording
Impt recording	Impact recording
Man recording	Manual recording
Pk srv con rc	Parking surveillance continuous recording
Pk srv imp rc	Parking surveillance impact recording

Language setting	Language setting
Language setting	Language setting
Japanese	Japanese
Simp Chinese	Simp Chinese
English	English
Time zone	Time zone

Version information	Version information
Version information	Version information

ver.1.0 728091