

THINKWARETM DASH CAM

X500

User Manual



This Dashboard Camera (dash cam) is a specialized onboard device that continuously records video while the vehicle is in use.

Some features may not be available depending on installation, driving conditions, and vehicle type. The video quality might vary for each device as a result of installed firmware.

The device DOES NOT guarantee video recording of all accidents as built-in impact sensor may not be activated due to combination of user settings and the level of impact during the collision.

Contents

	Before Using THINKWARE DASH CAM™ X500	2
	FCC Statement	2
	Caution	3
01	Getting Started	
	1-1. In the Package	4
	1-2. Optional Accessories	4
	1-3. Product Overview	5
	1-4. Inserting a Memory Card	6
	1-5. Vehicle Installation	7
02	Basic Operations	
	2-1. Turning the Device Power On/Off	9
	2-2. Road Safety Warning System	10
	2-3. Recorded Files	11
	2-4. Recording Videos While Driving	12
	2-5. [Optional] Recording Videos While Parked	14
	2-6. Manual Recording	15
	2-7. Formatting MicroSD Card	16
	2-8. Upgrading Firmware	16
03	LCD Display	
	3-1. Main Menu	17
	3-2. Live View	18
	3-3. File List	19
	3-4. Memory Card Settings	21
	3-5. Dual Save Videos	22
	3-6. Settings > Camera Settings	23
	3-7. Settings > Continuous Recording Settings	24
	3-8. Settings > Parking Recording Settings	25
	3-9. Settings > System Settings	26
	3-10. About Device	27
04	PC Application	
	4-1. Thinkware Dash Cam PC Viewer	28
05	Product Specifications	
	5-1. Specifications	33

Before Using THINKWARE DASH CAM™ X500

- ▶ Under the copyright laws, this manual may not be copied, in whole or in part, without the written consent of THINKWARE.
- ▶ Every effort has been made to ensure this Guide's accuracy. However, we cannot guarantee the accuracy of the contents in this document as there may be technical errors, omissions, and/or future changes.
- ▶ THINKWARE reserves the right to change or modify the product and the content of this manual at any time without prior notice for product improvements.
- ▶ Images contained in this user guide are illustrations for instructional purposes only and may differ from the actual product.
- ▶ Users do not reserve the right to use the product for purposes other than as specified in this user guide. According to the Personal Information Protection Act and other related regulations, the user/owner may be held liable if the video and/or conversation recorded by the device are distributed without their consent. Thus, special attention should be paid in using this product.

- The microSD memory card should be tested for errors on a regular basis and as the memory card is a consumable item, it will need to be replaced periodically.
- THINKWARE shall NOT be responsible for any problems and/or damages that may occur from the use of disingenuous, modified, or unauthorized parts and accessories.
- The device and the recorded videos are intended for personal use and the recorded videos should be used for reference only.
- The device does NOT guarantee video recording of all accidents as built-in impact sensor may not be activated due to combination of user settings and the level of impact during the collision.

FCC Statement

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

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

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

FCC CAUTION: Any changes or modifications to the equipment not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

This Class A digital apparatus complies with Canadian ICES-003.

Caution

- ◆ This device is designed to record video while the vehicle is in operation. The quality of the video might be affected by weather conditions and the road environment such as day or night, presence of street lighting, entering/exiting tunnels, and surrounding temperatures.
- ◆ THINKWARE is NOT responsible for the loss of any recorded video during operation.
- ◆ Although designed to withstand high impact of car collision, THINKWARE does NOT guarantee recording of accidents where the impact may cause the device to be damaged.
- ◆ Keep the windshield clean for optimal video quality.
- ◆ If a foreign substance (e.g. fingerprints) is attached to the lens, this might reduce the quality of the recorded videos. Keep the lens clean all the time.
- ◆ The specified operating temperature of this product is -20°C to 65°C (-4°F to 149°F) and storage temperature is -40°C to 80°C (-40°F to 176°F). Ensure that the device is kept within these temperature ranges; otherwise, the device may not function as designed and at extreme temperatures, permanent physical damage can result which is not covered by warranty.
- ◆ Avoid placing the device under direct sunlight.
- ◆ Avoid using the Product in extreme conditions where the Product is exposed to high temperature and/or humidity.
- ◆ Only use genuine accessories and peripherals from THINKWARE or authorized THINKWARE dealer. THINKWARE does not warrant the safety and compatibility from use of peripherals from other manufacturers. Use genuine parts supplied by THINKWARE.
- ◆ Do not apply excessive force when pushing the buttons on the device.
- ◆ Do not clean the Product using chemical cleaner or solvents as it may damage plastic components. Use soft, clean, dry fabric to gently wipe the Product.
- ◆ Do not place or store the device where it can be accessible by children and pets.
- ◆ Do not disassemble the Product as it will void product warranty and may also damage the product.
- ◆ Handle with care. Drop, shock, and mishandling of the Product may result in malfunction and/or damage to the device.
- ◆ Do not operate this device while driving.
- ◆ Install this device in a location where it has unobstructed view of the road but does not interfere with the driver's view. Check with your local and regional laws before mounting to windshield.
- ◆ The device and/or installation parts have moving parts and may shift in extreme road conditions such as unpaved road. Check frequently to ensure the device is positioned as instructed in this guide.
- ◆ Do not operate or handle power cable with wet hands.
- ◆ Do not use a damaged power cable.
- ◆ Keep the power cable away from heaters or other hot objects.
- ◆ Check that power cable with correct connector is used and the connections are secure and firmly in place.
- ◆ Do not pull, insert, or bend the power cable using excessive force.
- ◆ Do not place heavy objects on the device and the power cable.
- ◆ Do not modify or cut the power cable.
- ◆ THINKWARE does not guarantee that devices or peripherals not authorized by THINKWARE will be compatible with its Product.
- ◆ Do not attempt to insert foreign objects into the device or power cable.
- ◆ Do not spill or spray liquid into the device as it may cause malfunction, fire, or electric shock.
- ◆ This device is intended to be used inside the vehicle only.

1. Getting Started

This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to insure compliance.

1-1. In the Package



Main Dash Cam Unit



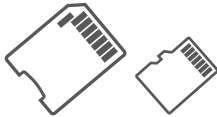
Mount with 3M tape
(1ea)



Car Charger



Adhesive Cable Holder
(5ea)



MicroSD memory card with adapter
(consumable)



USB MicroSD card
reader



Quick Start Guide/Warranty/
User Manual (stored in the MicroSD card)

1-2. Optional Accessories

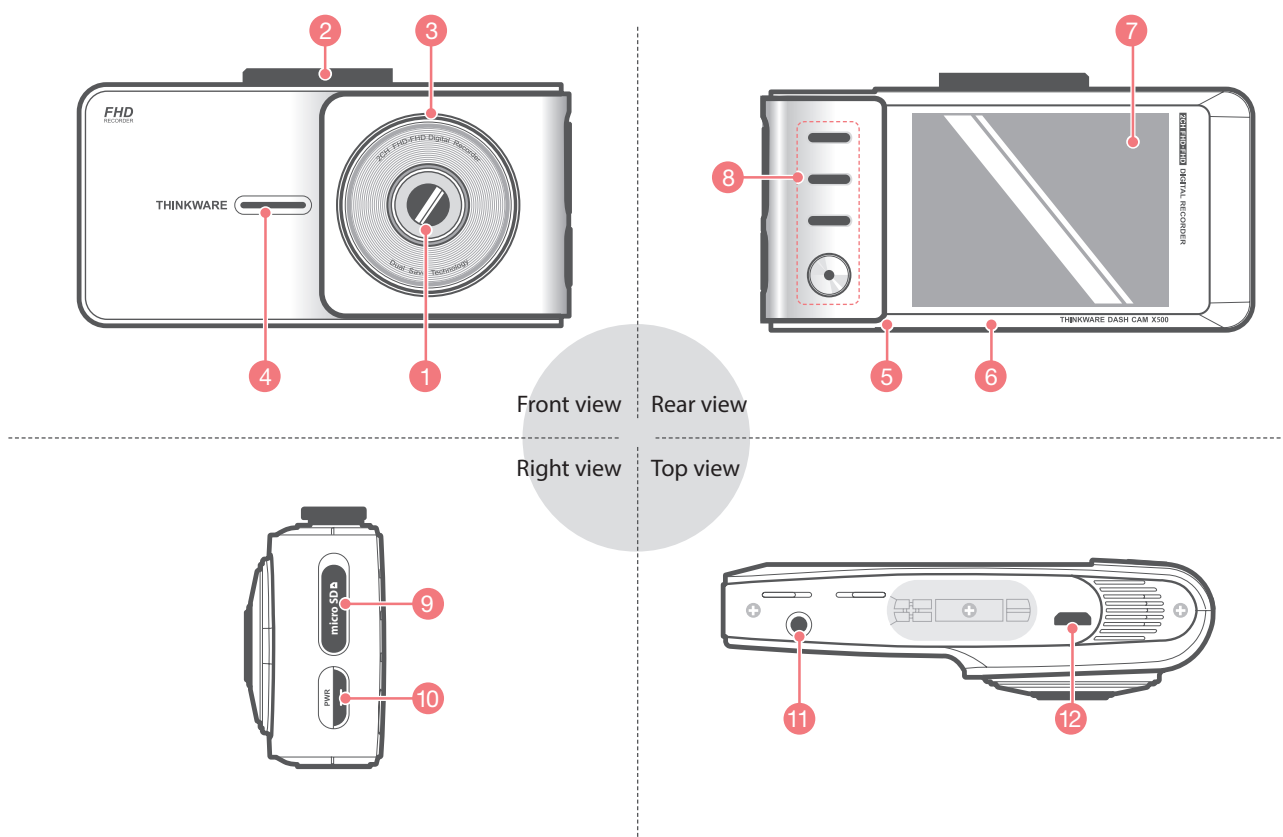



Hardwiring Cable



Rear View Camera

1-3. Product Overview



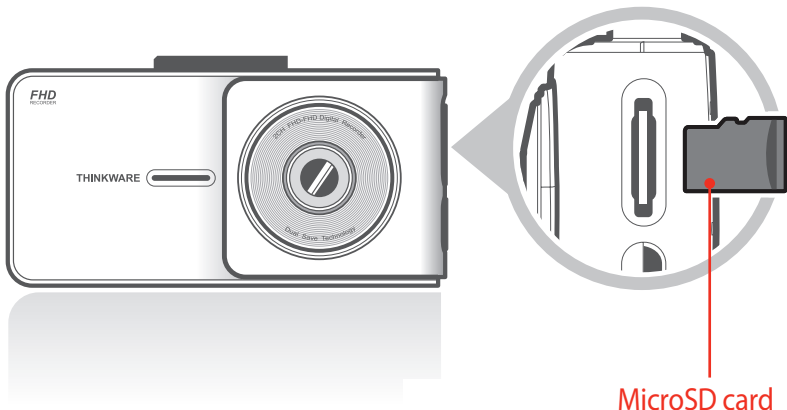
No.	Name	Description
1	Camera Lens	Front facing camera for video recording
2	Mount Connector	Connects to the windshield mount
3	Security LED	LED light that is used to visually indicate that the vehicle is equipped with dash cam which is in operation
4	Speaker	For voice guidance and alert/notification sounds
5	Reset	Press to force the device to restart
6	Microphone	Records audio along with video
7	LCD Screen	Provides Live View, video playback, and access to dash cam configuration
8	Control Buttons	Control Buttons to navigate through user menu on the screen
9	Memory Card Slot	Location for the memory card
10	Power  Button	Press and hold for 3 seconds to turn the device on/off
11	DC-IN	Connects to power cable
12	V-IN Socket	Connects to rear view camera. (Optional rear view camera is not included and requires separate purchase)

1-4. Inserting a Memory Card

1-4-1. About Memory Cards

- ▶ UHS MicroSD card must be used with a storage capacity of 16GB, 32GB, or 64GB.
It is strongly recommended that minimum 16GB memory card is used for full HD recording.
- ▶ The MicroSD card should be formatted every 2 weeks to maximize the lifetime of the memory card.

1-4-2. Installing a MicroSD Card



Open the slot cover and insert the MicroSD card into the slot with the metal contacts facing up toward the mount connector and push until it locks into place.

← **Inserting the memory card**

→ **Removing the memory card**

Press the end of MicroSD card until it clicks out from the slot. Pull out the MicroSD card and close the slot cover.

▶ Device only supports MicroSDUHS-I card with capacity of 16GB or higher

Do not apply excessive force on the MicroSD card or attempt to insert it in the wrong direction as it may cause damage the MicroSD card and the card slot.

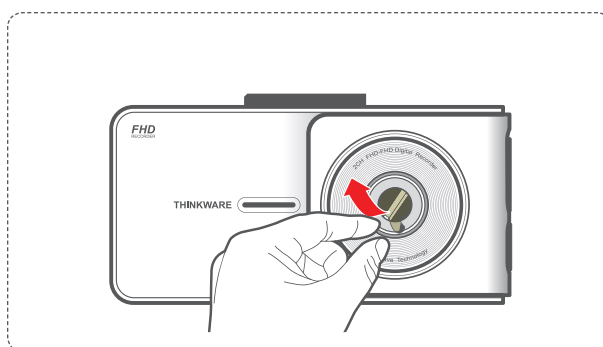
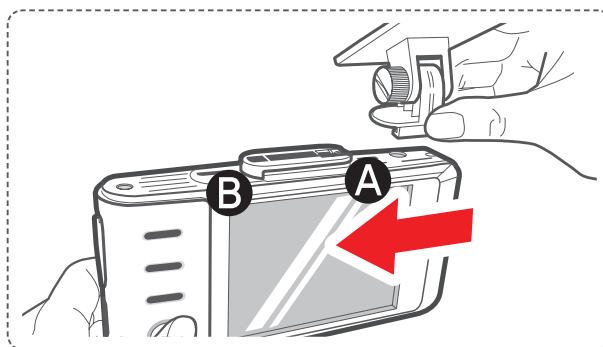
Cautions

- The MicroSD card should be tested for errors on a regular basis and as the memory card is a consumable item, it will need to be replaced periodically.
- THINKWARE shall NOT be responsible for any problems and/or damages that may occur from not using genuine or authorized parts and accessories. It is strongly recommended that THINKWARE memory card is used to minimize memory card error.
- Turn the device off completely before removing the MicroSD card to avoid damages to the memory card.
- To prevent loss of important data, frequently copy recorded videos from MicroSD card to another storage device such as personal computer for back up.

1-5. Vehicle Installation

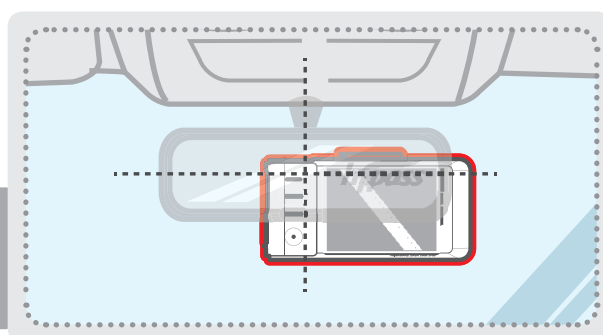
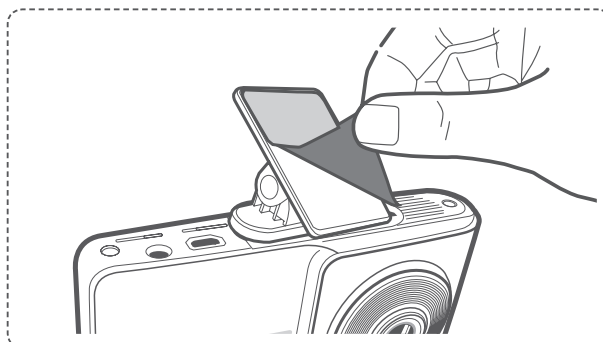
1-5-1. Connecting the Device and the Mount

- ① Place the mount so it is aligned with the connector (A), and push it toward (B) until it clicks into place.
- ② Remove the protective film from the camera lens.



1-5-2. Installing the Device

- ① Clean the area on the windshield where the dash cam will be installed.
- ② With dash cam main unit still attached to the mount, remove the protective tape from the back of the mount.
- ③ Attach the adhesive side of the mount on the windshield where it has an unobstructed view of the road but does not interfere with the driver's view.

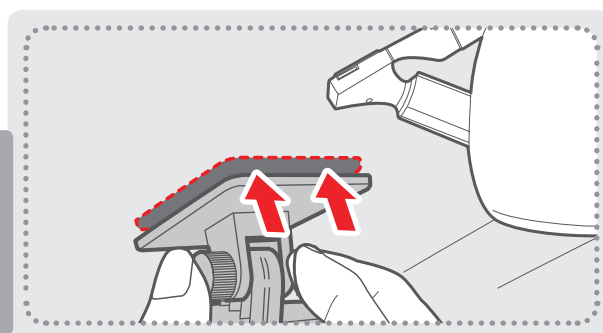


TIP

The camera is located on the left side of the main unit so install the dash cam on the right of center behind the rearview mirror.

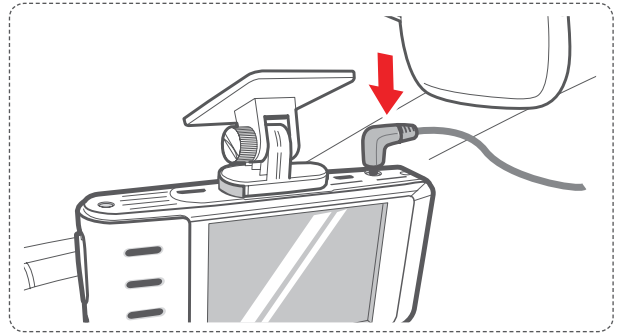
TIP

To ensure that the mount is safely secured, it is recommended that you separate the device from the mount after installation and press the mount towards windshield for 5 minutes to maintain pressure. Allow 24 hours until the adhesive on the mount has set before connecting the dash cam.

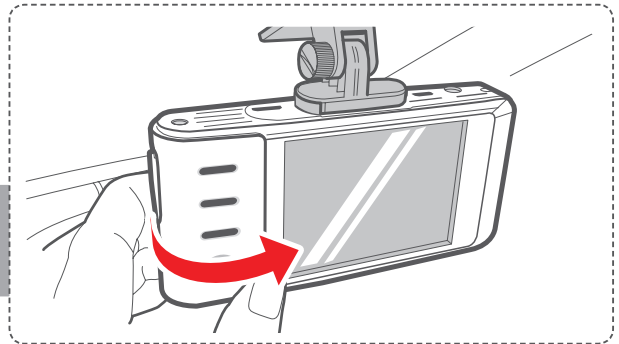


1-5-3. Connecting to power

- ① Connect the power cable to DC-IN socket of the device.
- ② Plug the charger adapter end of the power cable into a 12V DC vehicle power socket.
- ③ Arrange the wire by using the adhesive cable holder as shown below.

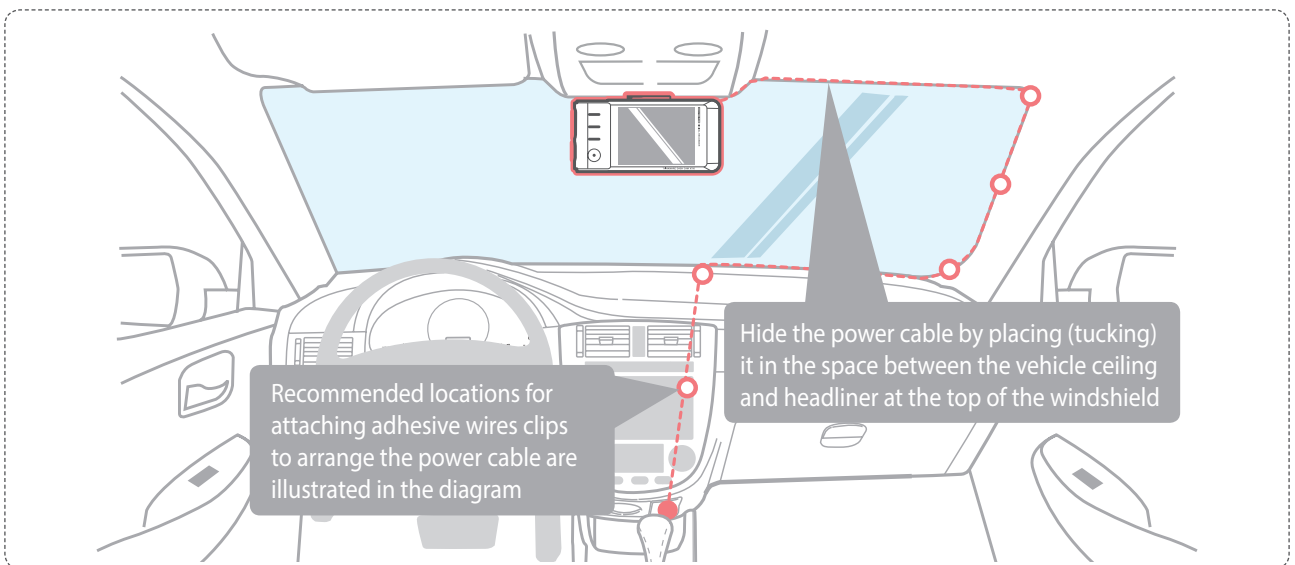


- ④ Adjust the camera so that the dash cam is facing forward and level with the road.



TIP

After installation, turn on the dash cam and use the live view on the LCD screen to adjust the camera angle.



For more information on the power cable routing instruction, please visit Thinkware homepage. (www.thinkware.com)

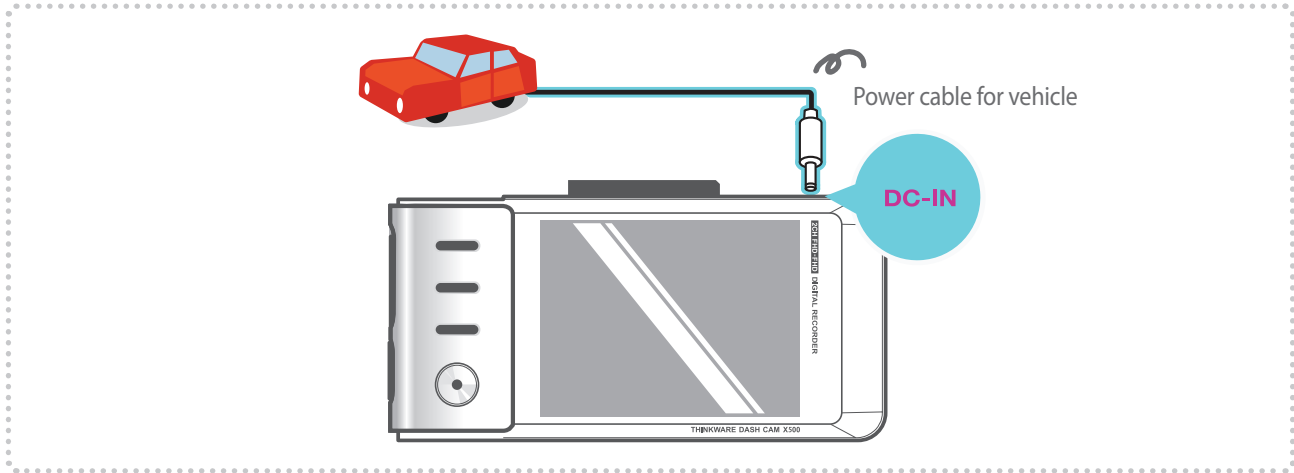
Preventing Vehicle Battery Discharge

- Depending on the car make and model, the power from the vehicle can be supplied even with the ignition turned off. In this case, the dash cam stays on as continuous mode and does not enter parking surveillance mode which will result in vehicle battery discharge.
- Some vehicles with multiple power sockets might be equipped with at least 1 outlet that does not shut off the power with the ignition. So, test each power outlet to ensure you connect to an outlet that shut off with vehicle ignition.

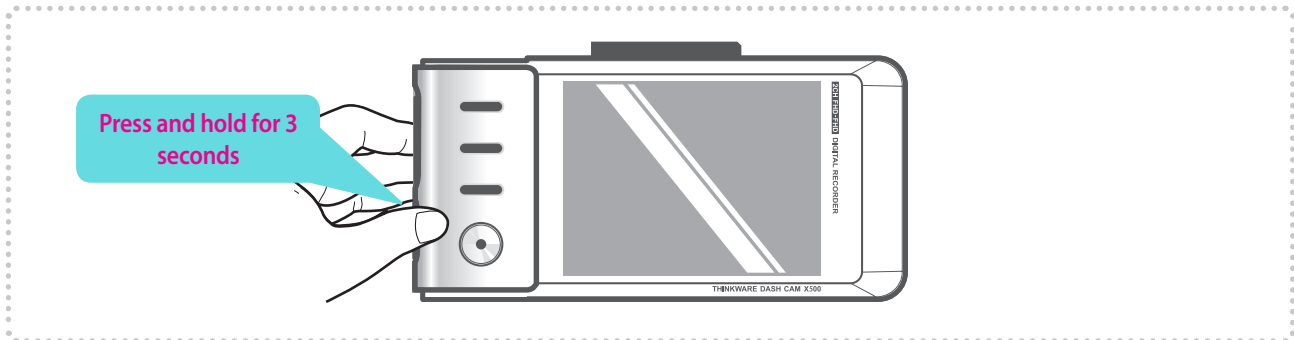
2. Basic Operations

2-1. Turning the Device Power On/Off

▶ The device will automatically turn on and off with vehicle ignition.

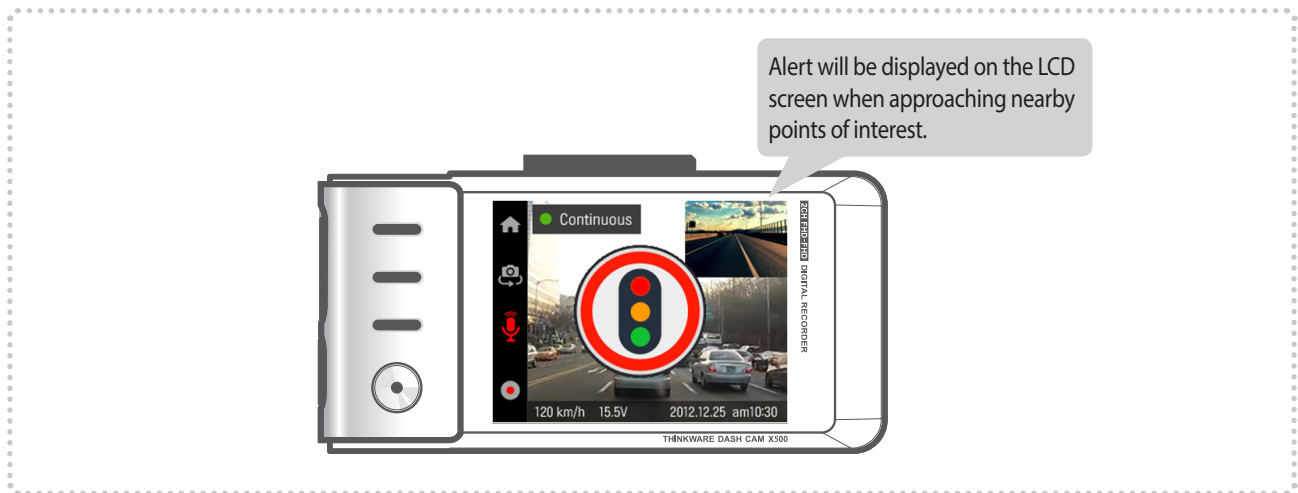


▶ To manually turn the device on/off, press and hold the Power button (⏻) for 3 seconds.



2-2. Road Safety Warning System

- ▶ Using embedded GPS and road data, related road safety information will be notified to the driver



- ▶ Resetting GPS

└ Built-in Internal GPS can be reset by selecting “Main Menu > About Device > GPS Info > Reset GPS”

Cautions

- This feature may not be available in some countries.
- GPS may be affected by weather conditions, satellite signal, and/or surrounding geographical features.
- Coated windshields can interfere with GPS signal which may result in poor or blocked GPS reception.
- Other electronic devices and/or equipment may interfere with GPS signal if placed too close to the dash cam.

2-3. Recorded Files

► Recorded video files are saved in the folder by date and hour in the MicroSD card.

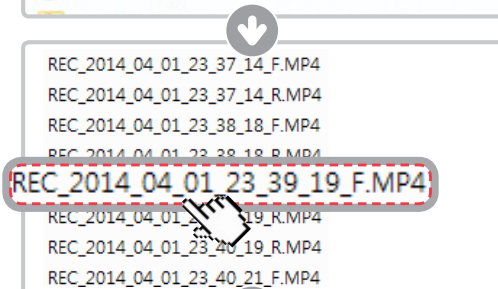
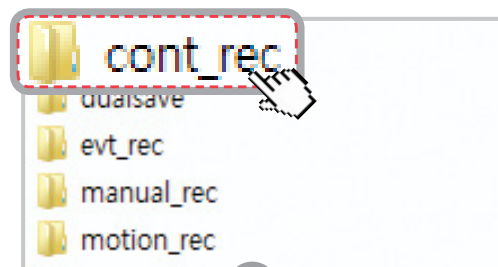
└ Files are created based on the time when the videos are recorded.

REC_2014_04_01_23_37_14_F

Year Month Day Hour Minute Second Front view recording

REC_2014_04_01_23_37_14_R

Rear view recording
(optional rear view camera must be installed)



└ As a surveillance product, the dash cam will automatically overwrite oldest file in the memory card once the memory is full. However, event recording and manual recording videos are stored in separate location and will be protected from file overwriting.

Cautions

- Do not use MicroSD as external storage device.
- Do not save or modify saved files in the MicroSD card.
This may result in unexpected behavior during operation.

2-4. Recording Videos While Driving

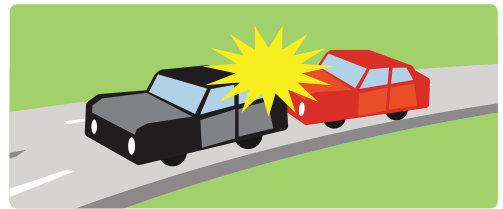
2-4-1. Continuous Recording Mode

- ▶ Videos are recorded in 1 minute segments and saves as files in the MicroSD card under folder named "cont_rec".



2-4-2. Incident Recording in During Continuous Recording Mode

- ▶ When the dash cam detects impact, it will immediately store the previous 10 seconds prior to impact and start recording video for next 10 seconds.
- ▶ This 20-second video will then be saved in a secure location on the MicroSD card under folder named "evt_rec".
Note that the dash cam will detect impact as incident only if the level of impact is greater than the sensitivity of the G-sensor set in the user configuration.



Cautions

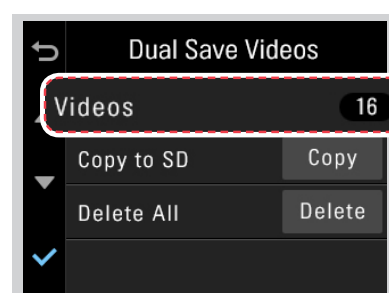
- Driving over speed bump, manhole, or uneven road at high speed can also be detected as incident.
- The device can record up to 1 minute if there are continuous impacts in case of multiple accidents.
- The time for which the device records video before and after impact can vary according to the device setting.

2-4-3. Dual Save™ (Internal Memory Backup)

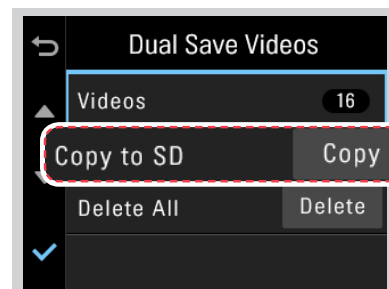
► Dual Save is a Thinkware proprietary technology that utilizes built-in memory as secure backup in addition to the MicroSD memory card. Dual Save technology guarantees incident video recording using internal memory in case of an accident that causes damage to the MicroSD memory card.

- └ In addition to saving incident video files to MicroSD card at the time of the accident, Dual save stores another backup copy onto the built-in internal memory in case there has been a damage to either the main unit or the MicroSD card that might result in failure to save incident videos on the external memory
- └ When Dual Save is activated, it will immediately store the previous 4 seconds prior to impact and start recording video for next 2 seconds for total of 6 second video clip

└ **View Dual Save Video Files:** Video recorded and stored on the internal backup memory through Dual Save technology can be viewed in the list located at "Dual Save Videos > Videos".



└ **Copy Dual Save Video Files:** Video recorded and stored on the internal backup memory through Dual Save technology can be copied to MicroSD card using copy menu located at "Dual Save Videos > Copy to SD". Ensure that a MicroSD card is present in the device



Cautions

- Dual Save technology saves duplicate copy of the recorded video as secure backup to the internal memory so the internal memory life span may be affected by G-sensor user setting, road conditions, and driving behavior which directly impact the frequency of incident recordings.
- Driving over speed bump, manhole, or uneven road at high speed can also be detected as incident.
- Professional product service is required for replacing internal memory.

2-5. [Optional] Recording Videos While Parked

This feature is available only when the dash cam has been hardwired directly to the vehicle battery. Separate purchase for the hardwiring cable accessory and professional installation is required.

2-5-1. Incident Recording

- ▶ When the dash cam detects impact while parked, it will immediately store the previous 10 seconds prior to impact and start recording video for next 10 seconds which is then saved in a secure location on the MicroSD card under folder named "parking_rec".



2-5-2. Motion Detection Recording

The dash cam and optional rear view camera are both equipped with motion detectors which are used to detect motion that initiates video recording while the vehicle is parked.


- ▶ When the dash cam detects impact while parked, it will immediately store the previous 10 seconds prior to impact and start recording video for next 10 seconds which is then saved in a secure location on the MicroSD card under folder named "motion_rec".

Cautions

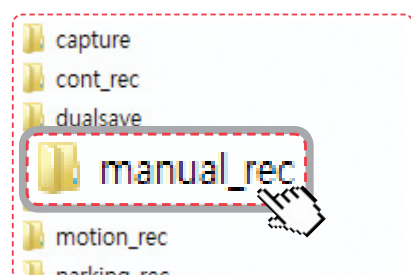
- The device can record up to 1 minute for continuous impacts in case of multiple collisions.

2-6. Manual Recording

In addition to recording accidents, the dash cam allows the user to initiate manual recording mode to capture scenery and/or places while driving. This feature can also be used to save video as witness where the installed vehicle is not directly involved in an accident. Video files saved during manually recording mode are stored in a separate location on the memory card and will be protected from video overwriting in continuous recording mode.

► **Briefly press the REC**  button to start recording. The device will record video for 1 minute (10 seconds before and 50 seconds after) as of the time when the button is pressed. The recorded video will be saved under the “manual_rec” folder.

Note that when manual recording is initiated, the previous 10 seconds prior to pressing the button will be saved so even if you just missed a scene, you can still capture and safely store the video by initiating manual record within 10 seconds of the event.

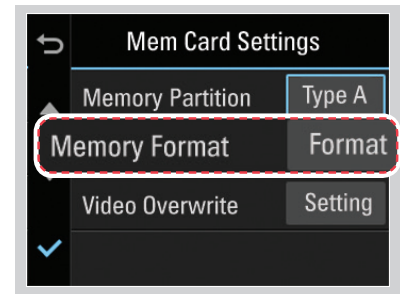


Cautions

- When the allocated storage for manual recording videos is full, oldest video file will be replaced by the new recorded video.

2-7. Formatting MicroSD Card

- ▶ Select "Memory Card Format" menu located at "Mem Card Settings > Memory Format".



Cautions

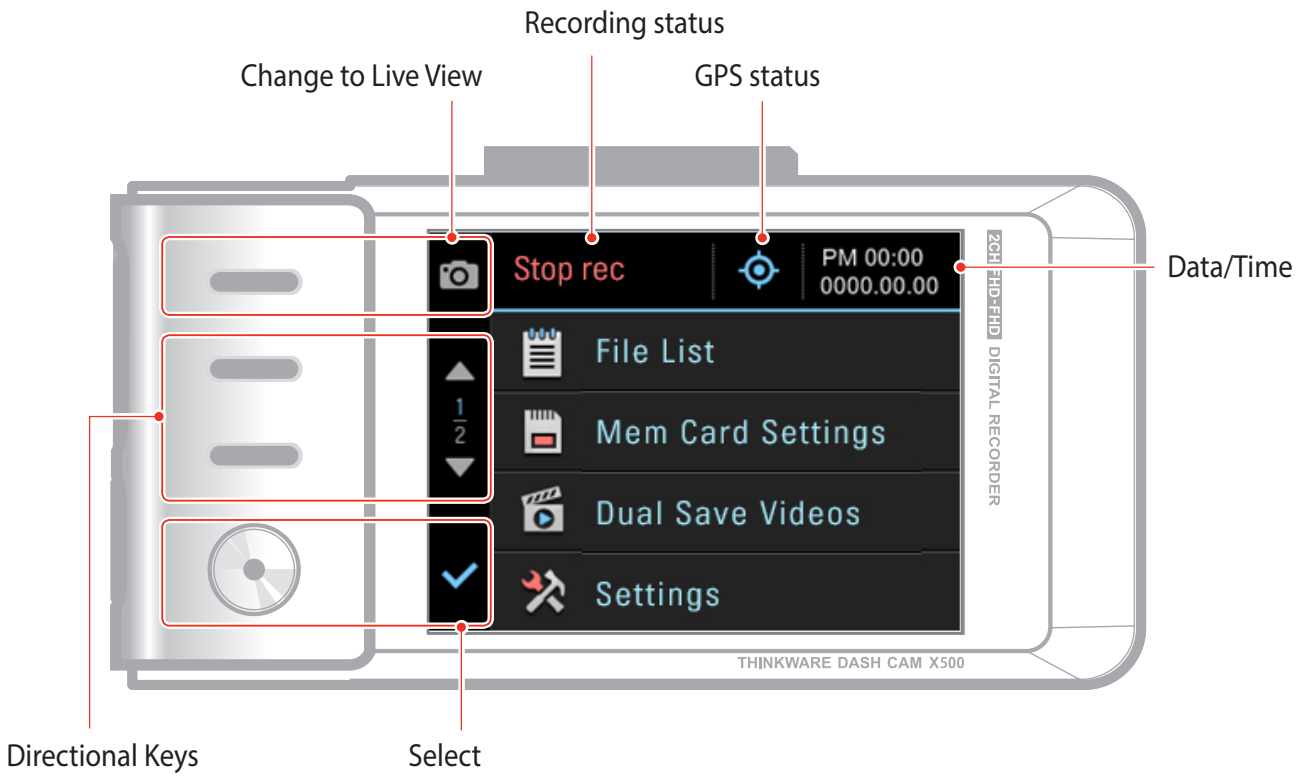
- The MicroSD card should be formatted every 2 weeks to maximize the lifetime of the memory card.

2-8. Upgrading Firmware

- ▶ The system will automatically be updated if the MicroSD card contains the firmware upgrade file.
 - └ The device restarts automatically after the upgrade has been completed.
- ▶ Make sure your device is always up to date with latest firmware. Please check back frequently at THINKWARE website (www.thinkware.com) for latest firmware updates.

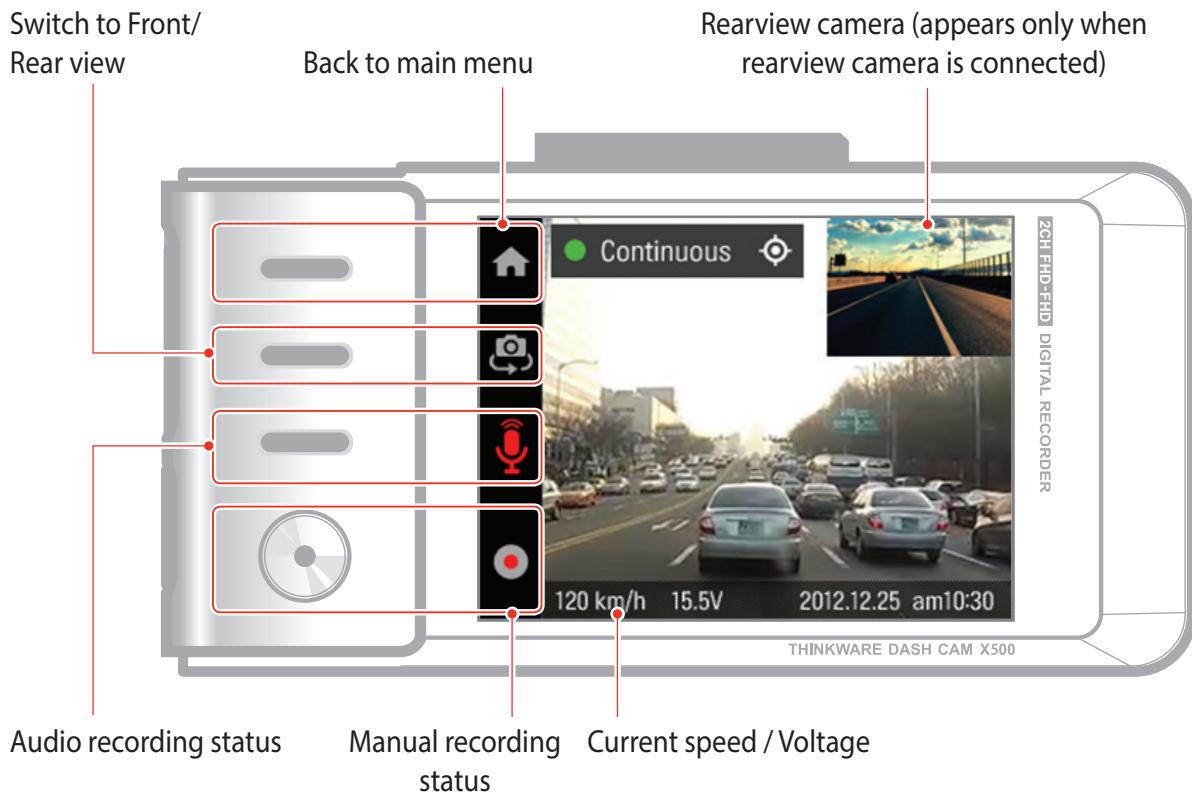
3. LCD Screen

3-1. Main Menu



3-2. Live View

LCD screen can be used to verify current recording view.



3-3. File List

Recording will suspend when browsing through video list and settings menu. Visual notification will appear on the screen to confirm the suspension of recording prior to entering the menu.

3-3-1. File List - 1

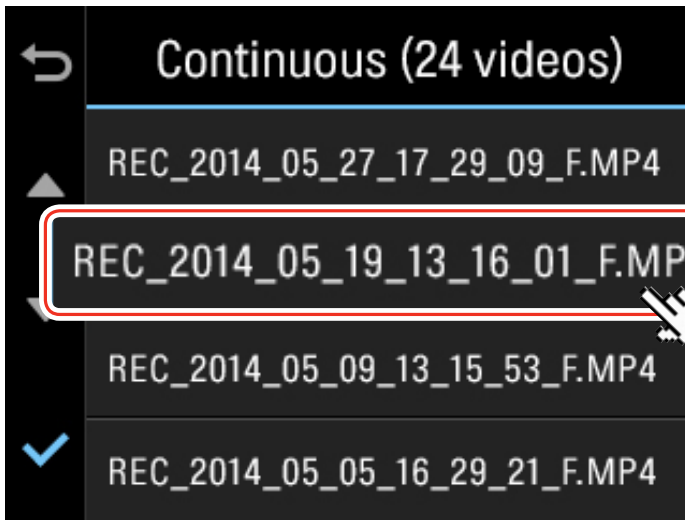


- ▶ **Continuous:** Lists loop recording videos during continuous mode (in 1 minute segments)
- ▶ **Incident Continuous:** Lists incident recording videos during continuous mode
- ▶ **Motion Detection:** Lists motion detection recording videos during parking surveillance mode
- ▶ **Parking Incident:** Lists incident recording videos during parking surveillance mode
- ▶ **Manual Recording:** Lists manual recording videos initiated by selecting button

Cautions

- The configured storage capacity may be different from the actual capacity by approximately 30 to 40MB.

3-3-2. File List - 2



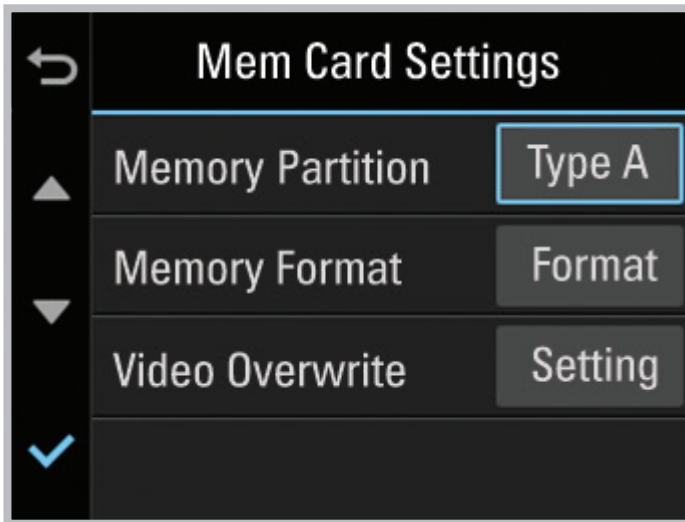
Recording will stop when accessing on-screen menu.



Video playback with 3X zoom



3-4. Memory Card Settings

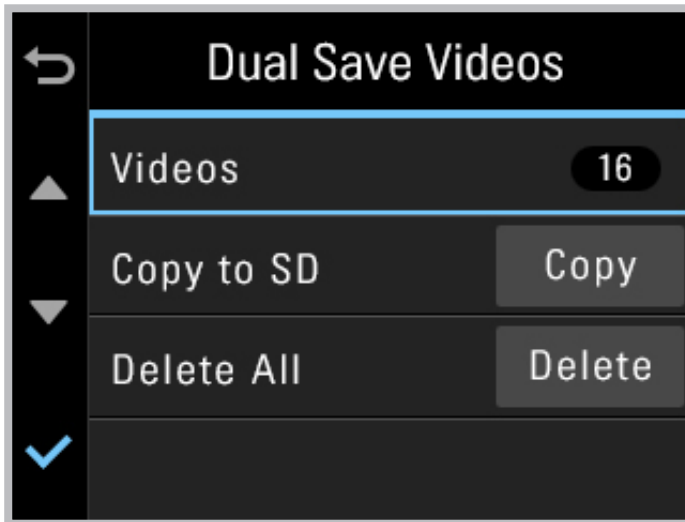


- ▶ **Memory Partition:** Sets how storage space on the memory card will be allotted for each recording mode
 - └ Type A (recommended) : Optimized for continuous recording
 - └ Type B : Optimized for incident and motion detection during parking surveillance
 - └ Type C : Optimized for continuous and incident recording
- ▶ **Memory Format:** Formats the MicroSD card
 - └ Formatting will completely erase all video files stored in the memory card
- ▶ **Video Overwrite:** Sets the overwriting option which will allow new video files to overwrite oldest video in storage reserved for each mode

Cautions

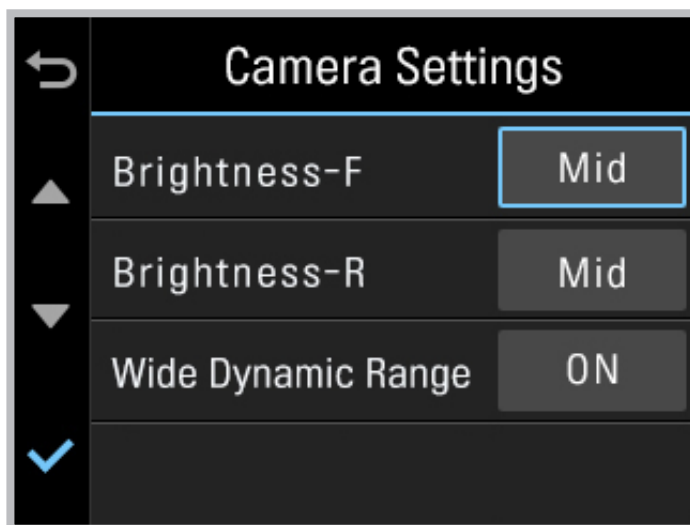
- It is recommended that you back up data before formatting the memory card.
- Once you format the memory card, all data will be deleted and cannot be restored.
- The method for formatting a MicroSD card might vary depending on the computer operating system.

3-5. Dual Save Videos



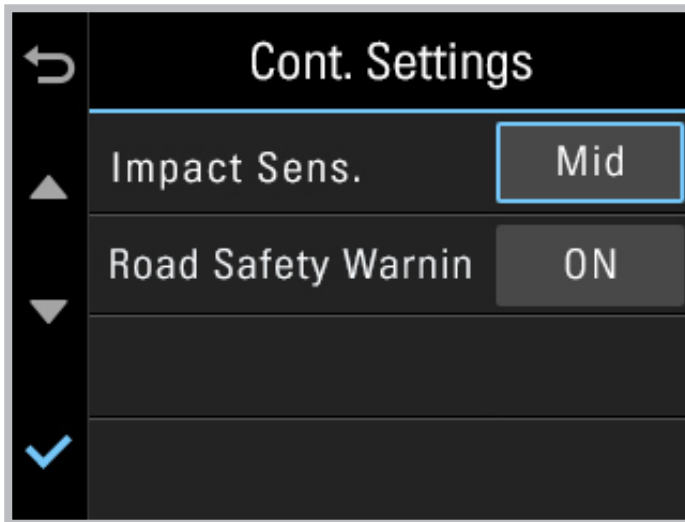
- ▶ **Videos:** View Dual Save video list
- ▶ **Copy to SD:** Copy all videos saved on the internal memory to MicroSD card
- ▶ **Delete All:** Delete all videos saved on the internal memory

3-6. Settings > Camera Settings



- ▶ **Brightness-F/R:** Sets the video recording brightness for front/rear camera
- ▶ **Wide Dynamic Range :** Sets the WDR mode to record clear video even under large variation of backlighting illumination.

3-7. Settings > Continuous Recording Settings



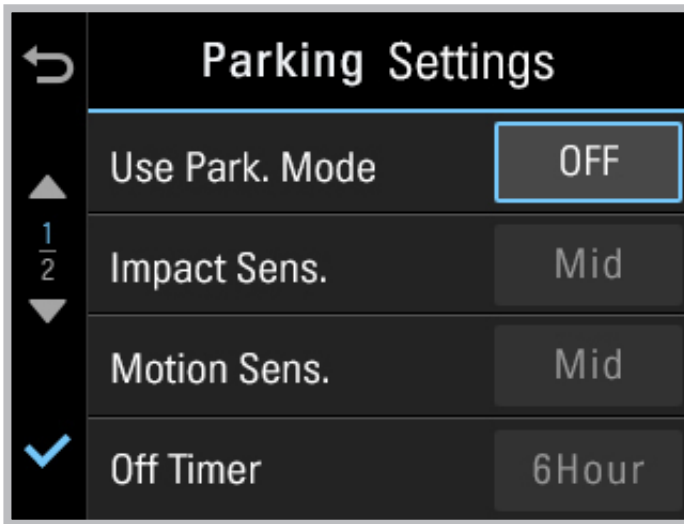
- ▶ **Impact Sensitivity:** Sets the impact sensitivity level
- ▶ **Road Safety Warnin:** Sets audible notifications for road safety warnings

Cautions

○ **Tips on sensitivity**

It is recommended that you set the sensitivity according to vehicle type. High sensitivity setting is recommended for cars with softer ride such as luxury sedans; while low sensitivity setting is recommended for cars such as performance cars, trucks, or SUVs which tends to have stiffer suspension settings.

3-8. Settings > Parking Recording Settings

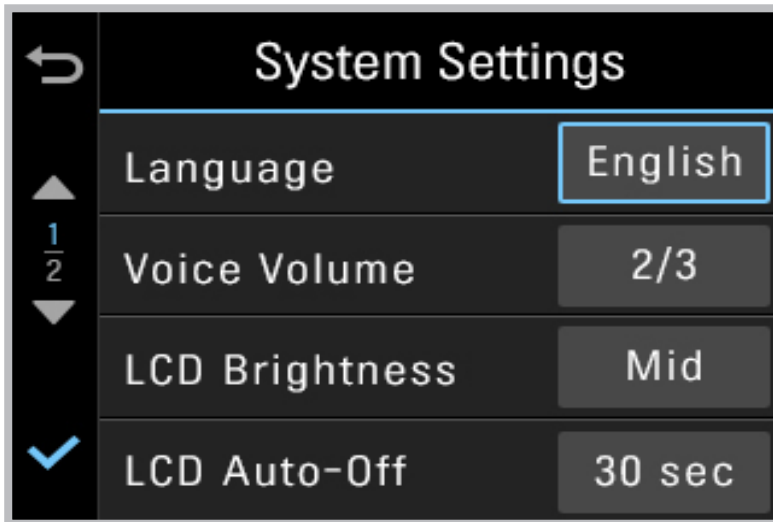


- ▶ **Use Parking Mode:** Monitors vehicle ignition status to automatically convert to parking mode when the vehicle engine is turned off
- ▶ **Impact Sensitivity:** Sets the impact sensitivity during parking recording mode
- ▶ **Motion Detection Sensitivity:** Sets the motion detection sensitivity during parking recording mode
- ▶ **Off Timer:** Sets the timer for the dash cam to automatically shut down in parking mode to prevent from draining the vehicle battery
- ▶ **Off Voltage:** Sets the voltage level for the dash cam to automatically shut down in order to prevent from draining the vehicle battery

Cautions

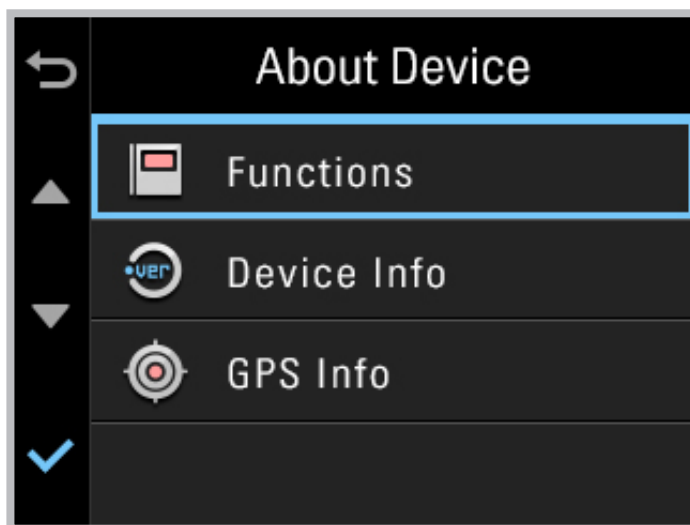
- It is recommended to format the memory card when settings have been changed.
- Backup important video files before formatting the memory card.

3-9. Settings > System Settings



- ▶ **Language** : Sets language
- ▶ **Voice Volume**: Sets the volume level
- ▶ **LCD Brightness**: Sets the brightness of the LCD screen
- ▶ **LCD Auto-Off**: Sets the time for LCD auto shut off
 - └ When LCD is off, pressing any button will turn the LCD screen back on
- ▶ **Security LED**: Sets the pattern for security LED
- ▶ **Time Zone**: Sets the time zone
- ▶ **Daylight Saving Time (DST)**: Sets the daylight saving time
- ▶ **Speed Unit**: Sets the unit for the vehicle speed

3-10. About Device



- ▶ **Functions** : Help for device features
- ▶ **Device Info** : Information on device and firmware
 - └ **Factory Reset**: Restores to factory setting
- ▶ **GPS Info** : View GPS information
 - └ **GPS Initialization**: Reset GPS

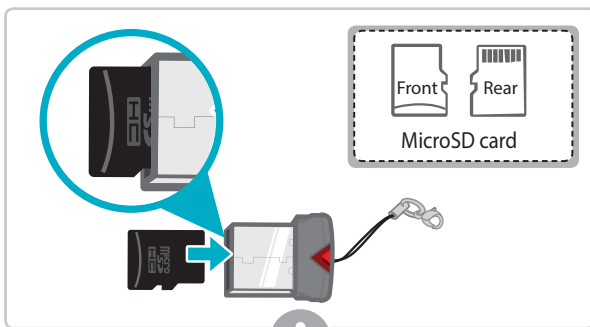
4. PC Application

4-1. Thinkware Dash Cam PC Viewer

Thinkware Dash Cam Viewer for both Windows/MacOSis provided which can be used to watch videos recorded with the dash cam. The video files recorded by the dash cam are in one minute segments and the PC viewer allows user to watch the segments as a single continuous video.

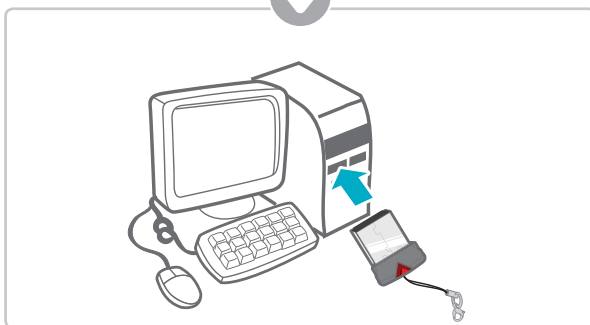
The setup file for the Thinkware Dash Cam PC Viewer is included in the MicroSD card in the package. Please check THINKWARE homepage(www.thinkware.com) for latest Dash Cam PC Viewer application.

4-1-1. Thinkware Dash Cam PC Viewer Software

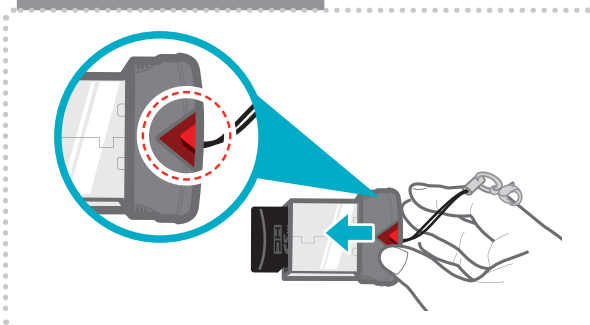


- ① Insert the MicroSD card into the USB MicroSD card reader (included in the package) with front side facing up as shown in the illustration.
- ② Connect the USB MicroSD card reader to the PC

Ensure that the USB card reader is correctly oriented when inserting to USB drive on the PC



Removing MicroSD card



4-1-2. Installing Thinkware Dash Cam Viewer

Windows



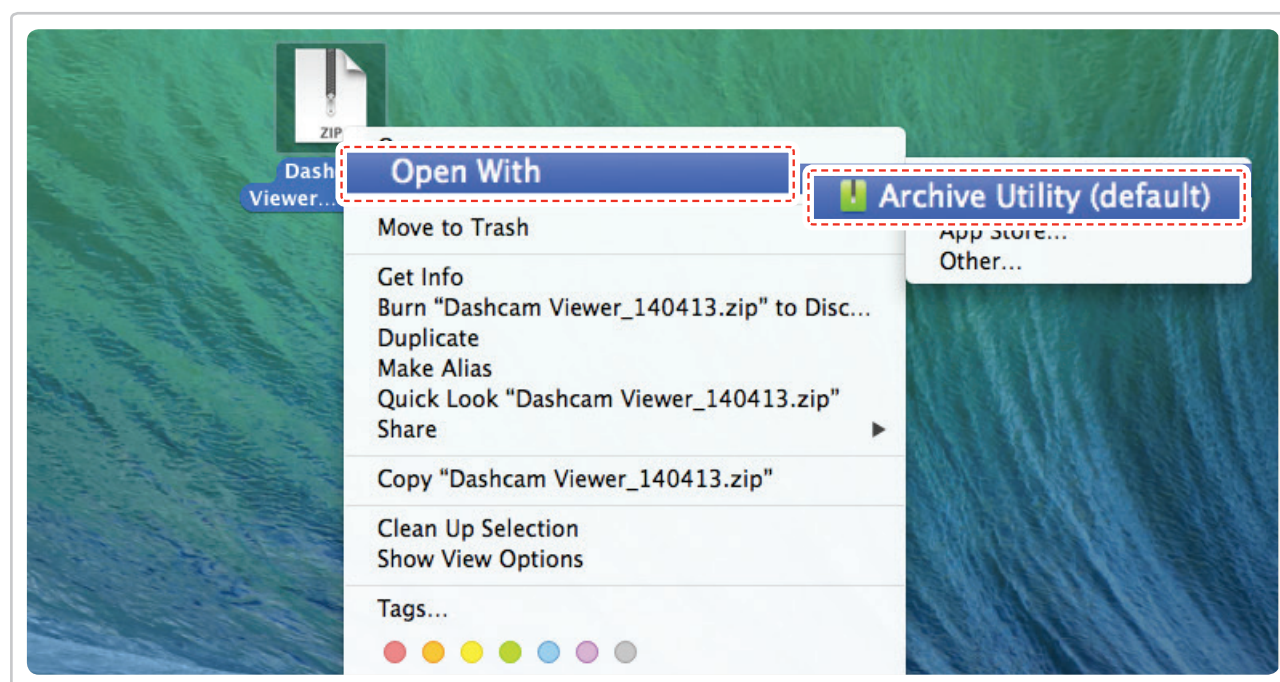
- ① Double-click the Thinkware Dash Cam Viewer setup file saved in the MicroSD card to initiate program installation.
- ② Double-click the application icon once PC Viewer installation completes and the application main screen will then appear.

Cautions

- System requirements :
Windows XP (32bit), Windows 7 (32bit/64bit),
Windows 8.x (32bit/64bit)

MAC

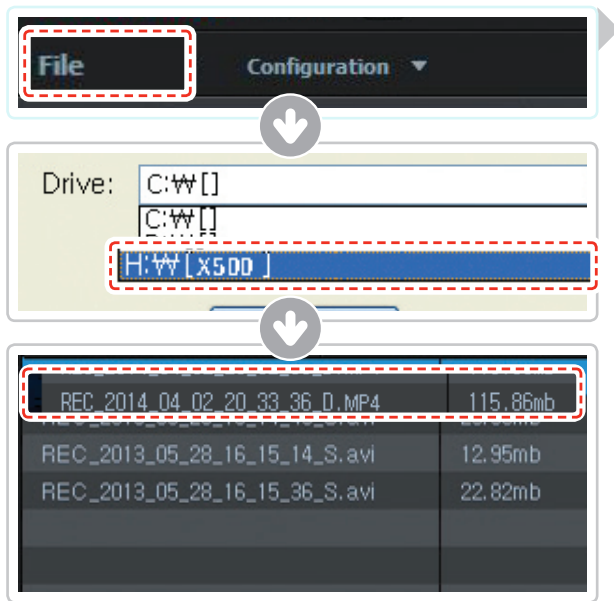
- ① Move the file named "Dashcam Viewer.zip" stored in the MicroSD card to the desktop.
- ② Right click on the mouse and select "Open With" > "Archive Utility" to launch the Thinkware Dash Cam viewer application.



Cautions

- System requirements : MAC OS X 10.8 Mountain Lion or later (OS X 10.9 Mavericks, OS X 10.10 Yosemite)

4-1-3. Select the Device Drive for X500

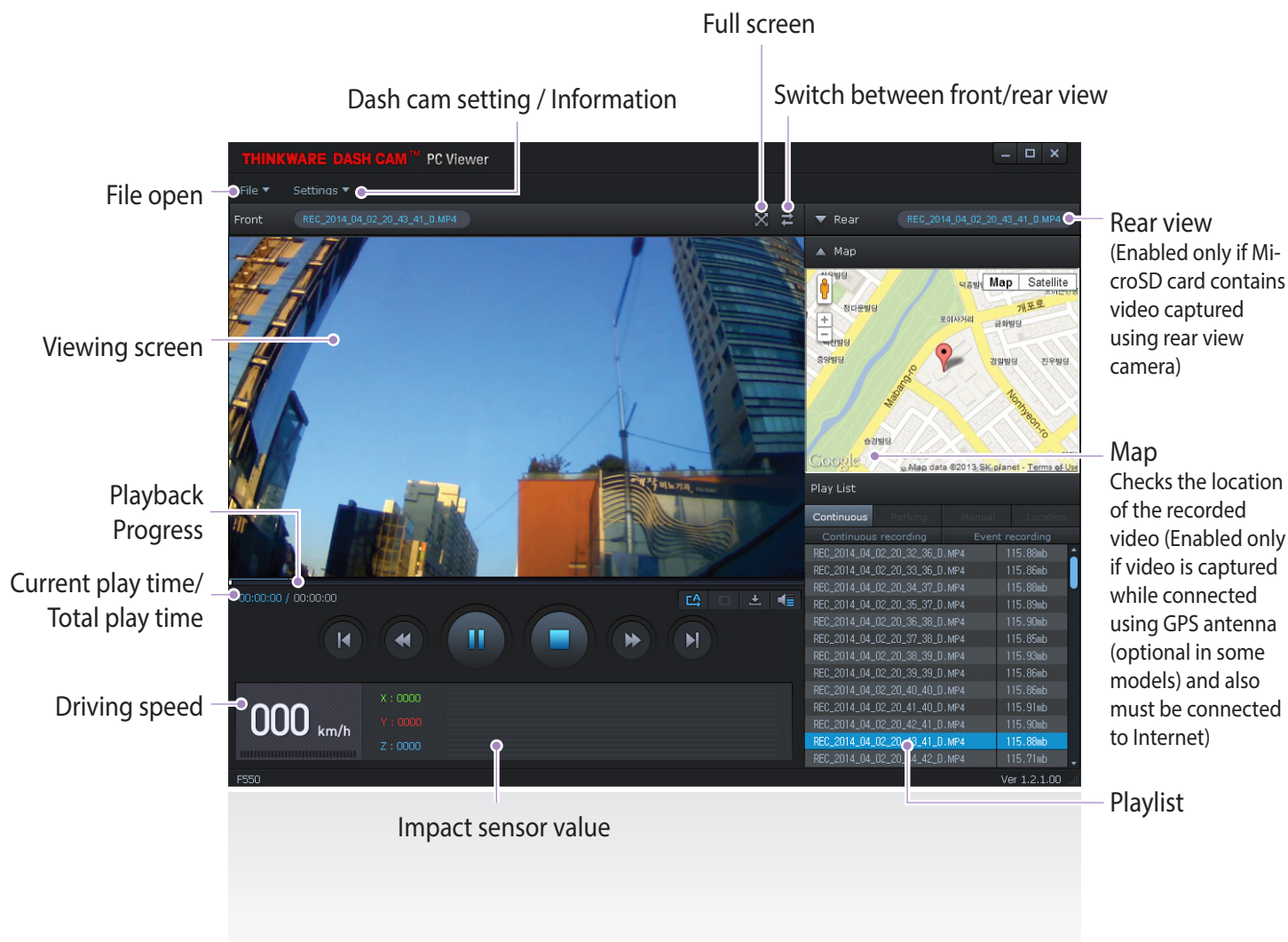


- ① Click **File** ▼ from menu and select the drive for the portable storage drive for the connected MicroSD card.
- ② Select any file from the list to load entire video playlist in the memory card.

Cautions

- The MicroSD card will not be recognized by the software until it has been initialized in the dash cam.
- It is recommended that the user record at least one video clip on the MicroSD card with the dash cam unit before accessing the Thinkware Dash Cam PC Viewer.

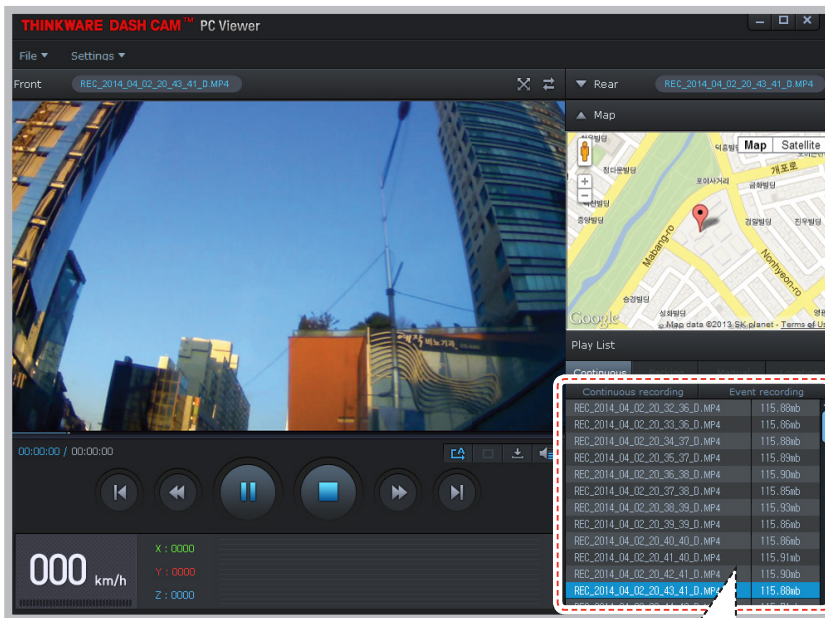
4-1-4. Thinkware Dash Cam Viewer Overview



No.	Name	Description
⏮	Play Previous	Plays the previous file before the current file
⏪	Rewind by 10 Sec	Rewinds the current file being played by 10 seconds (If selected, it continues to rewind by 10 seconds)
▶/⏸	Play/Pause	Plays the recorded file / temporarily pauses playback
■	Stop	Stops the file being played. The playback status resets to the starting point of the video.
⏩	Fast-forward by 10 Sec	Fast-forwards the current file being played by 10 seconds (If selected, it continues to fast-forward by 10 seconds)
▶	Play Next	Plays the next file after the current file
🔄	Auto Play	Automatically loops the video back to beginning once the end has reached
📏	Zoom	Sets the video expansion ratio (0.5x / 1.0x / 1.5x / 2.0x)
⚙️	Screen Setting	Sets brightness/speed of the video
💾	Save	Saves the video in play
🔊	Volume	Sets the volume of the playback

4-1-5. View Video Playlist

- ▶ Select appropriate folder (Continuous Recording, Incident Recording, Manual Recording, Parking Motion, Parking Incident) to see the playlist for each recording mode.



Continuous recording	Event recording
REC_2014_04_02_20_32_36_D.MP4	115.88mb
REC_2014_04_02_20_33_36_D.MP4	115.86mb
REC_2014_04_02_20_34_37_D.MP4	115.88mb
REC_2014_04_02_20_35_37_D.MP4	115.89mb
REC_2014_04_02_20_36_38_D.MP4	115.90mb
REC_2014_04_02_20_37_38_D.MP4	115.85mb
REC_2014_04_02_20_38_39_D.MP4	115.93mb
REC_2014_04_02_20_39_39_D.MP4	115.86mb
REC_2014_04_02_20_40_40_D.MP4	115.86mb
REC_2014_04_02_20_41_40_D.MP4	115.91mb
REC_2014_04_02_20_42_41_D.MP4	115.90mb
REC_2014_04_02_20_43_41_D.MP4	115.88mb

Continuous Recording Playlist

Continuous	Parking	Manual	Location
FILE NAME			SIZE
MAN_2013_05_28_16_15_25_S.MP4			93mb

Manual Recording Playlist

5. Specifications

5-1. Specifications

The specifications of this product may change without prior notice for product improvements.

Item	Standard	Note
Model	X500	
Size/weight	104.3 x51.4 x 29.3mm / 109g	
Display Panel	2.7"LCD (320x240)	
Capacity	MicroSD card (UHS-I)	16GB/32GB/64GB
Recording mode	Continuous Recording Mode	Records in 1 minute segment
	Incident Recording Mode	
	Manual Recording Mode	
	Parking Surveillance Mode	Optional hardwiring cable and installation are required for continuous supply of power when vehicle ignition is off.
	Audio Recording	
Camera	2.0 Megapixel, 1/2.9" CMOS	Same for rear camera
Viewing angle	Approximately 144° (diagonally)	Same for rear camera
Video	Full HD (1920 x 1080/H.264/extension MP4)	Same for rear camera
Frame rate	1 channel (Front view) : up to 30 fps	Same for rear camera
Audio	PCM (Pulse code modulation)	
Acceleration sensor	3-axis acceleration sensor (3D, ±3G)	Adjustable impact sensitivity (5 levels)
Rear camera	Support V-IN port	Optional accessory that requires separate purchase.
GPS	Embedded GPS	
Input power source	DC 12/24V	Rearview camera: DC 3.3V
Current consumption	2CH: 3.5W/1CH: 2.5W (mean)	Based on fully charged super capacitor/ LCD off
Auxiliary power unit	Super Capacitor	
Warning sound	Embedded speaker	Voice (buzzer sound) guidance
Operation/Storage Temperature	-20°C to 65°C / -40°C to 80°C -4°F to 149°F / -40°F to 176°F	
Connection Interface	1 x V-IN port (Micro USB)	