

LG Innotek

LGD521



User Manual

2CH Front Full HD / Rear HD High Resolution

Front 30FPS / Rear 30FPS

Format free recording

Low battery and high temperature shutdown

Security LED & Audio prompts

Wireless Connectivity

1 Caution for Safety



For safety and prevention of any property damage, be sure that user use the product after reading the following(Operation and Caution) carefully.



Caution on Operation and Storage

- Do not operate the product while driving. It may cause an accident.
- The product must be installed at a point which would not obstruct the driver's view.
- Do not allow unauthorized disassembly or alteration to the product. It may cause malfunction, and the consequent product damage will not be covered under the warranty.
- If the product is damaged or power is cut off by a serious accident, the product may not be able to record such event.
- Always keep the windshield clean to enable clear recording.
- Since the product's purpose is to record video data during driving, video quality may be deteriorated when in/out the tunnel, and at night or by contrast and backlight.
- Contaminated camera lens may deteriorate the video quality. Keep the lens clean.
- Do not place the product under direct sunlight or inside the closed vehicle as it may cause malfunction.
- Do not use chemicals or detergent to clean the product. Clean gently with soft cloth.
- Use of the product at temperature below -20°C or above 70°C may cause malfunction or breakdown. (This caution should be applied when product is unused.)
- Do not use the product in places in high temperature/humidity.
- Do not exert excessive force to the product (especially to buttons and to bracket) as it may cause breakdown.
- Check for correct recording, before each use.
- Extended exposure to sunlight and high temperature in the summer may cause malfunction.
- Do not turn off power, or remove the MicroSD card during firmware upgrading as it may cause malfunction.
- Do not touch the cigarette lighter cable with wet hands as it may cause electric shock.
- Do not use a damaged cigarette lighter cable as it may cause electric shock or fire.
- Do not plug the cigarette lighter cable in near heating devices.
- Do not leave the product connected to the cigarette lighter if not in use for a long period of time. Remove the cable from the product.
- Insert the cigarette lighter plug securely.
- Do not bend or pull the cigarette lighter cable by excessive force, or place heavy objects on the cable.
(It may damage the cord and as a result it may cause electric shock or fire.)
- The recorded file could be deleted to make an available space for recording even if the overwriting setting is off

1 Caution for Safety



For safety and prevention of any property damage, be sure that you use the product after reading the following (Caution on SD Card) carefully.

Caution on SD Card

- In order to confirm normal operation of the product, please check the image of the MicroSD card and format it on a regular basis. (PC format needed one to two times per month.)
- Because the MicroSD card is a consumable, if it is used for a long time, you may lose the data or may not record due to an error, so please check it periodically.
- When the product is recording or the power is on, do not eject the MicroSD card, as it may cause a failure of the MicroSD card and data loss.
- If temperature gets too high in the vehicle, data storing may be disabled, or data may be damaged. Park your vehicle in the shade in the summer.
- When validating an accident or car damage, please remove the MicroSD card and keep separate. Due to overwrite, important data may be deleted.
- When turning off the power of the product and remove the MicroSD card before LED is turned off, the last recording file may not be saved, so please be careful.
- When driving a car, do not remove the MicroSD card. Make sure to remove it safely when a car is in parking or stop.
- After turning on the power, make sure that it is in normal operation.
- Please note that the warranty period of the MicroSD card is three (3) months, and recommend to replace it every (6) months. Please purchase and use a MicroSD card that meets the manufacturers recommended specification.
- The MicroSD card randomly purchased other than the one we provide, shall be excluded from the warranty, and we shall not take any responsibility for loss and damage of the data recorded in the MicroSD card in any case.

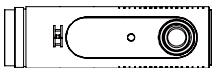

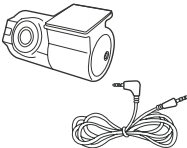
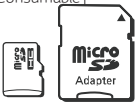

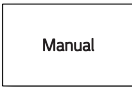
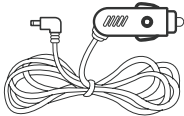
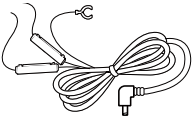

2 Product Specifications

Item	Specifications
CPU	ARM Cortex-A7 CPU
Flash Memory	1Gb
RAM	2Gb
Video Recording	2 channels
Camera	Front: 4M pixels / Rear: 1M pixels
Recording Resolution	Front : FHD (1920 x 1080P) Rear : HD (1280 x 720P)
Memory Device	micro SD Card (up to 128GB opt)
View Angle	Front : 110° (H) X 60° (V) X 130° (D) : OV4689 Rear : 89.9° (H) X 64.9° (V) X 120.3° (D) : HDX10
GPS	External GPS (optional)
Input Power	DC 12V~24V
Power Consumption	Up to 350 mA@13V
Auxiliary Power	Super Capacitor
G-Sensor	Triaxial accelerometer G sensor
Video Format	AVI
Audio Recording	Internal high sensitivity microphone
Audio Guide	Internal speaker
Video Codec	H.264 / AVC
Audio Codec	PCM S16 LE
High Temperature Cut-off Function	Yes
Constant Power Cut-off Function	Turned off, 11.4V(23.1), 11.6V(23.4), 11.8V(23.7), 12.0V(24.0), 12.2V(24.3)
Operating Temperature	-20°C ~ +70°C
Storage Temperature	-30°C ~ +80°C

- In the parking mode, if the voltage stays below the power cut-off limit for longer than 30 seconds, this product will be automatically turned off to protect batteries of the vehicle. If you start a car again, the product will start operating normally.
- If the temperature inside the vehicle rises during the parking mode, the product will be automatically turned off to protect itself. If you do not want the automatic temperature cut-off function, set the temperature cut-off function to 'No'. If you start a car again, the product will start operating normally.

3 Package

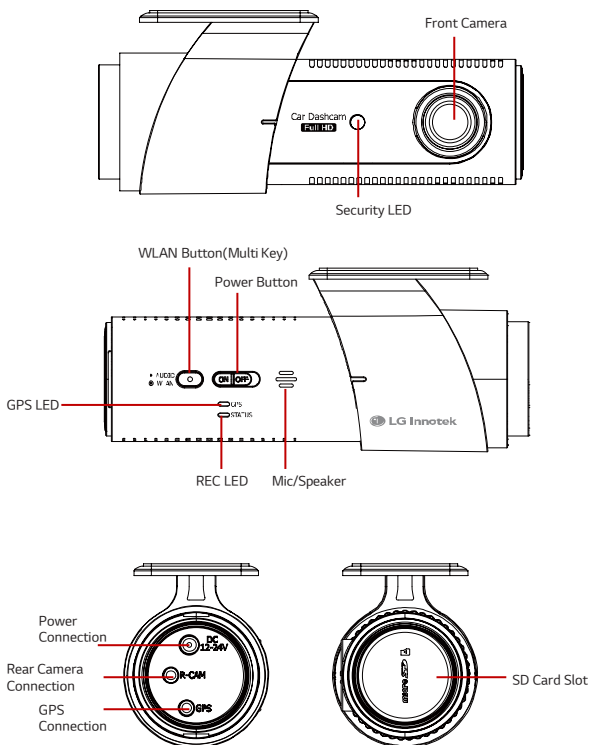
These are the accessories included with the product at the time of purchase.

		
Main Body(LGD521)	Bracket	Rear(HD) Camera, Rear Camera Video Cable
<p>[Consumable]</p> 		
MicroSD Card & Adapter	Clip	Quick Manual
		
Cigarette Lighter Adapter Power Cord (CLA)	Hardwire Cable [Option]	GPS Module [Option]

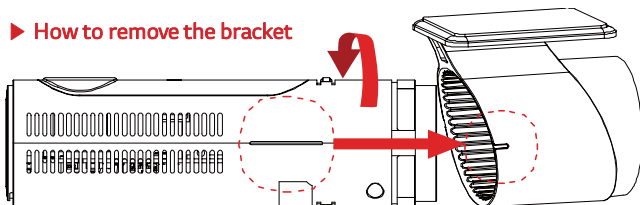
The above image may look different from the actual components .

The components of the product mentioned in this Quick Manual are subject to change without prior notice to improve its performance.

4 Product Parts



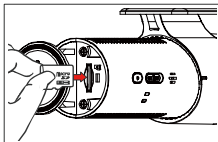
► How to remove the bracket



5 Product Installation



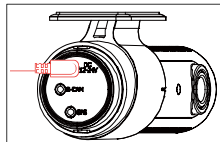
► Front Camera Installation



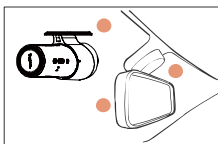
1. Insert the MicroSD card in the card slot. (Check the MicroSD card direction)



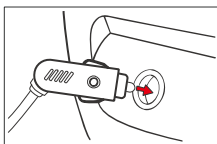
2. Remove the protective tape from the bracket.



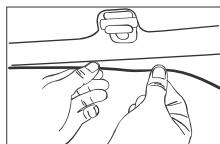
3. Connect the cigarette lighter cable to power connection.



4. Attach the product in place on the top of front windshield or middle, left or right of the mirror.



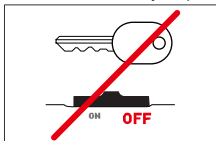
5. Connect the CLA to the 12V power socket.



6. Arrange the power cable

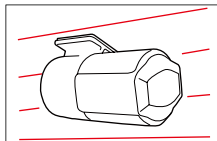
► Rear Camera Installation

1. Shutdown a car battery and power



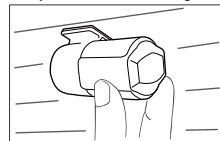
Please power off the car and ignition before installation. (Disconnect the power connection)

2. Attach the Rear Camera.



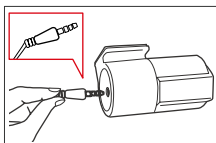
Remove the protective tape and attach the rear camera in proper location in windshield.

3. Adjust the Rear Camera Angle



Adjust the angle with the rear camera attached.

4. Connect the Rear Camera Cable



Connect the (—) shape's rear camera cable to a rear camera connection and the (ㄣ) shape's one to the body.

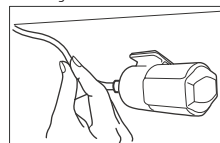
※ Note ※

Please note that the product will not record if the cable is connected incorrectly.

5. Check an Operation

Turn the body on and check a proper operation by playing the recording files on the MicroSD card or TV-OUT. (The video splitter cable has to be connected when checking TV-OUT.)

6. Arrange the Front/Rear Camera Cable



After checking recording operation, well-arrange the cable. If you embed cable to car wall, please check cable connection. Also after embedded double-check if the product can record properly.

6 Recorded Video



► Title of Recorded Video Files

Title of recorded file	aaab_cccc_dddddd_eeeeee_favi		
aaa	Type of recording	Description	Remarks
	inf	Normal recording	inf0_0000_140120_091603_lavi
	evt	Impact recording	evt0_0000_140120_091603_lavi
	moe	Motion recording	moe0_0000_140120_091603_P
b	channel	Description	Remarks
	0	1 channel	Front
	1	2 channels	Front+rear
cccc	index	Description	Remarks
	0000-9999	File order	The index starts with 0. The last file index varies depending on the size of SD card memory.
dddddd	Year, month, and date created	Description	Remarks
	YYMMDD		140120
eeeeee	Time created	Description	Remarks
	hhmmdd		091603
f	Recording mode	Description	Remarks
	I	Normal recording	Turned on when ACC is on
	E	Event recording	It can be set in Menu> Storage Setting> Normal Recording/Event Recording.
	P	Parking recording	Turned on when ACC is off

► Properties of Recorded Video

■ Bitrate (bits per second)

Definition	FHD Video	HD Video
Ultra-high definition	11 Mbps	6 Mbps
High definition	9 Mbps	5 Mbps
Standard definition	7 Mbps	4 Mbps

	1 ch Recording (bps)		2ch Recording (bps)			
	Normal	Parking	Normal		Parking	
			Front	Rear	Front	Rear
Ultra-high definition	11	11	11	6	11	6
High definition	9	9	9	5	9	5
Standard definition	7	7	7	4	7	4

■ FPS (Frame per second)

	1 ch Recording (FPS)		2ch Recording (FPS)			
	Normal	Parking	Normal		Parking	
			Front	Rear	Front	Rear
Ultra-high definition	30	30	30	30	30	30

7 Recorded File



► Size of Recorded File

- Each recorded file will be saved using the format-free system based on file size.
- Normal : 120 MByte
- Event : 60 MByte
- Motion : 60 Mbyte

► Recording Time by SD Card Size

FHD + HD

Chan nel	Definition	Camera	16GB			32GB			64GB		
			Normal (50%)	Motion (20%)	Event (30%)	Normal (50%)	Motion (20%)	Event (30%)	Normal (50%)	Motion (20%)	Event (30%)
1 Chan nel	Ultra-high definition	Front	96	39	58	196	78	117	394	158	236
	High definition	Front	118	47	71	239	96	143	482	193	289
	Standard definition	Front	151	61	91	307	123	184	619	248	372
2 Chan nels	Ultra-high definition	Front/Rear	62	25	37	127	51	76	255	102	237
	High definition	Front/Rear	72	30	45	154	61	92	310	124	290
	Standard definition	Front/Rear	96	39	58	196	78	117	394	158	373

(Unit: Minute)



- By time : When the memory capacity runs out, recorded files will be automatically deleted beginning with the oldest one.
- By type : The percentage of allowed memory usage is set per recording type. When the memory capacity for a recording type runs out, recorded files of the recording type will be automatically deleted beginning with the oldest one. Recordings of an accident can also be deleted.

► On-Screen Display (OSD) Description



- Model name : LG INNOTEK LGD521
- F/W Version : V :1.0.772
- Date recorded : 2016/11/28 MON 10:07:51
- G-Sensor Value : X :-0.2 Y :-0.0 Z :-0.9
- Speed (Displayed only when GPS is connected):
- Voltage : Input voltage
- INDEX (aaaabbbbcccc)
 - aaaa : Normal file index
 - bbbb : Event file index
 - cccc : Motion file index



8 Recording Scenario



▶ Driving Mode

① Recording of an impact event in the driving mode

- A buffer video of 10 seconds will be included in the video when an impact event occurs in the driving mode.
- If the power supply is cut off immediately after an impact event while driving, the event recording at the end may not be performed normally. In this case, you can refer to the normal recording of the same timeline.

② Recording of multiple impact events in the driving mode

- If another event occurs during impact event recording, the second event can be processed 10 seconds after occurrence of the first impact event.
- After the first impact event file is saved, the second one is saved.
- If the second impact event happens after or at the same time with the completion of the first impact event, the recording of the second impact event will start 10 seconds before the completion of the first impact event.
- Once an event happens and a new file is created, the second event will not be recognized for 10 seconds after occurrence of the first event.

▶ Parking Mode

This refers to the recording while the vehicle is parked with ACC off.

Motion event is not recognized within 10 seconds after switching to the parking mode. The product can sense a motion 10 seconds later.

① Recording of an impact event in the parking mode

- A buffer video of 10 seconds will be included in the video when an impact event occurs in the parking mode.

② Recording of multiple impact events in the parking mode

- If another event occurs during impact event recording, the second event can be processed 10 seconds after occurrence of the first impact event. After the first impact event file is saved, the second one is saved.
- If the second impact event happens after or at the same time with the completion of the first impact event, the recording of the second impact event will start 10 seconds before the completion of the first impact event.
- Once an event happens and a new file is created, the second event will not be recognized for 10 seconds after occurrence of the first event.

③ Recording of a motion event in the parking mode

- A buffer video of 10 seconds will be included in the video when a motion event occurs in the parking mode.

④ Recording of multiple motion events in the parking mode

- If another motion event occurs during motion event recording, the second event can be processed 10 seconds after occurrence of the first motion event. After the first motion event file is saved, the second one is saved.
- If the second motion event happens after or at the same time with the completion of the first motion event, the recording of the second motion event will start 10 seconds before the completion of the first motion event.

⑤ Recording overlap of a motion event and an impact event in the parking mode

- If an impact event occurs together with a motion event, recording of both events will overlap during the parking mode.
- A buffer video of 10 seconds will be included in the impact event video when an impact event occurs during motion recording. (This is the same even when a motion event occurs during impact recording.)
- If another event occurs during the overlap of an impact event and a motion event, the product follows the scenario for recording of multiple events for the corresponding event type.

▶ Switching the Mode

① Driving mode > Parking mode

- Automatic switching: If ACC is cut off in the normal recording mode, the product enters the parking mode 10 seconds later.

② Parking mode > Driving mode

- Automatic switching: If ACC power is high, the product automatically switches to the driving mode.

9 Channel Switching Scenario



▶ Scenario for Switching between 1-Channel and 2-Channel Automatic Recording

- If the rear camera is removed when the product is set to 2 channels, the 2-channel recording continues and the rear screen shows black frames.
- The rear connection alarm sounds once and repeats every 10 seconds. This can be stopped by changing the rear connection or the channel settings.
- At this time, the recording may be stopped for 1 - 3 seconds.

10 LED Operation



► Front Security LED and User Notice LED

Item		Status				GPS (Blue)	Security (White)	Remark
		2 Channel		1 Channel				
		WLAN ON (Green)	WLAN OFF (Red)	WLAN ON (Green)	WLAN OFF (Red)			
Booting		Blink alternately						
Recording	SC card not inserted	OFF					ON	
	Normal	Green ON	Red ON	Green 3 seconds /Red 1 second	Red 3 seconds /Green 1 second		Blinks (1 sec.)	
	Event	WLAN ON Green/ WLAN OFF Red blink (1 sec.)					Blinks (50 m)	Normal Parking
	Motion	WLAN ON Green/ WLAN OFF Red blink (500 msec.)					Blinks (500 msec.)	Parking Motion
Parking		Green ON	Red ON	Green ON	Red ON		ON	Not recorded
Not installed						OFF		
Not Fixed						Blinks (1 sec.)		
Fixed						ON		

- Front Security LED operates only when the language is set to Korean or Chinese (refer to the table above).
- If the language is set to others (Japanese, English, Spanish, and French), the Security LED is turned off.
- If you change the LED settings through WLAN or PC Viewer, the changed settings apply.
- Note 1) If you select "1 Channel" in the settings when 2 channels are connected, the product follows the scenario for 2-channel connection.

11 Low Voltage Cut-off



► Power Management

- You can set the constant power cut-off voltage to Disable (11V) or 11.4 - 12.2 (23.1 - 24.3) V on the Viewer.
- If an event occurs (and the event file is saved) with the voltage remaining below the cut-off limit and if the voltage does not rise above the cut-off limit for 30 seconds or more, this product is turned off.
- The constant power cut-off function is not enabled in the driving mode. It is enabled only in the parking mode.

► Display on the Viewer

- The Viewer displays as follows:
- Disable is set to 11.0 (23.0) V.

0	Disable
1	11.4(23.1)V
2	11.6(23.4)V
3	11.8(23.8)V
4	12.0(24.0)V
5	12.2(24.3)V

12 High Temperature Cut-off

- The temperature cut-off function is used to protect the product from high temperature.
- The high temperature cut-off function is not enabled in the normal mode.
- The temperature cut-off function is enabled only if the "Use temperature cut-off" option is set to "Yes" in the black box viewer.
- If the product stops operation due to high temperature, recording stops and the product turns off.
- The cut-off temperature is based on the temperature outside the product (inside the vehicle) and is $76 \pm 5^\circ\text{C}$.
- The temperature detected by the internal temperature sensor is 110°C . (Room temperature $71 - 75^\circ\text{C}$)
- If the temperature cut-off function is activated, recording and motion detection stop, and the front/rear LEDs

13 Sensor Operation

► G Sensor Operation

- Based on events while driving (1: most sensitive, 5: least)

Viewer	OFF	5	4	3	2	1
Gravity	4.0	1.1	0.9	0.7	0.5	0.3

- Based on events when parked (1: most sensitive, 5: least)

Viewer	OFF	5	4	3	2	1
Gravity	12.0	0.35	0.28	0.22	0.17	0.13

► Motion Event Activation

- You can set the sensitivity of a motion event activation.
- If you set the sensitivity too high, a motion event is activated by very small changes, creating too many motion events.

Stage	0	1	2	3	4	5
Sensitivity	OFF	Very Sensitive	Sensitive	Normal	Insensitive	Very Insensitive

14 Using Multi-Key

► Microphone On/Off

- If you press and hold the multi-key button for 3 seconds, the product rings once. If you release the button when it rings, the microphone turns on with a message "The microphone is turned on". If you repeat the above procedure, the microphone turns off with a message "The microphone is turned off".

► WLAN Function On/Off

- WLAN is always off when the product boots. You can use the multi-key to set it to "On".
- To turn it on manually, press and hold the multi-key button for 6 seconds until the product rings twice. If you release the button when it rings twice, WLAN is turned on with a message "Wi-Fi is turned on". If you repeat the above procedure, WLAN turns off with a message "Wi-Fi is turned off".
- If the outside temperature stays above 55°C for 30 seconds or more, WLAN automatically turns off to protect the WLAN module. WLAN stays turned off even if the outside temperature falls below 55°C .

► Resetting the Product

- Press and hold the multi-key button for 9 seconds until the product rings three times. If you release the button when it rings three times, the product repeats ringing three times for 20 seconds. If you press the multi-key button once again within 20 seconds, the product is reset with a message "Turning off". If you do not press the button again within 20 seconds, the product rings once differently and the reset is cancelled.

► Changing the Language

- If you press and hold the multi-key button for 9 seconds or more, you can hear a voice message changing according to different languages. Release the button when you hear the language you want. Then, the language changes to the one you want.
- The language switches in the order of English > French > Japanese > Chinese > Korean.

15 SD Card



- To insert or remove a SD card to and from the product, you need to turn off the product first.

▶ Automatic Formatting

- Update is performed only when you insert a SD card with the update firmware and restart the product by turning it off/on.
- When booting, if the SD card has an unsupported file system, a voice message is heard asking whether to format the card. If you want to format the card, press the multi-key button once.
- Even if the SD card contains the setup.cfg file, if the card is not formatted in the black box (if it is formatted in the PC), the black box asks whether to format the card.

▶ Manual Formatting

- To manually format the SD card, turn on the product while pressing and holding the multi-key button. Press and hold the button until booting is completed.
- When you hear a voice message asking whether to format the card, release the multi-key button. Then press the button once again to format the card. To exit the format mode without formatting the card, turn off the power switch.

16 Time Settings



▶ Setting the Time Zone (GPS connected)

- You can change the time zone in the Time Zone option under System Settings of your smartphone app. The changed time zone is a time zone relative to GMT/UTC and is applied when the GPS is connected.

▶ Setting the Current Time (GPS not connected)

- If you connect the product to your smartphone, the smartphone time is applied as the time of the black box.
- In the Viewer, change the time under the Default Settings menu and change "Apply Time Settings" to "Yes". Insert the SD card with the saved settings to the black box and boot it to set the time of the black box. When you set the time using the Viewer, you must consider the time needed to insert the SD card and boot the black box.

▶ PC Viewer System Requirements

- ① Windows PC Viewer
 - OS : Windows 7 (32/64 bit) or higher
 - CPU : Intel core i3 or higher
 - RAM : 2 GB or higher
 - Display : 1920x1080 or higher
- ② MAC PC Viewer
 - OSX : 10.11.x (OS X El Capitan) or higher

▶ Operating Conditions and Specifications of Smartphone App

- ① **Android phone: Android 4.4 or higher recommended**
 - Galaxy S3 or later or an equivalent model supported
 - LG Optimus G or later or an equivalent model supported
- ② **iPhone: OS 10.0.2 or higher recommended**
 - iPhone 5 or higher supported

- 1) If you use the live view function with an Wi-Fi app, the bitrate decreases to 4 Mbps.
- 2) If you exit the live view, the bitrate returns to the original setting 30 seconds later.
- 3) When the bitrate is changed, recording stops temporarily and restarts with a ringing sound.

- * wifi bitrate : Front 4M / Rear 2M
 * Ultra quality bitrate : Front 11M / Rear 6M

- * Recording definition :
 - Front : Ultra-high definition (11M)/high definition (9M)/standard definition (7M)
 - Rear : Ultra-high definition (6M)/high definition (5M)/standard definition (4M)

Mode	Action	Remarks
Recording mode	Entering the live view	Wi-Fi bitrate applied with a ringing sound
	Switching live view channels	Wi-Fi bitrate maintained
	live view exit	After 30 seconds, bitrate switches to the standard bitrate with a ringing sound.
	Re-entering the live view within 30 seconds	Wi-Fi bitrate maintained
	Entering the parking mode in the live view	Live view ends without switching to the parking mode. Bitrate switches to the standard bitrate 30 seconds later. After additional 10 seconds, the product switches to the parking mode.
	Entering the parking mode 30 seconds after ending the live view	Live view ends without switching to the parking mode. Bitrate switches to the standard bitrate 30 seconds later. After additional 10 seconds, the product switches to the parking mode.
	Entering the parking mode 30 seconds or more after ending the live view	Bitrate switches to the standard bitrate. 10 seconds later, the product switches to the parking mode.
Parking mode	Entering the live view	The product re-enters the parking mode after applying the Wi-Fi bitrate. The product rings once and produces a voice message related to parking recording.
	live view exit	After 30 seconds, the product switches to the standard bitrate and re-enters the parking mode. The product rings once and produces a voice message related to parking recording.

19 Smartphone APP Download



► Before use

■ LG Innotek Smart Manager Application

- Application is available for both Android and iOS.
- Search "LG Innotek" in Google Play Store or Apple iOS App Store.



- Real time video and playback can be delayed depending on the type of Smartphone.
- Do not use the application during driving. It may cause accident.
(Please use it always during parking or stop.)
- Please check wireless signal or the setting if the application can't be connected to the product for the first connection.
- When [Internet Service Check] menu is "On" on wireless setting, try again after changing to "Off".
- Try again after all setting on wireless "Signal Sensitivity Setting"
- Wireless disconnection can occur depending on a receiving sensitivity and interference
- Stable wireless connection can be used in the vehicle.
- During wireless connection, FPS can be different depending on the type of Smartphone.
Auto recovery will be operated when wireless is disconnected.

Android phone : LG Innotek recommends above Android version 4.4

Ex) Samsung Galaxy S3/LG Optimus G or equivalent specification

Apple : LG Innotek recommends above iOS version 10.0.2 (iPhone 5)

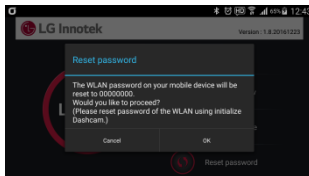
► Smartphone Wireless Setting (iOS)



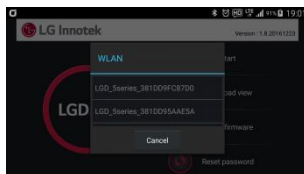
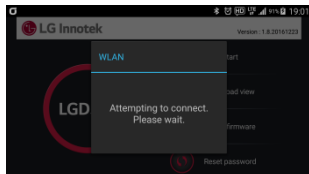
1. Turn on wireless on the Smartphone configuration menu.
2. Select 'LGD 5series' network on the wireless list.
3. Press 'Connect' after enter the password [00000000]

20 Using the Smartphone App

► Home Screen

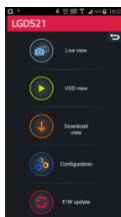
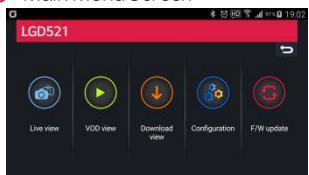


- 1) **Version:** Displays the version of the app.
- 2) **Reset the password:** Resets the WLAN password saved in your phone (not the black box password) to 00000000. (This function is supported only in an Android phone and not in an iPhone.)
 - ※ When the black box is reset in the factory, the black box WLAN password is set to 00000000.
 - ※ Changing the password using the smartphone app will change both the smartphone and black box passwords. If the passwords saved in your smartphone and black box do not match, you need to reset the black box to the factory default and reset the password in the smartphone for synchronization.
 - ※ Since iPhone does not save the black box password, it does not have the "Reset the password" button.
- 3) **START:** Connects the black box to WLAN.
 - ※ If the connection is carried out successfully, the black box rings once and sets the system time of your phone to the black box time, and the screen changes to the menu screen.
 - ※ Since an iPhone starts the app after connecting to WLAN manually, iPhone does not display the connection screen and the list of connected access points (AP) and goes to the main menu screen directly.



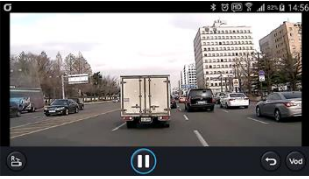
- 1) Connect instantly if a recently connected black box AP is displayed.
- 2) If a recently connected black box is not found and if there are two or more black boxes available for connection, the list of black boxes appears so that you can choose one.
- 3) If the connection screen does not move to the next step, connect to WLAN directly from the WLAN settings of your phone.
 - ※ If the Smart Network Switching function is selected, the connection may be lost repeatedly. So, it is recommended to deselect the function. (The menu for setting this function varies depending on the mobile phone manufacturer.)

► Main Menu Screen



Select a menu to go to the relevant screen.

► Live View

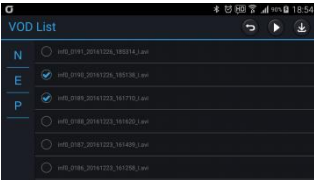


※ Touch "Live View" to start live view with a ringing sound in the black box. The screen definition of the recording saved in the black box switches to 4 Mbytes for front and 2 Mbytes for rear.

※ 30 seconds after the live view ends, the screen definition switches back to the standard definition with a ringing sound. This applies to both parking and normal modes.

- 1) Touch the screen to display the control menu at the bottom.
- 2) R : Switch to the rear view (F : Switch to the front view).
- 3) VOD : Move to the VOD list.

► VOD View

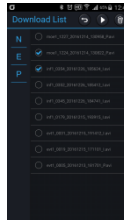
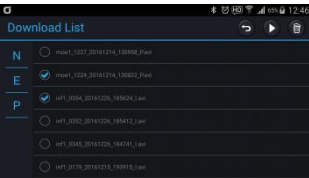


- 1) To play a stored video, select a video and press the Play button.
- 2) Select a channel to play (front/rear) to start playing.
- 3) Touch the VOD Play screen to display the control menu at the bottom.
- 4) When playing a VOD video, you cannot adjust the seek bar using the control menu.

The total time will be displayed as 5 minutes if the video is currently being recorded or ended abnormally.

- 5) Press the Download button to download the selected video to your smartphone.

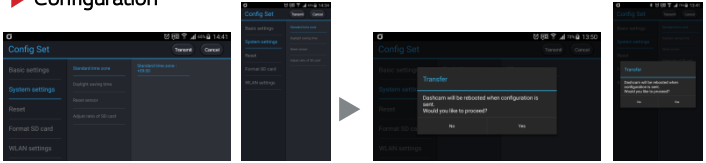
► Download View



- 1) It displays videos downloaded to your smartphone. You can play the video in the same way as VOD play.
- 2) When playing a downloaded video, you can adjust the seek bar using the control menu.

The total time will be displayed based on the actual video duration even for abnormally recorded videos.

► Configuration



1) You can fetch the values set in the black box and change the basic settings or system settings.

You need to press the Transmit button to apply the settings to the black box.

- 2) **Transmit:** Press the Transmit button at the top after changing values to transmit the changed values to the black box and reboot the black box.
Rebooting turns off WLAN in the black box, so you need to turn it on to reconnect.
- 3) **Reset:** Resets the changed values to the default settings.
Reset the changed values to the default settings and transmit them to apply them to the black box. To fetch the settings from the black box, go back to the main menu and re-enter the Settings screen to read the black box settings.
- 4) **Format SD Card:** Formats the SD card in the black box and restarts normal recording.
After formatting, the connection between the app and the black box is lost and the app switches to the home screen. After formatting, the black box restarts recording without rebooting.
- 5) **WLAN Settings**
 - (1) You can set or reset the password to connect to the black box via WLAN.
It changes both passwords saved in the black box and the smartphone.
 - (2) The password needs to be composed of 8 characters, combining English alphabets (case sensitive) and numbers.
(e.g. 12345678, qwer1234)
 - (3) After the setting is completed, the black box reboots and the WLAN app switches to the home screen.
 - (4) After the black box reboots, you need to turn on WLAN in the black box again to reconnect.
 - (5) The changed password is saved in the smartphone, and you can reconnect to the black box without re-entering the password.
 - (6) You can reset the black box password without using the WLAN app by resetting the black box to the factory default. In this case, you need to reset the smartphone password in the home screen of your WLAN app in order to synchronize with the black box.

► F/W Update



■ Performing Update Using the App

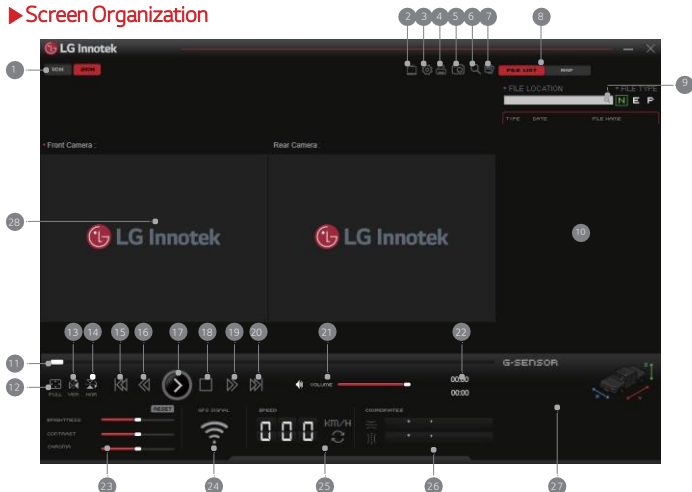
- 1) Download the latest firmware from the server.
<http://www.lginnotek.com> > Customer Support > Black Box > Firmware Download
- 2) Copy the downloaded firmware file to the /LGInnotek/firmware/ folder in your smartphone.
(In the case of an iPhone, copy it to the Documents/mmc/ folder in the app.)
- 3) Start the smartphone app to connect to the black box.
- 4) The firmware copied to your smartphone is displayed under the New F/W Version menu.
- 5) Press the upload button to upload the latest firmware to the black box.
- 6) After uploading the firmware, the WLAN app switches to the home screen, and the black box reboots to start the update automatically.
- 7) The black box reboots after the update is complete.
- 8) After the black box reboots, you need to turn on WLAN again in the black box to reconnect.

■ Performing Update Using the PC

- 1) To update using a SD card, save the firmware for update in the SD card.
- 2) Then turn off and on the black box with the SD card inserted to start the update.

21 Using the PC Viewer

► Screen Organization



Item	Description	Item	Description
①	Front channel/Front&rear channels	⑮	Play the previous file
②	Viewer settings	⑯	Move 5 seconds backward
③	Black box settings	⑰	Play or pause
④	Print the video	⑱	Stop
⑤	Capture the video	⑲	Move 5 seconds forward
⑥	Zoom	⑳	Play the next file
⑦	Separate the files	㉑	Adjust voice volume
⑧	Switch between the video list and the map screen	㉒	Total file duration/play time
⑨	Find file location	㉓	Brightness/Saturation
⑩	Screen for switching between the video list and the map screen	㉔	GPS signal strength
⑪	Play bar	㉕	Driving speed
⑫	Switch to full screen	㉖	Latitude/Longitude
⑬	Flip horizontally	㉗	G sensor information
⑭	Flip vertically	㉘	Play screen

<Windows PC Viewer>

- LG Innotek recommends above

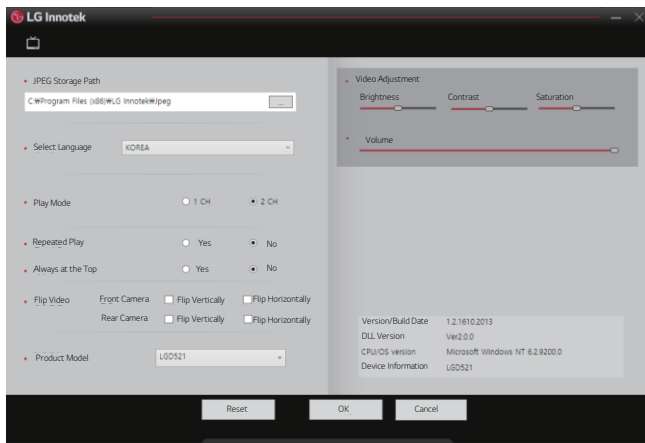
Windows7(32/64bit)/Intel core i3/RAM 2GB/Display 1920x1080

< MAC PC Viewer >

- LG Innotek recommends above OSX : 10.11.x (OS X El Capitan)

21 Using the PC Viewer

► Viewer Settings



Item	Description
JPEG Storage Path	Set the storage path of captured screen image files.
Select Language	Select user language.
Play Mode	Set the number of channels.
Repeated Play	Set whether to play the video repeatedly.
Always at the Top	Set whether to display the viewer window always at the top.
Flip Video	Set the vertical/horizontal flip of a video.
Product Model	Select the product model.
Video Adjustment	Show the brightness/contrast/saturation of the Viewer play screen.
Volume	Show the video volume of the Viewer play screen.

21 Using the PC Viewer

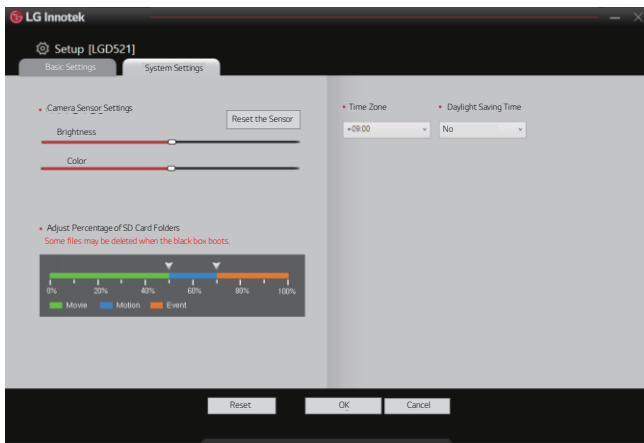
► Settings 1



Item	Description
Recording Mode	Set the recording mode.
Front Video Definition	Set the definition of the front recording video.
Rear Video Definition	Set the definition of the rear recording video.
Motion Detection Sensitivity	Set the motion detection sensitivity in the parking mode.
Driving Mode G-Sensor	Set the G-Sensor event sensitivity in the driving mode.
Parking Mode G-Sensor	Set the G-Sensor event sensitivity in the parking mode.
Voice Output Volume	Set the guide voice volume.
Voice Recording Volume	Set the voice recording volume.
OSD Output	Set the OSD output for video.
Speed Unit	Set the speed unit.
LED Output	Set the front security LED lighting.
Cut-off Voltage	Set the cut-off voltage when using the constant power.
Select Recording Channel	Set the recording channels.
Apply Time Settings	Apply the time changed in the Time Settings option. (You must select Yes to apply the changed time.)
Time Settings	Set the time of the recorded file.
Language Settings	Set the guide voice language.

21 Using the PC Viewer

► Settings 2



Item	Description
Camera Sensor Settings	Set the brightness, contrast, and saturation. Press the Reset button to reset the sensor to the default settings.
Adjust Percentage of SD Card Folders	Set the storage percentage for each recording file type.
Time Zone	If GPS is used, it automatically synchronizes with the time zone for the region.
Daylight Saving Time	Set whether to apply the daylight saving time.

22 Firmware Update



■ Firmware Update

1. Power off dshcam and separate SD card from Dashcam.
2. Insert SD card to PC and copy firmware file to SD card.
3. Insert SD Card Dashcam and Power on.
4. Dashcam will update firmware file automatically and LED indicator will be blinked while updating.
5. Once firmware update completed, Dashcam will be rebooted automatically. (Downloaded firmware also deleted automatically)

23 Format SD card

■ How to format SD Card

1. Keep press button, and power on Dashcam.
 2. You'll listen 'Format SD Card' message and SD card will be formatted.
 3. When SD card format completed, Dashcam will be turned normal recording mode.
- ※ In case of sudden power off, SD card format canceled automatically.

24 Warranty and Customer Service



Warranty and Customer Service Information

Notice

- ① All images and pictures in this Quick Manual are provided to help the user's understanding. They may be different from the actual product and be changed without prior notice.
- ② The specifications and functions of this product are subject to change without notice to improve its performance. All contents of this Quick Manual are subject to change without prior notice.
- ③ All data saved on the MicroSD card may be deleted for repair service.
Please make sure that you back up important data before you request a service. LG Innotek and its service agents take no responsibility for any data loss or problems resulting from such loss.
- ④ LG Innotek does not guarantee the accuracy of the contents in this Quick Manual as there may be technical errors and/or omissions.
- ⑤ LG Innotek shall not be responsible for any problems and/or damages that may occur from the use of Unauthorized parts and accessories.
- ⑥ The device and the recorded videos are intended for personal use and the recorded videos should be used for reference only.

서비스안내

- ▶ You can download the User Manual from <http://www.lginnotek.com> (Support - Product - Dashcam)
 - ▶ If any defect is found within the warranty period, the product will be repaired without charge. However, such free service will not apply and the product will be repaired with charges for parts or labor in the following cases
1. The warranty period of one year has expired.
 2. The warranty period has not expired but any of the following cases applies:
 - 1) The failure results from any disassembly, repair or modification made by an unauthorized service provider, a user, or any third party.
 - 2) The failure results from the use of the product in conjunction with components not provided by LG Innotek.
 - 3) The failure results from the misuse of components provided by LG Innotek.
 - 4) The damage results from an external shock.
 - 5) The corrosion results from water damage or pollution.
 - 6) The damage results from the user's negligence after installation, including moving, dropping, shocking, or forcefully operating the product.
 - 7) The damage results from the fall of the mount during the drive.
 - 8) The failure results from natural disasters, including lightning, earthquake, and flood.
 - 9) The failure results from abnormal use, storage, and handling of the product.
 - 10) The failure results from the error of power source or connecting devices.
 - 11) The failure results from the user's mistake or negligence.
 - 12) The product number is so seriously damaged that it is impossible to identify.
 3. After the warranty period expires, the product or its parts will be repaired or replaced with a fee within the parts replenishment period of the product specified by LG Innotek (one year after the warranty period).

25 Product Warranty



The warranty period of this product is 1 year from the original date of purchase.

- Warranty period : One year from the purchase date of the product.
- In the event of defects within 1 month from the date of purchase : Free repair or replacement.
- Exception : For Micro SD card, it is 3 months from the date of purchase, see the table below.
- Paid service period : For 1 year after the expiration of the warranty period (see the table below)
- This product records and saves videos of vehicle accidents, but it is not guaranteed to record all accidents. Accidents with light impact that is not enough to activate the impact detection sensor may not be recorded.
- In accordance with Personal Information Security Law & related legislation, LG Innotek Co., Ltd. will not be held responsible for any problem due to illegal use of this product.
- The recorded video produced by this product constitutes the secondary data that may help to determine the circumstances of an accident. LG Innotek Co., Ltd. Will not be held responsible for any loss or damage caused by any accident.
- This product does not guarantee video recording of all accidents and LG Innotek shall not be liable or responsible, directly or indirectly, for any loss or damages whatsoever caused by accidents. LG Innotek shall not provide any support service for all the consequences of accidents.

	Type	Compensation	
		Within warranty period	Within paid service period
A significant repair due to performance or functional defects that occur during the normal use of the product	Defects within 10 days from the date of purchase	Free replacement	N/A
	Defects within 1 month from the date of purchase	Free replacement or free repairs	N/A
	Repairable defects	Repairable defects Free repairs	Paid repair
	Irreparable defects	Free replacement	Paid replacement
	Defects found 3 times in the same part	Free replacement	Paid repair/replacement
	Defects found 5 times in different parts.	Free replacement	Paid repair/replacement
	The product sent in for repair was lost by the repair service center	Free replacement	Free replacement
Damage caused by mishandling while the seller delivers the product to the consumer		Contact Seller	N/A
Damage caused from mishandling while the seller installs the product		Contact Seller	N/A

LG Innotek

LGD521