

ULTIMATE SMART CAR DVR

BLACKSYS CL-100B

USER MANUAL

2CH Full HD Car DVR with brilliant image

Simultaneous recording of front view with Full HD resolution (1920x1080, 25fps) and rear view with HD resolution (1280x720, 25fps) provides super high quality videos.



Notice

This product helps you to use the recorded video as a reference in case of car accident. The recorded video by this product carries no legal binding force. CammSys will not be responsible for any legal conflict and damage caused by recorded or non-recorded video.

- For safety, do not operate this product while driving such action may result in injury or accident.
- An accident at very low speed or impact may not trigger emergency recording and could be recorded as a normal file.
- Recording may not be executed in case the product is defect caused by car accident or other reason.
- Recording can be distorted under the condition where brightness suddenly changes like passing through a tunnel, direct sunlight reflection during the day time or where light is not available at night time.
- All right to hardware, software and relevant data are reserved by CammSys Corp. and protected under copyright law. In case of illegal copy and process, not only civil compensation but also criminal punishment based on protection of intellectual property rights can be engaged.
- Do not use the product for other purpose rather than Car DVR.
- In case of recording other's voice without permission, you will be liable for legal responsibility.
(In case that you save other person's voice without any permission, be cautious that you may have legal liability)
- CammSys will not be held responsible for any damage caused by negligence, careless and improper management of user.
- Cammsys do not ensure that record all the accidents in case of not operating 3D G-Sensor with subtle impact.
- Cammsys will not be held responsible for any loss caused by malfunctions or loss of recorded image from external influences or accidents.

Table of contents

02 Notice

04 Caution

- 04 ... Installation and Maintenance
- 06 ... SD Card Use
- 06 ... Use of Power
- 07 ... OBD Management

08 Main features

13 Components

- 13 ... Standard Components
- 14 ... Front
- 14 ... Rear
- 15 ... Upper Side
- 15 ... Right Side
- 16 ... Components of OBD Device
- 17 ... OBD product specification

18 Installation Method

- 18 ... Front Camera Installation

19 ... Rear Camera Installation

21 ... OBD Terminal Installation

24 Operating device & instructions

- 24 ... Details on Video Record
- 25 ... LED indicator and Voice guide

27 LCD GUI

- 27... LCD preview screen instruction
- 28... LCD main menu
- 30... Video recording
- 31... Video Playing
- 33... Firmware Update
- 34... OBD main
- 35... Setup and engine oil information screen
- 36... Screen for Malfunction Diagnosis & Trip Report
- 37... OBD Information
- 38... Configuration main menu
- 39... Time & System Setup
- 40... Display
- 41... Sound

42... Screen saver

43... Initialization

44... SD card format

45 PC Viewer instructions

- 45 ... Software installation & uninstallation
- 46 ... PC Viewer Layout
- 47 ... Basic use
- 48 ... Configuration

50 Firmware Update

51 How to format SD card

52 Technical Specification

53 Customer Service

54 Warranty

55 Product Warranty

Caution

Before use the product, check if operation and video recording goes well.

⚙ Installation and Product Management

- Keep the camera lens clean by preventing dust or foreign substance from coming into contact with the lens. Otherwise, this may result in video distortion. So keep the area clear around the installed camera. If another object is placed around, it can be reflected from the window. So do not put another object around the installed product.
- If installation location of the product is changed, it may not record properly even if it worked after initial installation. Therefore, install the product firmly and do not give an excessive shock or force to move the product.
- Continuous removal of the bracket from the windshield may cause weakening of the adhesive strength and new adhesive pads should be used to prevent damage. Please be cautious when install the product.
- Please check the position of SD card before inserting.
- In the case of using the power from the vehicle (DC fused power), please disconnect the power cable if you do not use the product for a long time. (It may cause discharge the battery.)
- Do not switch power off while firmware is upgrading. It may cause malfunctioning.
- Long term use of this product or in case of severe vibration may cause change in angle or location of product. Correct the angle or location of product while stop on a flat location.

Caution

- Do not use chemicals or detergents to clean the product. This can result in a malfunction.
- Never cause excessive shock to or inject a foreign substance into the product.
Causing excessive force or shock or injecting a foreign substance into this product can cause malfunction.
- Avoid high temperature (direct sunlight) or high humidity for normal operation of product. If it has to be parked for a long period in summer, we recommend that park in the shadow or indoor.
- Do not disassemble or repair this product. It can cause malfunction and such action will result in the product being void of all warranty /service provisions.
- Do not use a sharp object on the LCD screen or touch screen. It may cause of screen damage.
- If power is supplied constantly, it may damage the vehicle battery efficiency. So it is recommended that raise the cut-off voltage.
(If it has to be parked for long hours, power cable should be separated.)
- **Electric connection should be made either at cigar jack power or OBD power, but not both at the same time.
When electric connection is made both at cigar jack power and OBD power at the same time, it would damage the OBD module.**
- Be cautious when connecting OBD cable with rear camera terminal to avoid product damage.

Caution

SD Card Use

✓ Be sure to turn OFF the power and the LED is OFF before removing or inserting the SD card. Removing the SD card while product is in use can cause a malfunction.

- Use the authorized SD card which the manufacturer/distributor provided. If unauthorized SD cards are used, it may cause malfunctioning and loss of recorded data.
- Do not disassemble or repair this product. It can cause malfunctioning and will void warranty.
- SD card is an expendable supply. After a period of use, it may not be able to record data correctly. Please change the SD card to a new one. Data can be lost and damaged if data is kept in SD card for a long time.
- If you want to keep the videos, back up the data onto other storage devices such as HDD, CD and USB. Keeping the data in SD card only, may cause data loss and damage.
- Check the recorded data of SD card regularly to make sure that recording is working well
- Recommend to format SD card at least once in 15 days for stable operation.
- As SD card is expendable supply, manufacturer is not responsible for any data loss and damage caused by not using for a long time. Cammsys will not be held responsible for it

Use of Power

- This product is designed to be plugged into a cigar jack power only. In the case of using any other power source from the vehicle, consult with your local vehicle dealer. Please note this method is outside of manufacturer's responsibility under any circumstances and cannot be held liable for damage or injury.
- Do not remove or insert SD card while power is turned on, it can cause serious error of the product.
Make sure to turn OFF the power and LED is OFF before removing or inserting the SD card. Removing the SD card while product is in use can cause damage of video file.

OBD Management

- In case of any vehicle malfunctions when connecting OBD, separate device immediately and call Customer Service Center.
It can be caused by product defect or careless mounting.
- OBD will operate to detect motion in parking mode even if it turns off ignition.
Decrepit car battery can be cause of discharge. So recommend do disconnect power cable or replace to new battery.
- Installation of OBD may cause some confliction messages between auto care services and car diagnosis on Hyundai/Kia car original navigation functions. This is due to the duplication of car diagnosis. Please try to follow the installation manual.
- Please check the model supporting list before install the product.
There are some vehicles that are not supported and some features not supported models.
- Model supporting list and functions are updating consecutively, so please check through our website or Customer Service Center.
- Do not remodel OBD or amputate cable. It can bring vehicle damage and the user has responsibility for any loss.
- Installing OBD may differ from the type of vehicle, so recommend to install at professional vehicle shop.
Installation at discretion may cause the damage.
- Average fuel efficiency can vary with actual fuel expenses, and our product does not assure this. Use only for reference.
- Eco-Driving information may different depending on the vehicle and individual.
- Driving distance and speed information may differ from dashboard due to the vehicle manufacturer self-calibration.
- Diagnostics of vehicle diagnose errors of Engine sensor (ECU) which is controlled electronically.
Does not diagnose mechanical failure (puncture of tire, expendables, external damage)
- In terms of vehicle maintenance, its point of view can vary, please use it for reference only.

Main features



FULL HD(1920x1080)

Full HD resolution for high quality video

F1.8 Lens with Sony Exmor sensor provides brighter and clear high quality Full HD images.



REAR CAMERA
HD(1280x720)

High quality HD rear camera recording

720P HD resolution with 25fps



OBD SYSTEM

OBD SYSTEM (Optional)

It is possible to check the information about the accident situation, malfunction diagnosis, eco-driving, automotive service information in real time. So it is possible to make an accurate decision in regarding of accidents and support the maintenance of a vehicle.



MULTI VIEW

PIP Multi Viewer Function

It is possible to divide a screen as the front screen and the rear screen upon recording and they could be watched concurrently. Also, it is possible to move the screen.



4 INCH LCD

4.0 inch wide viewing angle LCD

With the wide screen of 4.0 inch Full Touch High Definition LCD, it is possible to set the menu and check images.

Main features



PARKING

Parking Mode Recording

Parking mode activates automatically when vehicle stops for a certain amount of time if DC fuse power cable is connected and any damage of vehicle can be recorded.



SUPER CAPACITY

Super Capacity (Backup Battery)

Built-in super capacity secures safe storage of recorded data even when power supply is disconnected caused by unexpected accident or impact.



2CH CAMERA

Front and Rear recording

Front with Full HD, Rear with HD resolution at 25 fps respectively.



SECURITY LED

LED Lighting

Security LED in front indicates that Car DVR is installed in this vehicle and it is always operating while Car DVR is powered on. Rear LED with blue color indicates state of each function such as recording and GPS reception.



VOICE REC

Voice Guide/Recording

Voice guide announces each action and state. Built-in microphone records voice and surround sound which helps situation analysis in case of accident.

Main features



130°

130° Angle of View

130° Diagonal angle lens can record wider angle of view.



BLACKSYS VIEWER

Dedicated PC viewer

BlackSys PC viewer provides not only video playback and but also video analysis.



EMERGENCY REC

Emergency Button Recording

User can record event manually with emergency button during driving, parking and accident. Recording total 30 sec. including 10 sec. before and 20 sec. after from the time of pressing emergency button is performed. The recorded video at the moment is stored in event folder



SDCARD FORMAT

Manual Format

Manual format is available without PC.



IMAGE ZOOM

Zoom function using PC viewer

Zoom-in the important points of video through PC viewer.

Main features



GPS

Location and driving information (Optional GPS)

Optional high-sensitive GPS (SiRF 4) records vehicle speed, route and location information. It is synchronized with Google Map and displays the driving path. It is easy to trace back to the location of the accident using Blacksys PC Viewer.



DC FUSE
POWER CABLE

Video Out (Optional Cable)

If DC fuse power cable is connected, recording is available during parking mode.



CONTINUOUSLY
RECORDING

Normal Recording

All the images in the driving are recorded continuously as 1 minute file.
If memory is full, recording starts overwriting from the oldest file by deleting them in order.



MOTION DETECTION

Motion Detection in Parking Mode

When motion is detected during parking or stopping, recording get started for a certain time and if motion is not detected, recording is put on standby without recording. This mode stores only necessary videos, SD card memory is managed efficiently.



EVENT

3D G-Sensor

3-axis G-Sensor detects impact, brake, acceleration of vehicle and automatically records video images. To avoid overwriting, it stores files in a separated folder.

Main features



LOW VOLTAGE

Real-time check and indication of vehicle voltage / Low voltage protection

Since it is possible to check voltage patterns of a vehicle in real time, a user can set up voltage to be suitable for a situation as well as battery discharge prevention method.



HIGH TEMPERATURE

High Temperature Prevention Function

It is a system of which shuts off the black box automatically if the main unit device reaches the temperature which can be strain to the system and then turns on the black box when temperature decreases to a safe level.

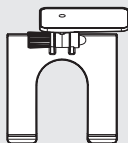
Components

Actual components may be different from pictures and some components can be changed in case.
If package doesn't include below components, please contact a retail shop or company where product was sold.

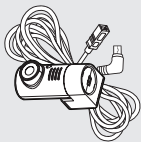
■ Standard Components



Main Unit (Device)



Holder



Rear Camera



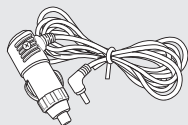
User Manual



Cable Holder

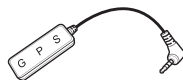


Micro SD Memory

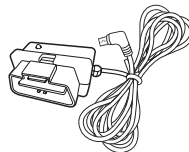


Cigar Jack Cable
(Excluded if OBD is selected)

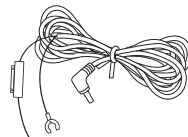
■ Option



External GPS modul

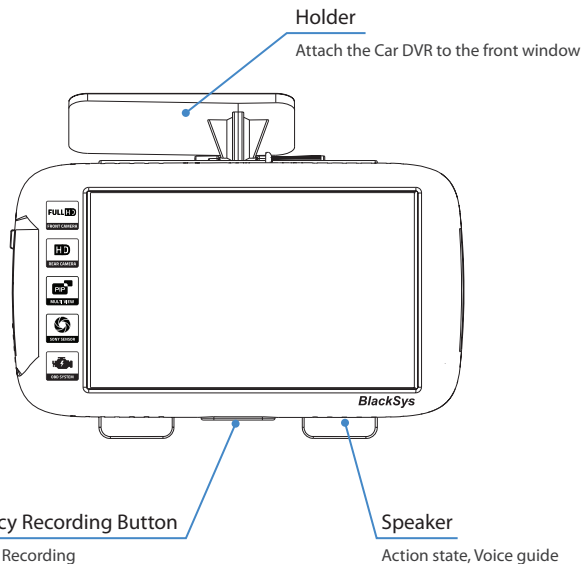
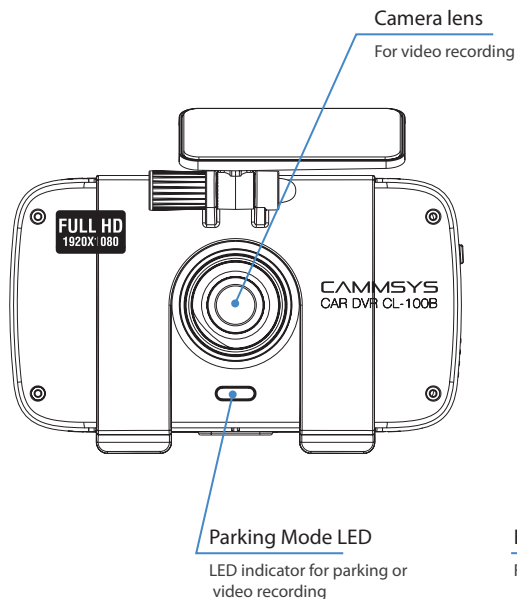


OBD terminal



DC Fuse Power Cable

Components



Components

Power Terminal

For supplying power to the main unit using cigar jack

GPS Port

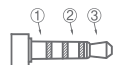
For checking location and speed of vehicle through dedicated PC viewer

Clamping lever

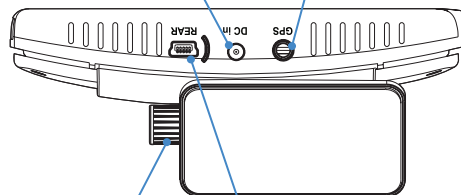
For fixing holder to product and adjustment available on up/down, left/right side

Rear Camera connection port

Mini USB port for HD Rear Camera



- ① GND
- ② GPS Data
- ③ Power



OBD Connection Terminal

Check driving information by connecting OBD cables

Micro SD card slot

External Micro SD card port

REAR LED

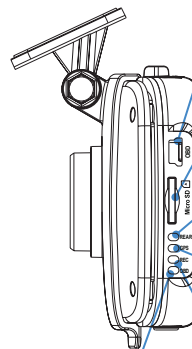
Connecting status indicator

GPS LED

Connecting status indicator

REC LED

Recording status indicator



OBD LED

Connecting status indicator

Components of OBD Device (※OBD Optional Components)



Black Box Connection Jack
(Permanent power included)

Terminal for connecting PCs
(Disable)

Terminal main device



Fixed device

Operation Status LED

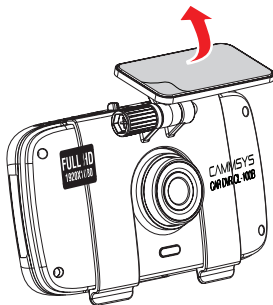
- Black Box Connection Jack : Connection jack which connect with function of OBD terminal (CarNSys) and permanent power.
- Fixed device : A device for fixing a vehicle OBD terminal and an OBD terminal (CarNSys) main device.
- Operation Status LED :
 - Blue lighting : Vehicle identification and normal operation status
 - Red blinking : Defective terminal
 - Blue blinking : Unidentified vehicle
 - Pink blinking : Detection of vehicle malfunction
- Terminal for connecting PCs : Currently disabled

OBD product specification (※OBD Optional Components)

CPU	32 bit Embedded Micro Controller
Memory	4MB Serial Flash
Vehicle I/F	CAN, ISO14230(KWP2000), ISO9141-2
Power Terminal	Permanent Power (Plug & Play), RTC and Built-in Backup Battery
Black-Box I/F	UART (Serial Communication)
PC I/F	USB 2.0
Input Voltage	DC +8V ~ 24V / 50mA Max, Stand by current of 8mA or less
Operation Temperature	-45°C ~ +85°C
Dimension (mm)	48mm(W) x 22mm(L) x 24mm(H)

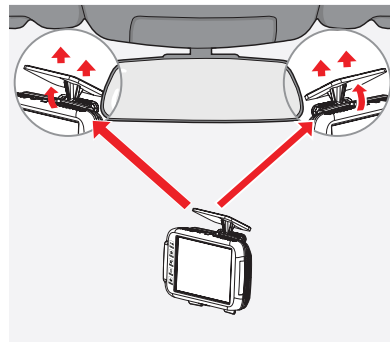
※ For the enhancement of product performance and function, the marked specification is subject to change and/or modification without notice in advance.

Installation Method



1. Attaching double-sided adhesive tape

Wipe up the foreign matters or moisture completely from the location of installation. Remove the release paper on double sided tape and attach it to the cradle part of holder and remove the red adhesive protector.

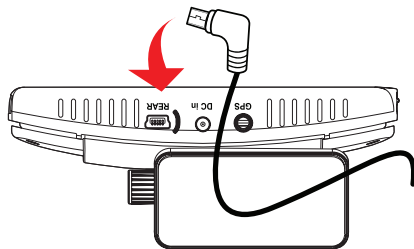


2. Installing unit

Installation is recommended on the left/right of room mirror. Tightly fasten the adhesive of holder to the windshield by pushing it. Adjust the angle of camera to record forward and unit to be vertically installed. Finally, tighten the clamping lever.

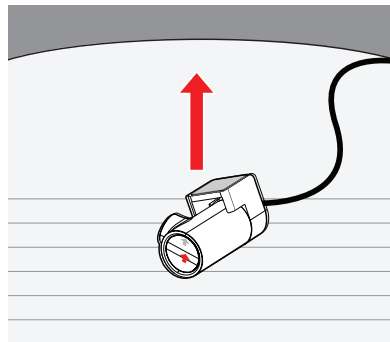
※ If a video from navigation system or dashboard reflect in windshield, it could affect video quality.

Installation Method



1. Rear Camera Installation

Connect rear camera to the rear camera connector .
Clean up the cable of Rear Camera from the location
of installation.

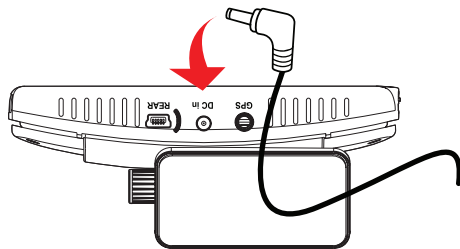


2. Installation

Wipe up the foreign matters or moisture completely from the location
of installation. Remove the red adhesive on double sided tape and
attach it to the rear windshield. Installation is recommended on the
middle of rear windshield and holder should be forwarded to the left
side.

- ※ Tinted windows may cause unclear image of video from rear camera.
Avoid tinted window.
- ※ An arrow on the picture should point the upper side upon installation.

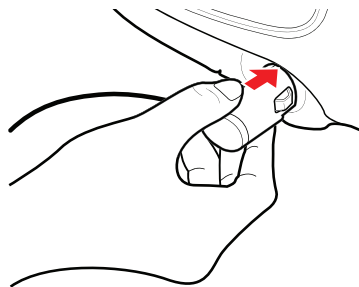
Installation Method



3. Power cable arrangement and connection

By using the cable holders, arrange the Cigar jack cable and connect it to the DC IN port(upper hole). Check the recorded image directly through LCD screen.

- ※ Power on after connecting rear camera cable.
Rear camera is not recognized if you connect power cable after connecting rear camera cable.



4. Power cable connection and check the LED state

After inserting the Cigar jack Power cable into cigar jack, turn on the car ignition. If all LEDs of power status are on, installation is completed.

Installation Method (※OBD Optional Components)

- Caution for the Installation of OBD
 - Turn off the ignition first and then attach this device to a vehicle.
 - The installation location is varied over vehicle model so it should be checked in advance.
- In case of installing it to another vehicle
 - If this device is installed to another vehicle, it should be installed in the same way as the first installation .
 - A vehicle model should be checked first. Then, change the setting upon a vehicle type.
- Installation Location by Vehicle Model



※ OBD terminal of vehicle (It should be attached here.)

Installation Method (※OBD Optional Components)



1. Check the location of an OBD terminal

Check the location of an OBD terminal of a vehicle for connection of a device.



2. Connect a device

Connect a device and push a fastening device so it would not get disconnected



3. Fasten

A device may get disconnected due to long-term vibration so a fastening device must be properly used.

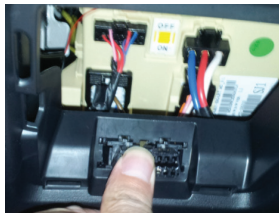


4. Organize cables

After organizing cables, connect them to a black box for usage .

Installation Method (※OBD Optional Components)

※ Installation if the fuse box of a vehicle cannot be closed



1. Separate and Install

If a cover of a fuse box does not close completely, an OBD terminal of a vehicle should be separated and then the device should be installed



2. Separate an OBD terminal

An OBD terminal would be separated if it gets lifted upward while pushing it.



3. Attach the Device

Attach the device to the separated OBD terminal.

After separation, move and then attach

First location of an OBD terminal



4. Fasten

Locate the attached device on a proper place.

Close a cover of a fuse box and then complete the attachment.

After organizing cables, connect them to a black box for usage.

Details on Video Record

Normal, Event, Parking mode recording files are stored and if external SD card is full, overwriting gets started from the oldest file. Overwriting gets started from the oldest files in order, regular data back-up is required to save important data.

■ Normal Recording

- Recording starts when vehicle power is turned on and recorded data are stored in SD card(**"NORMAL" folder**).

■ Parking Mode Recording

- 5 minutes after park or stop the car, if no motion is detected, it converts to Parking Mode Recording automatically. (In case of using DC fuse power cable or product is connected with a vehicle battery).
- If motion is detected consistently and driving is resuming, it converts Normal Recording again.
- When it detects impact during Parking Mode(Motion detection), the video file is stored in (**"PARK" folder**).

■ Last Scene Recording

- Though power supply is disconnected caused by accident or manually, last scene is recorded and stored by using built-in super capacity battery.









■ Event Recording

- If Acceleration sensor(G-Sensor) detects impact, sudden unintended acceleration and quick braking or manually pressing the event button during the car runs, it records 30 sec. of video to the (**"EVENT" folder**)(10 sec. before and 20 sec. after the event).

※ If power is disconnected within 2 min after power is on, recorded file can be damaged.













Operating device and instructions

※ Function can be changed according to product upgrade.

Mode		Button operation	Voice guide	LED state				
				REAR	GPS	REC	OBD	Parking
Power	ON	X	X					
	OFF	X	Car DVR is ending.					
Recording start		X	1CH : recording is starting.					
			2CH : 2CH recording is starting.					
GPS	Connected	X	GPS is connected. (1 time if connected)					
	No connected	X	-					
EVENT Recording	Automatic	X	Sound effect 1					
	Manual	Pressing Emergency button shortly	Sound effect 1					
Parking Mode Recording	REC	X	-					 (Unit of 1 second)
	Motion Detection		-					 (Unit of 2 seconds)
Voice Recording	ON	X	-					
	OFF	X	Voice recording is ending.					
OBD	Connected	X	OBD is connected.					

Operating device and instructions

Operate in occurrence of an error

Mode	Button operation	Voice guide	LED state				
			REAR	GPS	REC	OBD	Parking
SD card is not inserted	X	In case of waiting for the insertion: Please insert a SD card.					
SD card malfunction	X	There is an error on a SD card.					
Camera error	X	A camera is defective.					

LCD Menu - LCD preview screen instruction



Turn On LCD

- ▶ If CL-100B turns on when power is off, the system starts to operate and a video recording function gets activated.
- ▶ The sequence for starting of the CL-100B booting system is as the following.
Booting image → "Video recording start." → Video recording screen starts



Video screen

- ▶ When booting is completed, a real-time video screen would be shown.
- ▶ Upon 2-channel recording, PIP, displaying an image of a rear camera, would be shown on the upper right side. If a LCD screen gets touched after recording, a main menu would appear.
- ※ If there is no operation after starting the recording, a screen saver would be shown after 3 minutes.
LCD would be turned off when the screen saver is set as "Disable".






LCD Menu - LCD preview screen instruction (※OBD Optional Components)



※ Displayed information may vary upon vehicle type.

Preview Screen upon Installation of OBD

► OBD icons are composed as the following.

Icon	Name	Function
	Left turn signal	In accordance with information received from a vehicle, a left directional light would be flickered along with images.
	Accelerator Pedal Information	In accordance with information received from a vehicle, acceleration pedal information would be displayed along with images.
	Brake Pedal Information	In accordance with information received from a vehicle, brake pedal information would be flickered along with images.
	Transmission gear shift info	In accordance with information received from a vehicle, gear transmission P.R.N.D.M information would be displayed along with images.
Indication of Numbers	Speed(km/h)	In accordance with information received from a vehicle, current speed would be displayed.
Indication of Numbers	RPM (revolutions per minute)	In accordance with information received from a vehicle, current RPM would be displayed
	Right directional light	In accordance with information received from a vehicle, a right directional light would be flickered along with images.

LCD Menu - Main Menu



► Indicator

Icon	Fuction
	System information pop-up display
	1 channel (Front), 2 channel (Front +Rear)
	Voice Recording, Stop Voice Recording
	Voice Instruction, Mute the Voice Instruction
	GPS

Main Menu

► Main Menu Screen is composed as the following.

Icon	Name	Function
	Video recording	Move to a screen for video recording.
	Video playing	Move to a list of which recorded videos can be played.
	Upgrade	Pop-up screen inquiring the firmware update status would be displayed.
	OBD	Move to a menu screen of which OBD information could be checked.
	Configuration	Move to a menu for the initialization of time, system, display, sound and screen saver.
	SD card format	Pop-up screen inquiring whether a SD card is formatted or not.

LCD Menu01 : Video recording

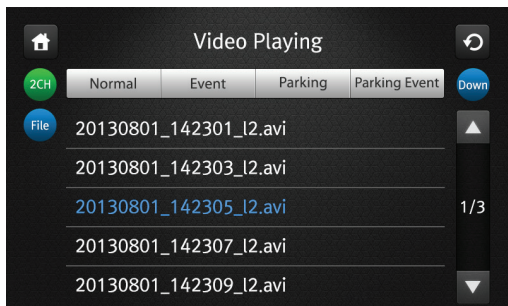


Record Video



- ▶ It is screen for the execution of video recording. On the upper side, a file name which is currently being recorded would be shown in after 3 to 5 seconds and on the upper right side, REC sign would appear. On the lower right side, a current time would be marked.
- ▶ When a LCD screen is touched after starting the recording, a main menu would appear.
- ▶ If there is no operation after starting the recording, a screen saver would be shown after 3 minutes. If a screen saver is not set, the recording screen would be maintained.
- ▶ Upon 2-channel recording, PIP, displaying an image of a rear camera, would be shown on the upper right side.



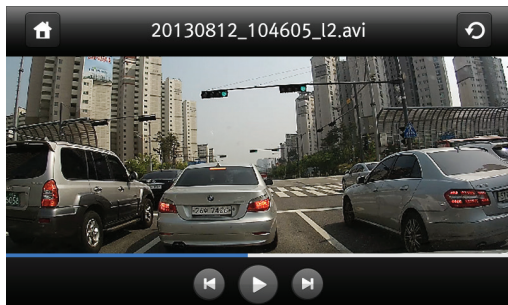
LCD Menu02 : Video Playing



Video Play List

- ▶ The video playing screen shows the list of recorded images saved in SD card.
- ▶ When  the "Home" button is clicked on the video playing screen, it would move to main menu.
- ▶ If  the "Previous" button is clicked on the video playing screen, it would move to video play list.
- ▶ When the "ALL/1CH/2CH" button is clicked, all the recorded files would appear on the list as their sequence, but if the button text is ALL, all the files regardless of 1CH/2CH would be shown on the list. When the button text is 1CH, only recorded files of 1CH would appear, and if the button text is 2CH, only recorded files of 2CH would appear.
- ▶ "File/Date" Button. If the button text is "File", a file name shown on the list is the same as a file name shown on the upper left screen upon recording. If the button text is "Date", a file name shown on the list is changed as date.
- ▶ "Up/Down" buttons would make files to be arranged in an order of date.
- ▶ File List Navigation Button, upon clicking of "Up/Down" button, a file shown on the file list is changed. Upon clicking the button once, **next/previous five files would be shown rather than individual file.**

LCD Menu02 : Video Playing



Player Screen

- ▶ Screen to be shown upon selecting the recorded file name at the video player screen.
- ▶ Upon starting of the playing, the player screen image would be shown and then disappear after 3 seconds. After disappearing of the playing screen image, if a LCD screen is touched, the player screen image would appear again.
- ▶ On the upper side of the player screen, a name of a file which is currently being played would be shown, and a control button would appear on the bottom.
- ▶ Player control buttons are composed of the previous button, the play button (stop) and the next button.

- ▶ Upon the completion of playing of a current recorded file, the player would play the next file automatically.
- ▶ If the previous button/next button is clicked during playing, the playing would be stopped immediately and the previous/next file would be played. If the play button is clicked during playing, the playing would stop and if the playing button is clicked once again, it would resume.
- ▶ When a LCD screen is touched while the playing is paused, the touched area would get either Zoom In/Zoom Out.
- ▶ Upon playing of a 2-channel recorded file, a PIP button would be generated and a video recorded by a rear camera would be shown as PIP on the upper right side. Upon playing of 2 channels, a PIP button would appear on the lower left of a player image, and upon clicking of a PIP button, the front/rear screen would be switched in the following order. "PIP" → "Front" → "Rear "

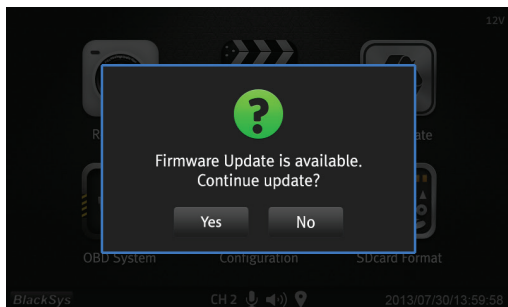
LCD Menu03 : Firmware Upgrade



Firmware Upgrade

- Upgrade file could be easily downloaded from BlackSys website or BlackSys Exclusive Viewer. Downloaded upgrade file should be copied into a SD card and then the card should be inserted to the main body. It can be easily updated through LCD.
- After copying an upgrade file into a SD card and inserting the SD to a main body and clicking the firmware update button, a pop up window of "Upgrade file is being searched" would appear. If there is no upgrade file in SD card, a pop up window of "No file" would appear. If there is a pop up window of no upgrade file found, please check whether there is an upgrade file in a SD card or the upgrade file name is correct.
- If an upgrade file is found, a pop up window of "Firmware Update is available. Continue update??" would appear. If "No" button is clicked, it would go back to main menu. When "Yes" is clicked, it would be upgraded.

※ Upgrade of an OBD terminal, an optional device, should be executed in the aforementioned sequence.



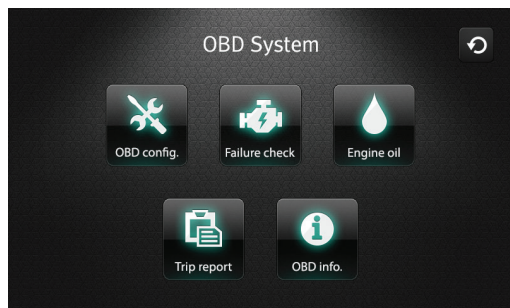
LCD Menu04 : OBD Main






※ It is a screen to be displayed upon installation of an OBD terminal, an optional device.



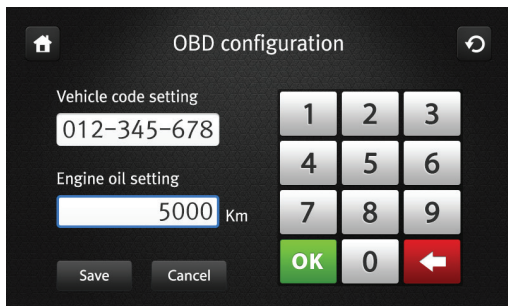
Select an OBD System

- ▶ If an OBD terminal is not installed, an icon would be deactivated.
- ▶ If an OBD terminal is not corrected or there is an error, a pop up window of showing a relevant message would appear.
- ▶ An OBD main menu screen is composed as the following.



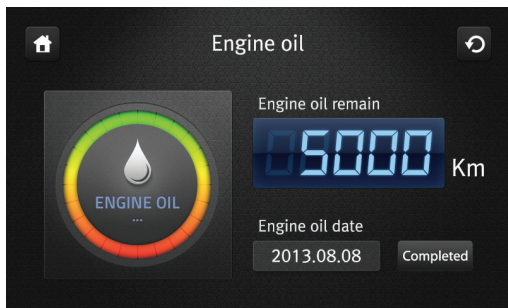
Icon	Name	Function
	OBD configuration	Move to a screen for the setup of a vehicle cord and engine oil exchange distance.
	Failure check	Move to a screen of indicating the vehicle malfunction diagnosis, coolant temperature and battery abnormal voltage.
	Engine oil	Move to a screen of indicating the remaining distance from the engine oil exchange distance.
	Trip report	Move to a screen of displaying the driving information and eco-driving information received from OBD.
	OBD information	Pop-up window showing HW/FW version and current status would appear.

LCD Menu04 : OBD - Configuration and engine oil information screen



Screen for OBD configuration

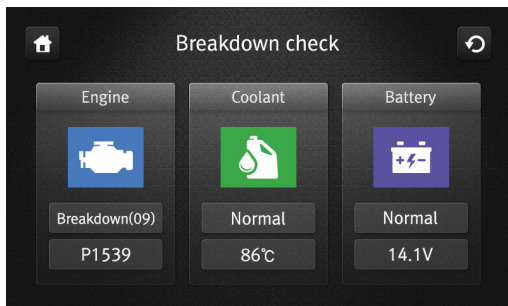
- ▶ For the Setup of a vehicle code, an additional vehicle code table would be provide upon purchase of an OBD product.
Enter a vehicle code corresponding to your vehicle model.
※ Setup of a vehicle code is required once.
- ▶ Upon clicking of a save button after Setup of a vehicle code, the vehicle code would be transmitted to an OBD and an OBD menu would appear.
- ▶ Upon clicking of an "OK" button on the lower left side of a number key pad, a cursor would move to an enter box. When an arrow button on the lower right side is clicked, a character typed into the enter box of which a cursor points would be erased.
- ▶ Setup of engine oil is a function for setup of a distance required for the exchange of engine oil. Click a number on a number key pad.
- ▶ Upon clicking of a save button after entering a number, the number would be saved and an OBD menu would appear.



Screen for Engine oil information

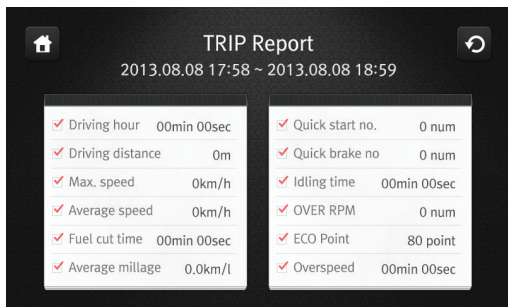
- ▶ Screen displaying the remaining distance from the engine oil exchange distance.
- ▶ Along with the remaining distance, an engine oil exchange date would be displayed.
- ▶ When an "Completed" button is clicked, an engine oil change date would be changed to a date of which the button is clicked and "Engine oil remain." would be reset.
- ▶ Engine oil remaining distance would be updated after driving and turn off the ignition.

LCD Menu04 : OBD - Screen for Malfunction Diagnosis & Trip Report



Screen for Breakdown check

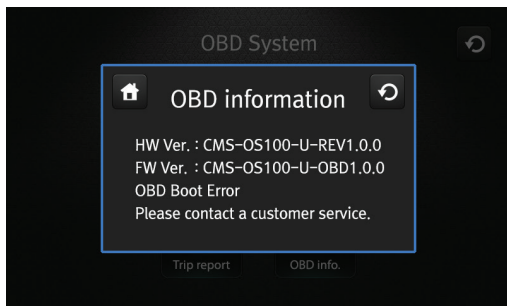
- ▶ Malfunction Diagnosis information from OBD would be displayed.
- ▶ It detects information on vehicle malfunctions related with an engine system, coolant temperature and abnormal battery voltage.
- ▶ If there is more than one information on engine/mission malfunctions, the information would be rotated once per second.
- ▶ Diagnostics of vehicle diagnose errors of Engine sensor (ECU) which is controlled electronically. Does not diagnose mechanical failure (puncture of tire, expendables, external damage)
- ▶ In terms of vehicle maintenance, its point of view can vary, please use it for reference only.



Screen for displaying of a TRIP Report

- ▶ Information on the driving received from OBD would be displayed.
- ▶ It is a screen for displaying of driving information, which would appear when the ignition is off after driving.
- ▶ Types of information to be displayed would include
 - Driving Information : Driving hours, Driving distance, Max. speed, Average speed, Average fuel efficiency
 - Eco Driving Information : Quick start no., Quick brake no., Idling time, OVER RPM, ECO Point, Overspeed
- ▶ Average millage can vary with actual fuel expenses, and our product does not assure this. Use only for reference.
- ▶ Mileage and speed information may differ from dashboard due to Car maker, self-correction, and etc.

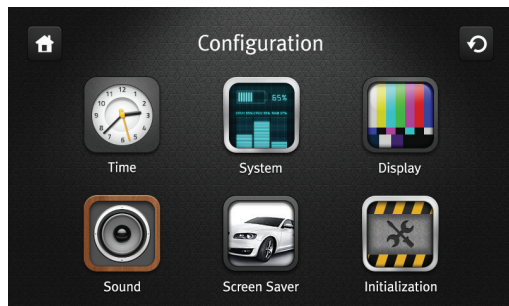
LCD Menu04 : OBD - Information



Screen for OBD information







- It displays versions of hardware and firmware of an OBD terminal.
- It displays the operation status of OBD.
The following three messages would be printed out.
"OBD is being normally operated."
"OBD Boot Error : Please contact a customer service."
"OBD Normal Error : Please upgrade the terminal."

LCD Menu05 : Configuration main menu

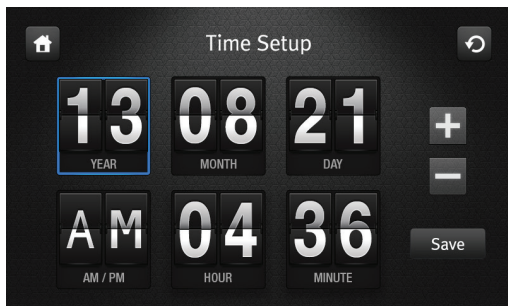


Screen for Configuration

► Configuration Screen is composed as the following.

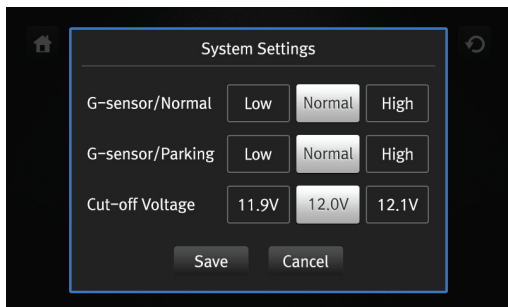
Icon	Name	Function
	Time	Move to a screen for time Setup.
	System	Pop-up window for normal, parking shock and cut-off voltage Setup .
	Display	Move to a screen for camera Setup, LCD brightness, and camera brightness Setup menu.
	Sound	Pop-up window for voice recording and speaker volume Setup would appear.
	Screen Saver	Pop-up window for selecting a screen saver would appear .
	Initialization	Pop-up window which asks to make return to default would appear.

LCD Menu05 : Configuration- Time & System Setup



Screen for Time Setup

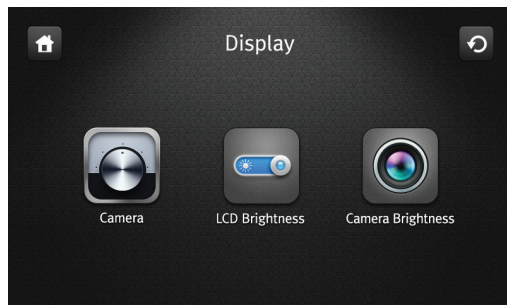
- ▶ It is composed of YEAR / MONTH / DAY / HOUR / MINUTE / PM,AM Screen and Home / Previous, +/-, and Save buttons.
- ▶ After selecting YEAR / MONTH / DAY / HOUR / MINUTE / PM,AM, the number would go up/down if +/- button is selected.
- ▶ When a 'Save' button is clicked after setting up of time, the time would be saved.



Screen for System Settings




- ▶ Normal shock sensitivity and parking shock sensitivity are a menu which would initiate the recording of an event in occurrence of shock on a vehicle.
- ▶ Normal shock sensitivity and parking shock sensitivity are composed of low, normal and high.
- ▶ Cut-off voltage is a function to complete a black box system when battery voltage of a vehicle is lower than the set point to prevent the discharge of a battery.
- ▶ Setpoints for cut-off voltage are divided into 11.9V, 12.0V and 12.1V.

LCD Menu05 : Configuration - Display menu screen

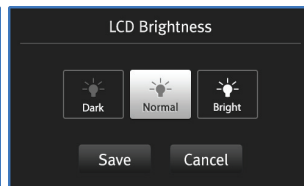
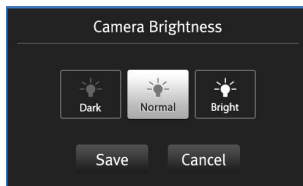
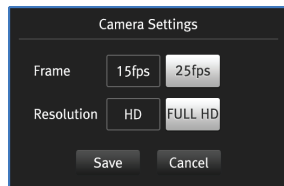


Screen for Display setup

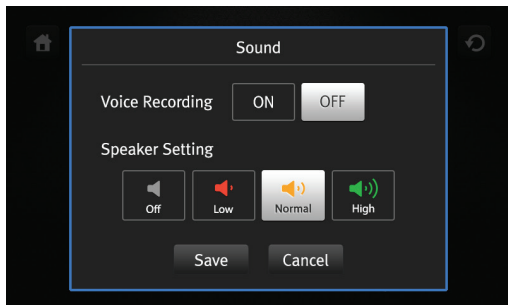
► Displaysetupscreen is composed as the following.

Icon	Name	Function
	Camera	It is a screen for setup of frames and resolution of a camera.
	LCD brightness	It is a screen for setup of LCD brightness.
	Camera brightness	It is a screen for setup of camera brightness.

► Pop-up screens for setup



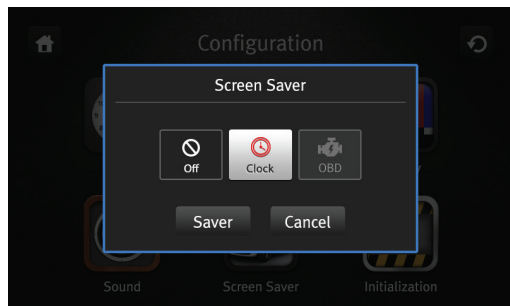
LCD Menu05 : Configuration- Sound



Screen for Sound setup

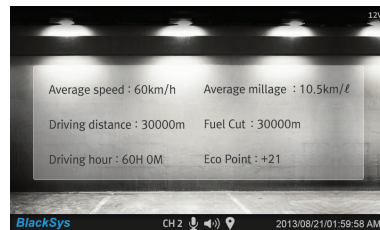
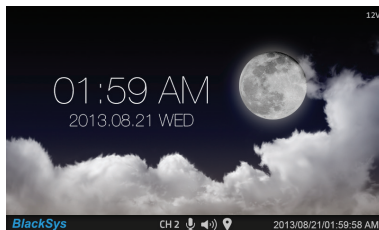
- It is a screen for setup of speaker volume as well as voice recording on/off.
- With a voice recording menu, on/off could be selected and speaker volume could be set to be Off/Low/Normal/High.

LCD Menu05 : Configuration – Screen Saver

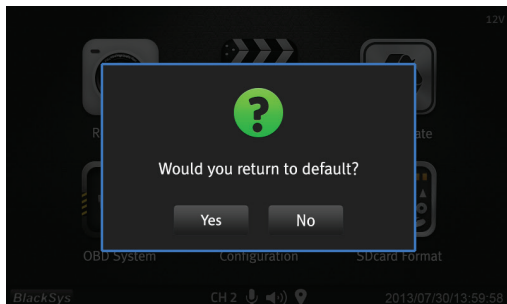


Screen Saver setup

- ▶ As for a setup menu, there are Off/Clock/OBD.
- ▶ If "Off" is selected, LCD would be turned off automatically to lower the vehicle battery consumption.
- ▶ If a Clock is selected, a screen saver image would be changed automatically in corresponding with time .
 - ※ From 6 am to 5:59.59 pm, an image of green grass would be shown.
From 6 pm to 5:59:59 am, an image of moon would be shown.
 - ※ OBD information display screen saver can be selected only when an OBD terminal, an optional device, is purchased



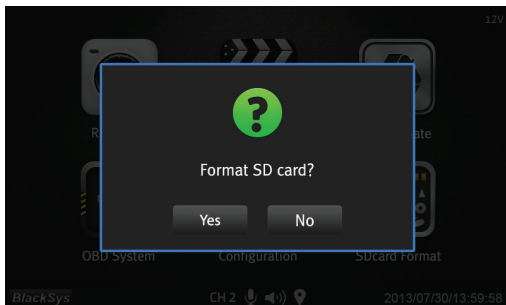
LCD Menu05 : Configuration - Initialization



Screen for Initialization

- ▶ When the initialization button is clicked, a pop-up window of "Would you return to default" would appear and if "No" is selected, a configuration menu screen would appear.
- ▶ If "Yes" is selected, the previous configuration would delete and it would return to default .

LCD Menu06 : SD Card Format



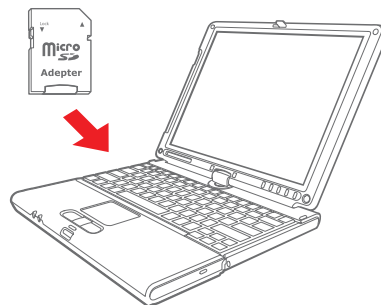
Screen for SD card format setup

- ▶ When a SD card is formatted, it is possible to execute the format of a SD card within a body.
- ▶ When a SD card format button image is clicked on a main menu, it would check whether a SD card is inserted or not. If there is no SD card inserted, a pop-up window of "Please insert a SD card" would appear.
- ▶ If a SD card is inserted, a pop-up window for selecting the formatting of a SD card or not would appear .
- ▶ If "No" is selected, it would go back to a main menu, and if "Yes" is selected, format would start and format progress rate would be displayed.
- ▶ Upon the completion of format, a pop-up window of "Format completion" would appear and it would go back to a main menu.

PC Viewer instructions

PC Viewer Installation

Insert SD card to the PC or download software from www.blacksys.co.kr/en > **Support** > **Download** and execute .
Once installation is completed, click BlackSys Player and execute it.



Uninstallation

1. Control panel > program uninstallation & change
> uninstall BlackSys Player
2. Execute C:\Program Files(x86)\BlackSys\BlackSys Player
Uninstall BlackSys Player
3. Execute Start > All program > BlackSys Player
> Uninstall_BlackSys Player.bat

Recommended System for PC viewer

- OS : Windows XP SP3, Vista(32bit), 7(32/64bit)
- H/W : Pentium 4 2.8GHz over / 1G RAM over
- Web browser : MS Internet Explore 8.0 over
- Direct X ver. : Direct X 9.0(JUNE2010) over
- Other : Windows.NET Framework 3.5 over

PC Viewer instructions

Version information

Update

Viewer Screen

Progress bar

Video play speed control

G-Sensor Data Review

OBD data unfold/fold

RPM

Speed (Km/h)

Average fuel consumption

Normal : Normal video file list

Event : Event video file list

Parking : Parking Mode video file list

Parking Event : Parking Event video file list

Play list

Map view

Turn Signal Indicator

Display an auto transmission selection lever

Display a brake

Display an accelerator

Folder open

Select drive

Video Screen Capture

Print

Configuration

OBD

Screen Minimization

Full Screen / Previous Screen

Close

Normal

Event

Parking

Parking Event

2014-01-13 20:49:55 51,012

2014-01-13 20:50:25 8,850

2014-01-13 20:56:46 7,051

2014-01-13 21:02:39 49,526

2014-01-13 21:21:25 51,587

2014-01-13 21:37:34 52,005

2014-01-14 18:10:52 61,440

2014-01-14 18:11:49 61,440

2014-01-14 18:12:41 61,440

2014-01-14 18:15:05 61,440

2014-01-14 18:16:45 61,440

2014-01-14 18:18:26 61,440

BlackSys

01:00:00

x0.5 x1.0 x2.0

00:00:00

P R N D 2 1

0000

000

00.0

BRAKE

ACCEL

⏮ : Move to Previous File in the List

⏪ : Move to 1sec. Before

⏩ : Moving video and pause

⏭ : Move to 1sec. After

⏮ : Move to Next File in the List

⏭ : Move to Next Frame

🔊 : Volume Control


☀ : Image Brightness Control


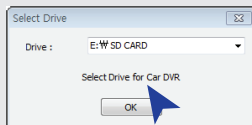
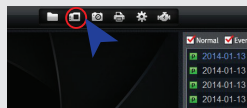
※ If scroll up mouse in front video while it's playing, video size enlarge 0.2times. Max. 14 times is possible and total 2.8 times enlarge screen would be available. (1~15 level)

※ PC viewer enlargement(full screen view) : 1~12 level is available in full screen view.


PC Viewer instructions

Drive open


- [] Select removable storage device of micro SD card and click "OK".

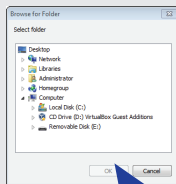
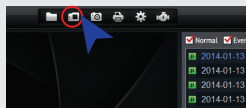


	Normal	Event	Parking	Parking Event
2014-01-13 20:49:55	51,012			
2014-01-13 20:50:25	8,850			
2014-01-13 20:56:46	7,051			
2014-01-13 21:02:39	49,526			
2014-01-13 21:21:25	51,587			
2014-01-13 21:37:34	52,005			
2014-01-14 18:10:52	61,440			
2014-01-14 18:11:49	61,440			
2014-01-14 18:12:41	61,440			
2014-01-14 18:15:05	61,440			
2014-01-14 18:16:45	61,440			
2014-01-14 18:18:26	61,440			

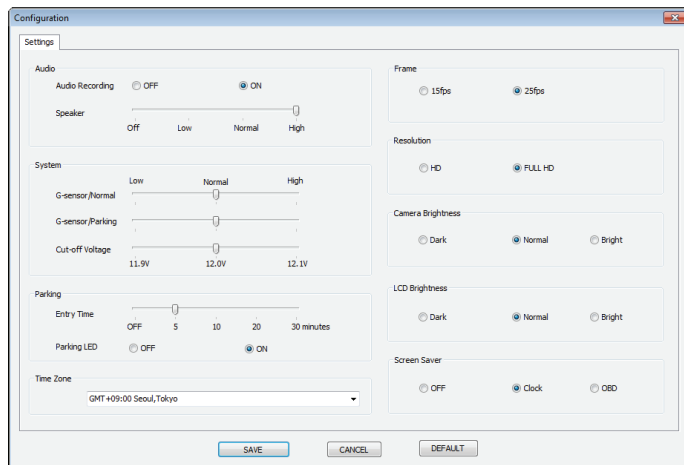
- Video files in the selected drive are displayed in time order.
- Select file wish to open and double click in the file list
[] or click play icon for the video play.

Select Folder

- [] Select folder open icon and select folder wish to open in the folder search window. Click "OK".



PC Viewer instructions



※ Applying Setting : Save the configuration PC Viewer -> Put SD card into CL-100B -> Reboot the device.

Configuration

Voice recording	: OFF / ON
Speaker	: Off / Low / Normal / High
Normal shock sensitivity	: Low-Normal-High
Parking shock intensity	: Low-Normal-High
Cut-off voltage Setup	: 11.9V / 12.0V / 12.1V
Entry time	: OFF / 5min / 10min / 20min / 30min
Parking LED	: OFF / ON
Time zone	: GPS Time zone set up
Frame Setup	: 15 / 25 fps
Resolution Setup	: HD / Full HD
Camera brightness Setup	: Dark / Normal / Bright
LCD brightness Setup	: Dark / Normal / Bright
Screen saver	: OFF / Clock / OBD
Save	: Save Setup file to SD card
Default value	: Return to default

PC Viewer instructions

Trip report

Engine On: 2013.11.27. 10:00:10

Engine Off: 2013.11.27. 10:15:24

Driving hour: 00:15:14

Driving distance: 5.90 Km

Max. speed: 79 Km/h

Average speed: 23 Km/h

Accrued distance: 2,394.69 Km

Accrued fuel volume: 582 mL

Average millage: 10.0 Km/L

No. of quick start: 0

No. of quick braking: 0

Idling time: 00:04:44

OVER RPM: 0

Overspeeding time: 00:00:00

Select folder

Trip report file	Date	Loca...
20131126_174012	13.12.03	WWW...
20131126_183518	13.12.03	WWW...
20131126_202839	13.12.03	WWW...
20131126_212250	13.12.03	WWW...
20131126_220553	13.12.03	WWW...
20131127_101514	13.12.03	WWW...
20131127_134610	13.12.03	WWW...
20131127_145532	13.12.03	WWW...
20131127_160258	13.12.03	WWW...
20131127_170846	13.12.03	WWW...

Unplug Date/Time

Plug Date/Time

Fuel cut mileage: 0.26 Km

ECO point: 9 Point


ECO mileage: 4,640 Point

ECO driving time: 00:00:04

Fuel cut time: 00:00:15

OK

TRIP report

► If an  OBD trip report button on the upper side is clicked, the following screen on the left would appear.

► If you double click a file on a trip report file list on the upper left, a report value would appear.

- Engine On/Off : Driving start time and end time
- Select folder : Select Trip report file folder
- Driving hours : Hours from the start to the end
- Driving distance : Distance from the start to the end
- Max. speed : Maximum speed during the driving hours
- Average speed : Average speed during the driving hours
- Accumulated distance : Accumulated distance of a vehicle
- Accumulated fuel volume : Accumulated fuel amount of a vehicle
- Average millage : Average fuel efficiency of a vehicle
- No. of quick start : No. of quick start during the driving hours
- No. of quick brake : No. of quick brake during the driving hours
- Idling time : Idling hours during the driving hours
- OVER RPM : No. of Over RPM during the driving hours
- Overspeeding time : Over Speeding hours during driving hours
- Unplug, Plug Date/Time : OBD terminal separation/attachment hours
- Fuel cut mileage : Accumulated distance in inertia driving caused by discontinuance of fuel supply
- ECO point : ECO driving score based on report value
- ECO millage: ECO driving accumulated score
- Eco driving time : No. of hours in economic driving
- Fuel cut time : Hours in inertia driving caused by discontinuance of fuel

Firmware Update

Firmware Update

✓ Please follow the below process in case of updating firmware.

- ① Remove SD card from the unit.
 - Turn off the ignition first and remove cigar jack cable from the unit.
- ② Access our webpage(www.blacksys.co.kr > Support > Download) and download the latest update file.
- ③ Connect SD card to PC and paste downloaded latest update file(CF100update.tar) to the root of removable disk.
- ④ Insert SD card which contains latest update file to the unit.
 - Turn on the ignition and connect cigar jack cable to the unit.
- ⑤ Touch the LCD screen and enter a main menu mode, and then click a firmware update button to upgrade.
 - Do not disconnect power cable while update is in process. It can cause malfunctioning.

※ Please check notice before upgrading firmware as firmware upgrade may change some functions of the product.

How to format SD card

Check the virus and format the SD card in a regular basis (twice a month at least) to avoid disadvantage caused by storage error such as non-recording and abnormal recording.

PC format

- ① Insert or connect SD card to PC.
 - ② Click **[Start]** → **[My Computer]**
 - ③ Place mouse pointer on **[Portable USB drive]** SD card and click the right button of mouse. then click the **[Format]**.
 - ④ Once click the **[Start]** button, format is started.
- FAT 32 format is required if SD card recognition and record error happen.
 - Change SD card if PC doesn't recognize SD card or format is not able to be completed.
 - If SD card contains other data, it can cause malfunctioning. Therefore, please remove it.
- ※ As SD card is expendable supply, manufacturer is not responsible for any data loss and damage. Also, manufacturer cannot guarantee the recorded data in SD card.

Technical Specification

※ Technical Specification can be changed without prior notice for product improvement..

Model Name		CL-100B
Camera	Lens (Pixel)	Front : 2M Pixels, Rear: 1M Pixels
	Angle of View	Front : 130° / Rear: 120°
	Sensitivity (Intensity of Illumination)	1.0 LUX
Function	Video Encoding / Voice Encoding	H.264(AVI) / PCM
	Resolution	Front : 1920(H)x1080(V) Full HD, Rear : 1280(H)x720(V) HD
	Normal Recording	NORMAL (70% of memory space, 1min./file, 30 frame/s)
	Recording Options	EVENT (20% of memory space, 30sec./file, 30 frame/s)
		Auto Parking Mode (1min./file, 30frame/s)
	Rec. Method (Video Recording)	In case SD Card is full, it deletes the oldest files (automatically) in order
	Voice Recording	Built-in MIC records voice and surround sound
	Format	Micro SD Card Format
	External GPS	SIRF 4(Optional)
	Shock Sensor	Tri-axial shock detection G-Sensor
	Memory Storage	Memory Storage Micro SD Card (16G ~ 32G)
	Rec. Frame	Max. 25fps
	Low Voltage Protection	Built-in
	High Temperature Protection	Built-in
Display	Embedded LCD (Built-in LCD)	4.0 Inch panorama (wide viewing angle) LCD
	Video Playing	Car DVR LCD and Exclusive PC Viewer Program
	Video Analysis	Video Analysis through PC Viewer software
Temperature	Operation temperature	-20°C ~ 70°C
	Storage temperature	-30°C ~ 80°C
Power	Input Voltage	DC 12V ~ 24V (±0.3V) / CIGAR JACK CABLE
Dimension(mm)		120mm(W) x 168mm(L) x 35mm(H)
Weight		168g

Customer Service

We don't take any responsibility for the data loss during the service. Please back up the data before applying for service.



82-70-4680-2595

CammSys Customer Service

- Address : 3F Daeil B/D, 681-17, Yeoksam-dong, Gangnam-gu, Seoul, 135-081 Korea
- Opening hour: 09:00 ~ 18:00 (Mon. ~ Fri.)
- Closed : Saturday, Sunday, and Public Holiday

If you come to customer service center, service personnel will care for the service timely and properly.
For further information regarding customer service, please refer to www.blacksys.co.kr/en.

Warranty

We provide product repair and replacement services within the warranty period in accordance with the consumer protection regulations(the Korea Fair Trade Commission Directive 2008-3)

🕒 Warranty period

- Product(main unit): 12 months from the purchase date(But, if purchase date is not clear, it can be applying 3 months warranty after manufacturing date)
- Accessory(expendable supply) : 6 months including SD card.(In case of using DC fuse power cable, memory card life can be shorter than general use)
- Service parts holding period: 5 years after stopping sales

	Type of Damage	Compensation standard	
		Within Warranty Period	After Warranty Period
Claim a service for trouble caused in a normal use condition	Claim a service for a main part within 10 days after purchase	Replacement or refund	Not applicable
	Claim a service for a main part within 1 month after purchase	Replacement or Free repair	Not applicable
	Claim a service for faulty unit	Free repair	Repair at cost
	Repair is not available	Replacement or refund	Replacement or refund after depreciation
	Replacement is not available	Refund at cost	Applicable by bylaw
	Claim a service for a main part within 1 month after unit exchange	Refund at cost	Applicable by bylaw
	Same defect over 3 times	Replacement or refund	Not applicable
	Multi defect over 5 times	Replacement or refund	Not applicable
	Lost by service center during repair service	Replacement or refund	Applicable by by law
Claim a service for not holding service parts within service parts holding period	Trouble caused in a normal use condition	Replacement or refund	Not applicable
	Customer's negligence or fault, functional defect	Repair at cost	
Damaged unit from distribution		Replacement	Not applicable
Damaged unit from installation		Replacement	Not applicable
Customer's negligence or fault, Functional defect	Repair is available	Replacement at cost	Applicable by bylaw
	Repair is not available	Repair at cost	Repair at cost

※ Warranty period is 12 months after purchase.

※ We provide product repair and replacement services within the warranty period in accordance with the consumer protection regulations.
(the Korea Fair Trade Commission Directive 2008-3)

Product Warranty

Model Name	CL-100B			
Manufacturer	Cammsys Co.,Ltd			
Serial No.				
Purchase Date				
Warranty Period	12 months from the purchase date (But, if purchase date is not clear, it can be applying 3 months after manufacturing date)			
Customer Information	Name		Tel.	
	Address			
Assembler information	Shop name		Tel.	

※ The warranty for the product is benefited by the details on the warranty card.

※ Warranty period is counted from the purchase date. So get the purchase date.

※ This warranty card is not reproduced.



