ADAS CAM

User Manual ver1.1

PLK Technologies.,Co.Ltd.

Crash-Avoidance ADAS CAM

Thank you for purchasing 『OPTIAN』.

The manual contains the functional explanation and operating method of OPTIAN.

Please read the instructions carefully before attempting to operate.

The manual may be subject to change without any prior notice

『 ADAS 』 or Advanced Driver Assistance System is an advanced safety assist system that can help a driver to realize and avoid potential risks of collisions with the utilization of warning signals

Main Features of OPTIAN!!

➢ **FCW (Forward Collision Warning)**

➢ **LDW (Lane Departure Warning)**

➢ **FCDA (Front Car Departure Alert)**

➢ **DVR (Driving Recorder)**

➢ **Full HD Clear Display**

➢ **Touch LCD Monitor**

➢ **Event/ Motion Detection CCTV Recording in Parking Mode**

➢ **Battery Discharge Prevention**

➢ **GPS Track Recording**

Contents

Safety Caution

Warning!

! ADAS functions are designed to assist the driver, however, it is not a substitute for careful driving and we take no responsibility for any damage caused by careless driving . Drivers should comply with local traffic regulations and should not rely on the ADAS CAM completely but use the system to assist only.

! Do not use modified power-supply cables , use only genuine products supplied by the manufacturer . Modification may cause vehicle damage or physical injury due to explosion or fire.

! Apply only the rated voltage otherwise it may cause vehicle damage or physical injury due to explosion or fire.

! Do not install the product in a location where it interferes with driver's vision.
! Do not configure the product while driving .
! Do not disconnect the power supply cable randomly as it may damage the product. Contact your installer for support .

! It is important to remove the SD card and download any important data as soon as possible after an accident to avoid loss of recorded data

! Do not use force to operate

! Do not press the LCD display with sharp objects as it may damage the LCD surface or touch panel.

! Insert and remove the SD card only when the recording function is turned off

! The Micro SD card is a consumable product. Errors may occur if used for long periods. It is necessary to format data and replace the SD card periodically.

Safety Caution

⚠️ **Warning!**
ADAS functions are designed to assist the driver, however, it is not a substitute for careful driving and we take no responsibility for any damage caused by careless driving . Drivers should comply with local traffic regulations and should not rely on the ADAS CAM completely but use the system to assist only.

! If the Micro SD card is damaged or the product is powered off prematurely, it may result in accidental data loss

! The ADAS functions only work when the speed rete received from GPS signal exceeds the set speed value . The ADAS functions are not a substitute for the driver's care and attention, the functions are an assistance to the driver only.

! Under following conditions the ADAS functions may not perform properly:
- Extreme weather
- Extremely curved roads
- Roads without painted lanes
- When the camera image is compromised due to reflected light from an object on the dashboard .
- When installed incorrectly
- When the horizon line calibration is incorrect

! Keep the camera lens and windscreen clean to ensure clear video and proper ADAS functions.

! Tinted windscreens will affect the brightness and definition of recorded videos. OPTIAN may not receive GPS signal if the windscreen has a tinted metallic film . Try to attach to the area without metallic film.

! Do not disassemble or modify OPTIAN as it will result in data loss, damage and will void the warranty cover.

Main Body

Rear Camera

Micro SD card

SD Card Adapter
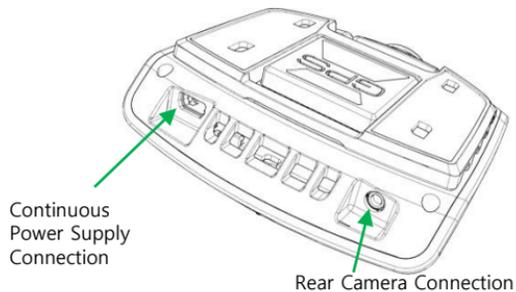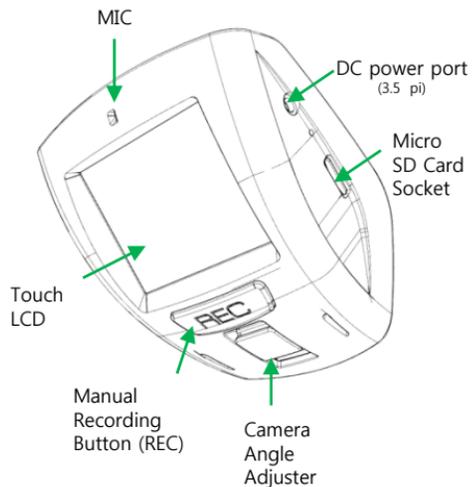

Cigar Jack /

Power Supply Cable

Rear camera Connection Cable

User Manual

- Specifications of the above components are subject to change according to the components supply.
- Above images are just to help user's understanding and actual components may look a little different .

Main Body

Detachable Bracket

Internal GPS

MIC

DC power port (3.5 pi)

Micro SD Card Socket

Security LED

Menu Button

Touch LCD

Front Camera (Full HD)

Volume Adjustment Button

Manual Recording Button (REC)

Camera Angle Adjuster

Continuous Power Supply Connection

Rear Camera Connection
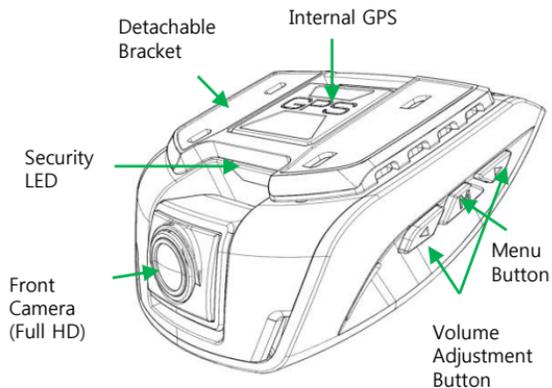
Rear Camera / Internal Camera

Integral bracket

Rear Camera
(VGA)

* the rear camera angle can be adjusted by rotating the main body

• When attaching the rear camera to the rear window glass , please make sure the bracket is on the right side.

Indication
LED

DC Power-supply Port

FCW (Forward Collision Warning)

1. FCW function generates a warning signal when there is a potential risk of collision to the vehicle ahead .

2. The collision risk is evaluated through TTC (Time To Collision) and it is classified by 3 phases.
   - TTC : The calculated value of the distance and the relative speed between a front vehicle and the host vehicle
   - Sensitive : TTC 0.9sec / Normal : TTC 0.7sec / Insensitive : TTC 0.5 sec
   - Secondary Warning : TTC 0.4 sec
   - The TTC sensitivity can be adjusted from the menu.

3. FCW function works when the vehicle is moving at the speed rate which is above the set speed value.
   - Default Speed Setting: 30km/h
   - ADAS operating speed value can be adjusted from 20 to 80(km/h) in the menu.

4. FCW can help avoid accidents caused by careless driving behaviors such as adjusting air conditioning or other distractions.

 LDW (Lane Departure Warning)

1. LDW function generates an audible signal if the vehicle departs from the lane while driving above the set speed in the menu.
2. LDW function works when the vehicle speed rate from internal GPS signal is over the set speed value.
   - Default Speed Setting : 60km/h
   - LDW activating speed can be adjusted from 40 to 80(km/h) in the menu.
   - Sensitivity of LDW can be changed in the 「Smart Car」 menu.
3. LDW function activates when the vehicle moves for more than 2 seconds in the lane .
4. LDW will help avoid any lane departure accidents caused by drowsiness or carelessness on the road.

 FCDA or Beep & Watch (Front Car Departure Alert)

1. FCDA function is activated only when the vehicle is stationary on the road.

2. FCDA can detect the movement of a vehicle in front while waiting for the traffic light to change and will inform the driver of any front movement through a warning tone.

3. FCDA generates a warning tone when the host vehicle starts to move closer to the front vehicle while waiting in a traffic jam.

4. The function only activates when the speed rate from internal GPS becomes 0 .

5. FCDA is a helpful function especially while waiting at traffic lights or in traffic congestion.

DVR (Driving Video Recorder)

1. DVR function can record data with the Full-HD front camera and the VGA rear (if equipped) camera.

2. Types of Recording
   - Continuous Recording: Records data into Normal folder continuously by generating files in 30sec intervals.

   - Event Recording: Records data automatically into the Event File folder when a detected impact value is over the set detection value.

   - Manual Recording: Records the event data when pressing the external **REC** button .

   - CCTV (Parking Event Recording Guide): Will inform the driver the number of recorded parking events through a voice message when the ignition is turned on.

3. Parking Mode
   - Parking Mode is activated when the vehicle is turned off and will be deactivated while the ignition is turned on.
   - If an impact is detected when parked , OPTIAN will record the event into an <Event> folder
   - If motion is detected when parked , it will record the video into a <Parking> folder
   - Vehicle Protection

   - Battery Discharge Prevention: In order to prevent battery discharge, OPTIAN will shut down when the vehicle voltage drops below a certain voltage.

   - High Temperature Cut-off Function: In order to prevent damage , the system will be automatically cut off when the internal temperature of the vehicle exceeds excessive temperature.

[Booting]

➢ When the ignition is turned on , the introduction image and the loading screen will appear followed by a <Welcome> voice message.
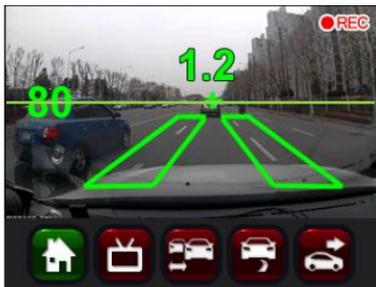

Intro Screen

Loading

* The loading time depends on the age and amount of data on the Micro SD card

➢After booting up , OPTIAN will start to record automatically by generating the "start recording" voice message .

[Screen Type and Explanation]

➢ Video Monitoring Screen

· **REC**	shows the video is being recorded
Center Number	If a front vehicle is detected, it will indicate TTC. (1.2) and generates the FCW signal ,the TTC will turn red .
Left Number	shows the vehicle speed rate from the GPS signal
————	The horizon guideline
⟋ ⟍	shows the lane lines are being detected. When OPTIAN generates LDW signal, the lane lines will turn red.
🏠	Home Button: Switches to the main menu
🎥	Camera Button: will change between Front and Rear camera views
🚗	FCW Button : turns ON/OFF FCW function.
🚗	LDW Button : turns ON/OFF LDW function.
🚗	FCDA(Beep & Watch) Function : turns ON/OFF FCDA function.

➢ ADAS Display Screen

- When the user presses the Video Monitoring Screen , it will switch to the ADAS Display screen.
- ADAS display screen shows TTC information as well as the detection of a front vehicle and lane lines via UI.
- When the user presses ADAS display screen a second time, the monitor will go into power-saving mode and if user presses again , it will switch to the Video Monitoring Screen.
- The DVR function works while in both screen modes.

[Basic Menu]

➢ User can enter into each function setting menu via the basic menu screen.

- Basic Menu screen will appear when the user presses the side M button or touches the <Home> button while viewing the video monitoring screen.
- When the user touches each icon in < Basic Menu >, it will enter into each relative setting menu.
- It is not possible to record video while in the menu mode.

1) ADAS CAM (Smart Car) : Turn ADAS functions On/Off and configure operations.
2) DVR(Black Box) : Change basic settings, monitoring settings and resolution settings.
3) Video Play (Play Movie) : View recorded videos.
4) Configuration : Change settings of system volume , voice warnings ,operational configuration and format SD card.
5) Vehicle Type (Install) : Configure the vehicle type and the installation position of OPTIAN.
6) Exit : Return to Video Monitoring Screen and start video recording function.

[Smart Car]

➢ Changing the settings of ADAS functions

1) Operation Settings
- Turn On/Off each function
- Touch the button to change between On and Off

2) FCW(Forward Collision Warning)
- Operating Speed: press the left & right arrows to adjust
  - Default Value is 30km/h, Possible to adjust from 20 to 80(km/h)
- Second Alarm : to give second warning at TTC 0.4 . Touch button ON/OFF
- Warning Level (Sensitivity) : Alarm will react faster on more sensitive setting.

3) LDW(Lane Departure Warning)
- Operating Speed : Press the left and right arrows to adjust
  - Default Value 60km/h, can be changed from 40 to 80(km/h)
- Lane Warning Sensitivity : 5 is the middle(default)value , when the set value increases , the alarm will react sooner .

* : Return to the previous menu

[DVR/Black Box]

➢ Changing the settings of DVR functions

1) Basic Setup

• It is possible to turn continuous recording On/Off.

(If it is turned Off, it will record only when an impact is detected)

• It is possible to turn voice recording On/Off.

(If it is turned Off, it will record without sound.)

• Sensitivity (Impact Level) : To adjust the impact detecting sensitivity
  - Sensitive : will detect and record a minor impact.
 - Insensitive : will only detect and record a strong impact .

2) CCTV Setup

• Discharge Prevention Voltage : In order to prevent battery discharge , OPTIAN will be turned off when the vehicle voltage drops below the set voltage.
  -The battery deterioration or any causes of voltage decreasing can possibly turn off the product.

• Motion Level : Adjusts motion detecting sensitivity.

3) Resolution

• Changes the recording resolution of the front camera.

• Stored data has allocated capacity on the Micro SD card.

The number of recorded files vary according to the capacity of Micro SD card.

Resolution	CCTV	Event	Parking
Full HD	100min	30min	15min
HD	180min	50min	30min
VGA	700min	200min	100min
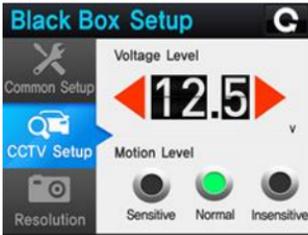
* ⟳ : Return to the previous menu

*2 Channel / Micro SD card (16GB)

[Video Playback]

➢ Playback of recorded video files from Continuous , Event and Parking modes.

1) Continuous/ Event /Parking

- Continuous (Normal) : Select and play continuously recorded files
- Event : Select and play recorded event files
- Parking(CCTV): Select and play the files recorded while parked
- Touch to select the desired video file, then press the play arrow icon to play the video
- If user presses STOP 🔲 button, it will return to the file selecting page.

* 🔙 Return to the previous menu

🔼 🔽 : move up and down to change pages

▶ : play the selected files

---

* User can check recorded video files with clear definition in a wider screen via the exclusive Data Manager program. In addition, it is possible to check acceleration data , vehicle coordinate and other information via the ADAS desktop Data Manager program.

[Configuration]

➢ Configure operating functions.

1) Volume Control
- Speaker Volume Control: controls speaker output volume (0~15)
- MIC Volume Control: controls input MIC volume (0~15)

2) Voice Alarm
- Event Recording: If on , OPTIAN will alarm with the voice announcement – start event recording.
- FCW : If on, OPTIAN will alarm with the voice saying - Watch out !!
- LDW: If on , OPTIAN will alarm with the voice saying - Be careful of your left/right lane.
- FCDA (Beep & Watch): If on , OPTIAN will alarm with the voice -Be careful !
* Even when the voice alarms are turned off, OPTIAN will still alert with the beeping sound.

3) Format SD card
- Deletes all the recorded files of Micro SD card by clearing up the system .
* Data format will delete all the recorded data , Save important files separately in PC before formatting data .
* User should format data via the exclusive data manager or configuration menu . The usual format method may not work properly on OPTIAN . Formatting the SD card via PC may damage recording file structure if the Data Manager Program is not used.

* ⟳ : Return to the previous menu.

4) System Setup

- LCD Setting : Changes the settings of the screen view and the power saving mode.
- LCD Display: Turns On/Off the signs of speed, speed unit ,smart UI and the horizon line screen data.
- Language Setting : Changes LCD Text and voices to different languages. (In the B2B Model, only a certain language will be provided)
- System Info: System check and system reset function .

4-1) LCD Setting

Display View : Sets the LCD display viewing method.
- Front : Front camera images only.
- Rear : Rear camera images only.
- PIP : Both front and rear images at the same time..

Screen Save
- It can set LCD viewing status. LCD will be turned on if user touches the LCD when it is at the off status .
- user can touch the monitoring LCD screen to switch to the power saving mode

4-2) LCD Display

- Speed : If on , the speed will show on the LCD
- Speed Unit : Select between km/h and mph
- Smart Car : If on, the ADAS UI overlay will appear on the video display screen.
- Horizon: If on , the horizon guide line will appear on the video display screen.
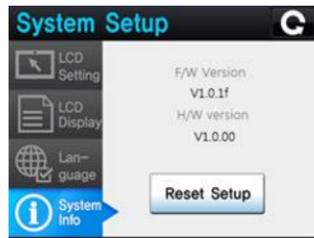
* Return to the previous menu.

[Configuration]

4-3) Language

Language voice guidance and text will be in the selected language

4-4) System Information

- Shows the version information of firmware and hardware .
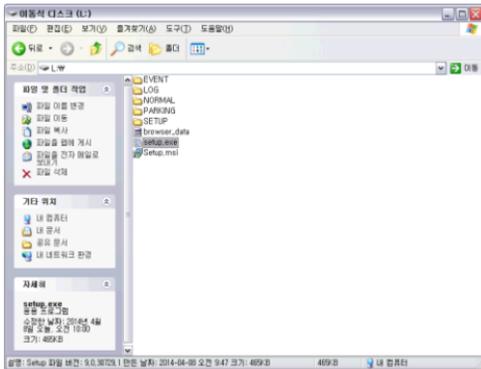- User can initialize the system by pressing the reset button.

 : Return to the previous menu

OPTIAN Data Manager

Installation of Data Manager Program

➢ Through the data manager program , users can view FHD videos in a wider screen. In addition, users can check information such as vehicle GPS data and acceleration data.

1) Install the exclusive OPTIAN viewer in PC (Ask manufacturer for the data manager program)
2) When the installation completes, the OPTIAN viewer program icon will appear on the desktop

* Recommended PC Specification
- Computer OS : XP(32bit), Vista(32bit), Window7(32/64bit), window8(32/64bit)
- Computer H/W : Pentium4 2.8GHz or above / 1G RAM or above
- Internet Browser: Microsoft Internet Explorer 7.0 or above
- Direct X version : Direct X 9.0 or above

Screen Composition
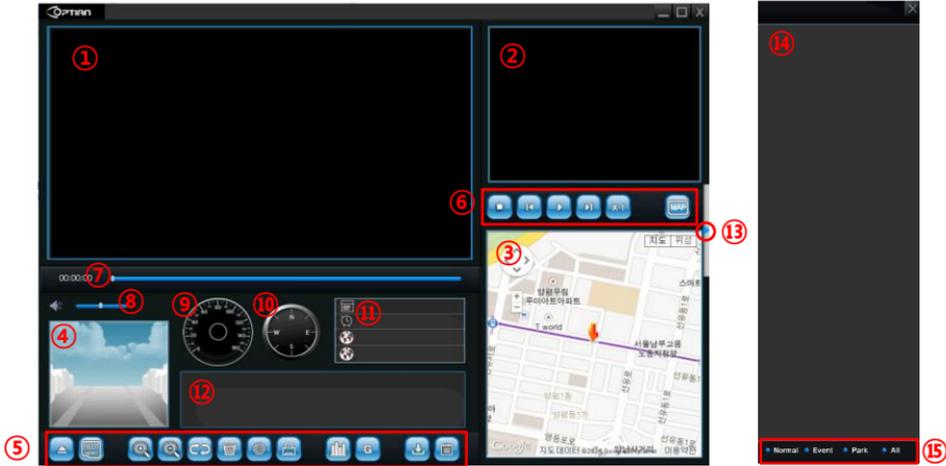
1) Main Screen
2) Sub Screen
3) GPS Location on the map
4) (ADAS) Display Screen
5) OPTIAN Manager Menu bar

6) Video Play Bar
7) Video Play Time
8) Video Volume
9) Speed Indication
10) Compass

11) Recording Date & GPS co-ordinates
12) Acceleration sensor data; impact level & speed graph
13) File List window Open/Close button
14) File List window
15) Classification of Normal, Event or Parking modes

OPTIAN Data Manager

	Open file		Stop
	Open SD card		Play Previous File
	Zoom in on the video playing screen		Play Button
	Zoom out of the video playing screen		Pause
	Switch between the main screen video and sub screen video		Play Next File
	Format SD card	x1	Normal playing speed
	Configuration	x2	Quick Play x 2
	Print OPTIAN manager screen	**Description of Main Buttons**	
	View Acceleration/Impact/ Speed graph in detail		
G	Switching between acceleration and G-sensor buttons	MAP	Switch between Google and naver maps
ΔG	Press the G-sensor impact button to change to speed button	● Normal	CCTV File List
V	Press the speed button to change to acceleration button	● Event	Automatic/ Manual/ Parking event file list
	Copy the playing videos to a selected folder	● Park	Recorded Motion Detection File List
	OPTIAN manager version information	* It is convenient to play recorded videos via the OPTIAN manager	

Maintenance

⚠️ **SD Card Maintenance**
SD card is a consumable product. If it is not maintained well, errors may occur and it may not be able to record videos properly .

SD Card Insert/Remove
When inserting or removing the SD card , make sure the power is turned off .

Regular Data Formatting
SD card is a consumable product. If user formats data every 1 week or 2 weeks, it can decrease the probability of SD card errors and extend the lifecycle of SD card .

SD Card Format Method
Please format the data via the configuration setting or via the data manager program

Regular Check
When the video is being recorded properly, there will be a blinking REC sign on the video monitor or ADAS display mode. If the REC sign does not appear , it means there is an error in Micro SD card and user will need to replace or format the Micro SD card.

Data Backup
The recorded data may be deleted as time passes . it is necessary to record important data separately or store the SD card separately .

Troubleshooting

Q. There is No power on the product
- Check the power state of vehicle battery
- Start the vehicle , check the fuses

Q. The product does not boot up
- Check SD is inserted properly
- Check whether the Micro SD is a faulty unit , format the data of SD card

Q. No sound after booting up .
- Check the volume control setting

Q. No response from the screen image
- Check whether the SD card works properly
- For the product safety , OPTIAN will stop recording at high temperatures , please check the temperature of the product and vehicle.

Q. ADAS functions do not work
- Check whether it is turned off in the setting menu
- Check whether it receives GPS signal properly and the actual speed rate is over the set warning speed threshold
- Check whether the vehicle type setting and the horizon calibration of camera is correct.

Q. The warning timing is too slow or too fast
- Check the horizon line and vehicle type setting
- Check sensitivity settings of each function

Q. Not possible to read Micro SD card in PC
- Check whether Micro SD card adapter or reader works properly

Setup

Main body camera angle adjustment
To perform stable ADAS functions, it is necessary to match the green guide line of LCD with the horizon.

1. Please adjust the angle while vehicle is parked on flat ground . In order to match with the horizon correctly, it is recommended adjusting the angle when the driver has a good view of horizon
2. Open the camera angle adjuster cover
3. Turn gear inside the adjuster and match the horizon guide line of LCD with the actual horizon
4. After matching the line, please close the cover to firmly fix the camera
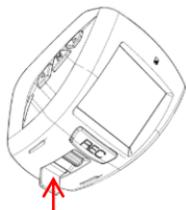
Open the cover of camera angle adjuster and turn gear to adjust the angle

Good

•**Correct Angle Adjustment**
: Horizon guide line matches with the actual horizon.

Bad

•**Camera angle is wrongly adjusted**
: Guide line is above the horizon

Bad

•**Camera angle is wrongly adjusted**
: Guide line is below the horizon

! images above are just for explanations.
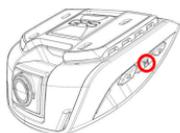Only adjust the camera angle while your vehicle is parked in a safe area

Vehicle Type Setting
It is necessary to set 'Vehicle Type ' for stable performance of ADAS functions.

(1) After booting up, press the side M button or the <Home> button in the Video Monitoring Mode to enter into the menu screen.
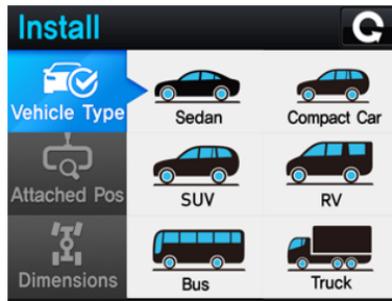
(2) . Press the 'Install' menu

[Menu Button]

[Home Button]

(3) Choose driver's vehicle type in the 「Vehicle Setting」menu

* If user selects a vehicle type, the values of Width and Height will be automatically set in 「Dimensions」 menu. For more accurate warning, it is recommended to input actual values of Width or Height in 「Dimensions」 menu.

| Type	Height	Width
Passenger Vehicle	1.3	1.8
Compact Vehicle	1.3	1.6
SUV	1.5	1.9
RV	1.7	1.9
Bus	1.6	2.5
Truck	2.5	2.5

Installation
.

(4) Press 「Attached Pos」menu button

(5) Choose installation position of OPTIAN in menu.

* Attached position is based on the driver's view inside the vehicle.
* If the product is attached to the right or left side of the
  windscreen, please select the applicable position and input the
  measured distance from the center of the windscreen.
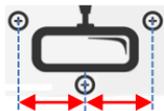
Attached Position(Center: 0cm)

(6) Press 「Dimensions」menu
* Please input the actually measured values of Height and Width ,by pressing the
  left and right arrows, to perform more accurate functions.
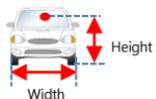
(7) Turn signals (Blinker)*

After installation, check the side arrows in the display mode . If the
    arrows are blinking , please change the High /Low options in the
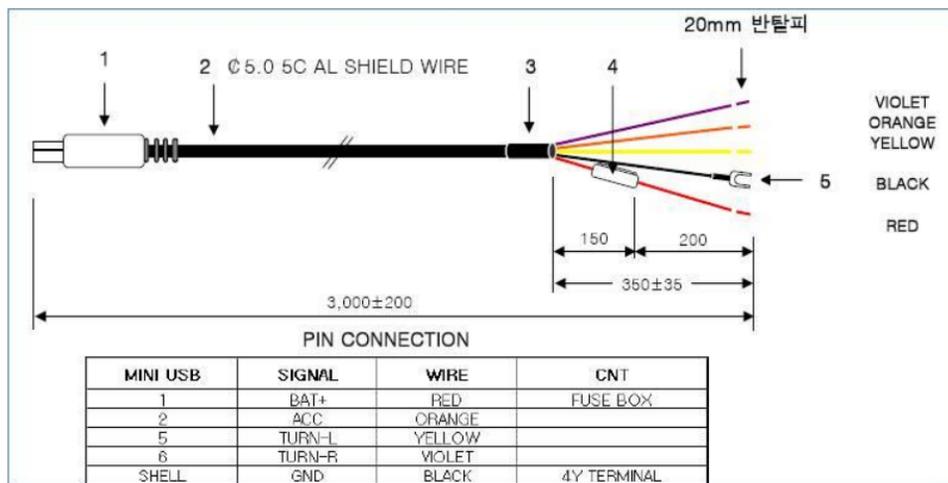   Dimensions menu .

Installation Method
Basic components are for connection to the continuous power-supply cable and turn signals, and should be professionally installed.

For the power-supply wire connection and turn signal (Blinker) wire connection, refer to the pin map guide .

Pin Map Guide

PIN CONNECTION

MINI USB	SIGNAL	WIRE	CNT
1	BAT+	RED	FUSE BOX
2	ACC	ORANGE	
5	TURN-L	YELLOW	
6	TURN-R	VIOLET	
SHELL	GND	BLACK	4Y TERMINAL

Installation Method

Basic components are for connection to the continuous power-supply cable and turn signals, and should be professionally installed.

1		Clean installation surface of windscreen	5		Rear Camera: Avoid heat wires in glass when attaching , the bracket should be on the right side .
2		Remove tape off bracket and install in suitable place horizontally	6		Plug the power-supply cable into DC port
3		Arrange cables when the power-supply cable is connected to DC port	7		Connect the rear camera cable to the main body
4		Find the suitable installation place on rear window and wipe clean	8		Connect power-supply cable to the vehicle wiring.

- Install near the rear vision mirror if the vehicle type is RV or Passenger car
- Install near bottom area of windscreen if the vehicle type is Bus (Not mandatory)
- Install to near top of windscreen if the vehicle type is Truck .

9		Front images will appear with voice messages after booting up
10		Adjust the rear camera angle by checking rear video images.
11		Adjust settings for ADAS and DVR functions
12		Match the horizon guide line while parked on the flat safe road

* Make sure the power is off while connecting cables

* Note that recorded image quality of rear camera may not be as good as expected due to rear window tinting .

* Rear camera bracket should be on the right side while attaching. Otherwise rear-view image will be reversed

If camera lens is affected by the reflecting lights of the objects on the dash board, it will not perform well. Thus do not put any objects on the dashboard. Especially at night , the camera could be affected by the navigational product of your vehicle .

!

Installation Method
In order to match with the horizon accurately, it is recommended to reset camera after installation.

Reset Camera
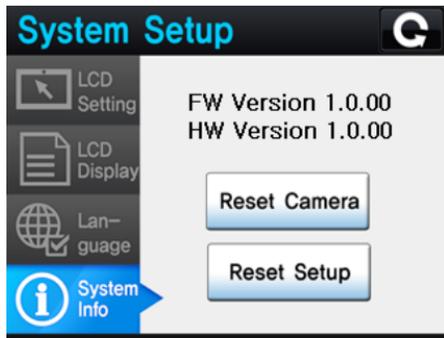
- In case OPTIAN is re-installed to a different vehicle type, it is important to reset camera first for more accurate warning functions.

- In case OPTIAN has a delay in warning functions, reset camera to calibrate automatically while driving on the flat road at the speed rate over 60 Km/H.

Notice ! **<Reset camera only when on the flat road !>**

Specification

Name	OPTIAN		
Front Camera	Full HD(1920 x 1080) 100 x 82 x 42 (mm)	Operating Voltage	12V, 24V
Rear Camera	VGA(640 x 480) 54 x 31 x 25 (mm)	Minimum Operating Voltage	9V
LCD	2.4" QVGA TFT Panel	Maximum Operating Voltage	32V
Recording Mode	CCTV, Event, Manual, Parking , Motion Detection	Maximum Electric Consumption	5.6W
SD card type	Micro SDHC card Class10 (up to 32GB)	Storage Temperature	-40℃~85℃
Recording Frame	Front 27fps/Rear 30fps	Operating Temperature	-20℃~70℃
Video	H.264 / extension – AVI	Minimum Operating Illumination	1lux
Voice Recording	Sensitive internal condenser MIC	Weight	155g

ADAS CAM
OPTIAN
www.plk.co.kr