Smarty
Drive Partner for your Safety

USER GUIDE

BX4000
4 CH, recorder

FW 2.6.0
SW 2.6.0

Conformity

FC

INFORMATION TO THE USER

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

-Reorient or relocate the receiving antenna.

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

WARNING

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Other Markings

CE 0678 E9

SAFETY ADVICE

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER.
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

Please make sure you follow the safety advice/instructions given in the user guide.

⚠ Caution
RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.
Battery for RTC(Real Time Clock) inside

⚠ Caution
Install the product where it does not block driver's visibility and where there is no airbag installed. This could cause an accident or might injure the passengers in case of accident.

⚠ Caution
Damages due to production malfunction, loss of data, or other damages occurring while using this product shall not be the responsibility of the manufacturer. Although the product is a device used for recording videos, the product may not save all videos in the case of a malfunction. In the case of an accident, the sensor may not recognize the shock when the impact is light and as a result it may not begin recording automatically.

⚠ Caution
When the impact is light like very light, such as a minor bump in the road, the G-sensor may not recognize the impact and as a result it may not begin recording automatically. Test and set your own G-sensor level for your vehicle.

WARNING:
TO PREVENT FIRE OR ELECTRIC SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

GPS Reception

1. Activate the product in an area without large buildings to improve GPS reception.

The commercial purpose GPS has the average rage error of more than 15 meters and the range error could be more than 100 meters due to environmental conditions like buildings, roadside trees etc.

2. The temperature range for optimum operation of the GPS receiver in your car is -10 ~ 50°C.

3. When using the product for the first time or after a long period (more than three days), it may take a little longer to recognize your current location.

It may take between five and thirty minutes to get GPS reception.

GPS reception may be impaired under the following circumstances.

1) If there is an object at the end of the GPS antenna

2) If your vehicle has metallic elements on the windshields

3) If equipment generating electromagnetic waves that interfere with the GPS signal is installed in the vehicle e.g.: Other GPS devices such as a certain type of wireless activated alarms, MP3 and CD players and camera alarms using GPS.

4) If you are using a receiver connected by cable, electric interference can be avoided by simply changing the location of the receiver (antenna).

5) On heavily overcast or cloudy days, if the vehicle is in a covered location such as under a bridge or raised roadway, in a tunnel, an underground roadway or parking area, inside a building or surrounded by high-rise buildings.

6) If GPS signal reception is poor, it may take longer to locate your current position when the vehicle is moving than when it is stationary.

Precautions for SD cards

To optimize use and prolong life of your SD cards please follow the below instructions.

1. Use only compatibly tested D-TEG approved SD cards.
2. Only use dry and clean SD cards.
3. Format SD cards at least once every other week or when the SD card seems corrupted. This will wipe all data, images, and file names on the card reducing recording errors.
4. Insert or remove SD cards only when the device is completely powered off. Wait until the blue LED is completed off before removing SD card.
5. SD cards used for continuously recording equipme nt such as dash cameras, typically last only 6 mont hs. Exchange SD cards periodically

Key Features

1. Up to 4 cameras and 1 microphone
- Connect up to 4 cameras and one mic with flexible positioning

2. Secluded recording unit
- Improve data security with separate recording unit with locking options
- Wired remote control

3. Selective recording modes
- Normal (continuous), event, dual recording and parking modes offered
- Each camera can be configured individually

4. Extended recording
- High compression MP4 recording to maximize recording time

5. High private information protection
- Unique data format restricting free access
- Easy conversion to common format through PC Viewer

6. Various digital input/output configurations
- 4 digital inputs, 1 panic button, and A/V output
- Built in G-sensor and external GPS for best reception

7. Powerful analytic software
- Assimilates input data with AV recordings for informative display
- Advanced data search, analysis, and reporting capabilities

8. Comprehensive design
- Compact size, easy to connect and install, tamper-proof options available

9. Licensed Location Applications
- Integrated Google™ Map and Google™ Earth for easy monitoring

10. Reliable performance
- Approved by multiple municipal governments and insurance companies

CONTENTS

1. Smarty BX4000 main unit

2. 4GB SD card
(PC Viewer software inside in "pcsw" folder.)

3. GPS Antenna module
with 5 m cable

4. Remote Controller
with 2.8m cable

5. Audio/Video output cable

6. Power and Digital Input Cable

7. Camera input cable (3 pcs)

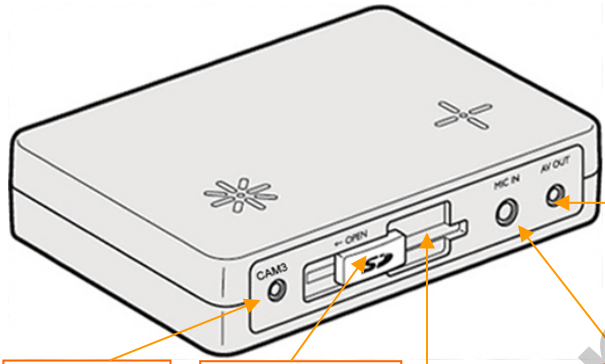
8. Wire Splice clip (5pcs)

9. Double sided tape (2 pcs)
Large for GPS, small for remote control

10. Velcro Sticker (2 pcs)
For main unit

INTRODUCTION

FRONT



Audio/Video Output

Camera 3 Input

SD card lock

SD card Slot

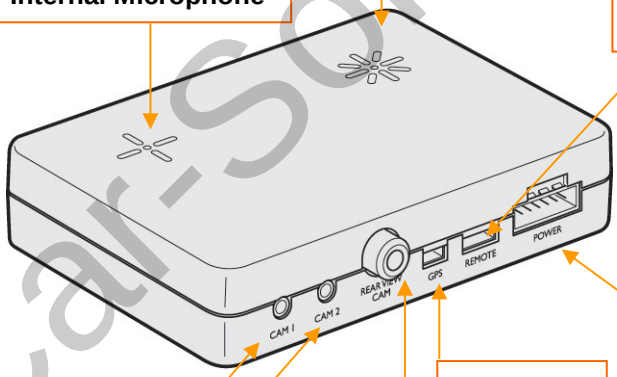
External MIC input

REAR

Buzzer

Internal Microphone

Remote Control Input



Power and Digital Inputs

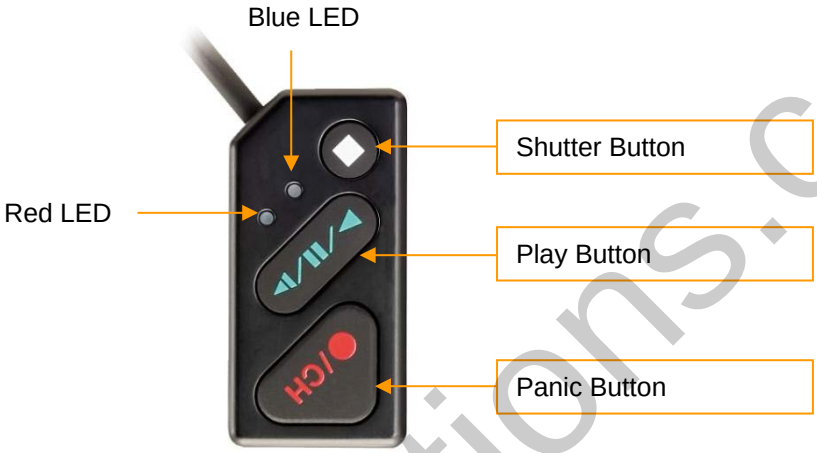
GPS Input

Camera 1, 2 Input

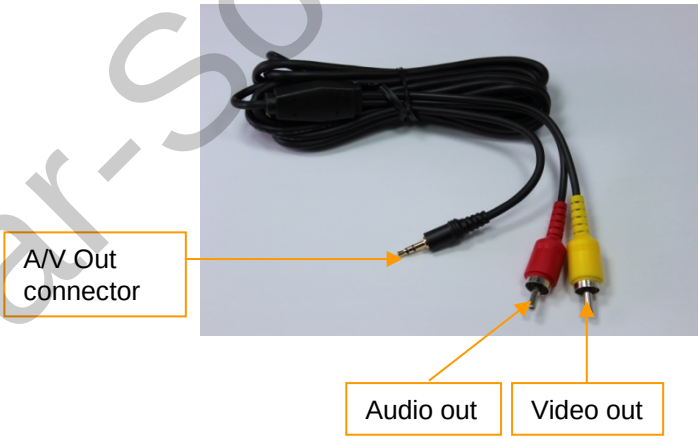
Camera 4 Rear View Input

INTODUCTION

Remote Control

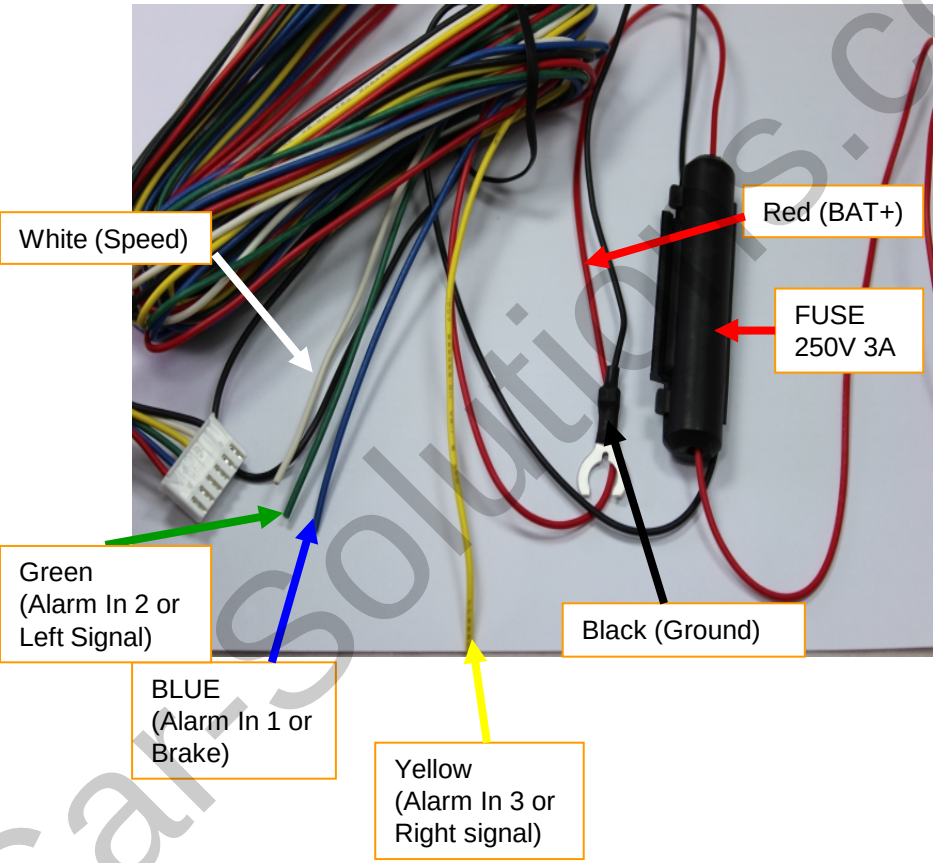


Audio Video Output Cable



INTODUCTION

Power & Car Signal Input



HARDWARE INSTALLATION

1) Find installation location for BX4000 (i.e glove box, under dash, trunk, etc.).

2) Use provided Velcro adhesive to secure BX4000 recorder. Velcro can be attached and detached freely.

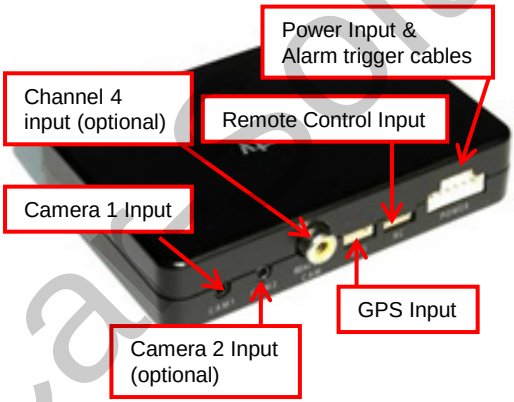
3) Install the cameras (sold separately) with double sided tape to the windshield or other flat surfaces as seen below.

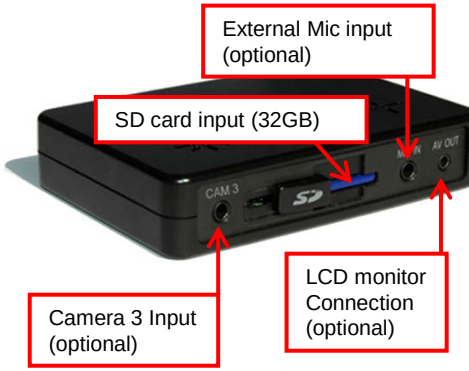
HARDWARE INSTALLATION cont'd

4) Install Remote Control onto dash next to the steering wheel and within reach of the driver using provided double sided tape.

5) Run remote & camera cable(s) and secure in headliner or other area so no cables are exposed. Use provided wire clips if necessary.

6) Connect all cables to BX4000 Recorder

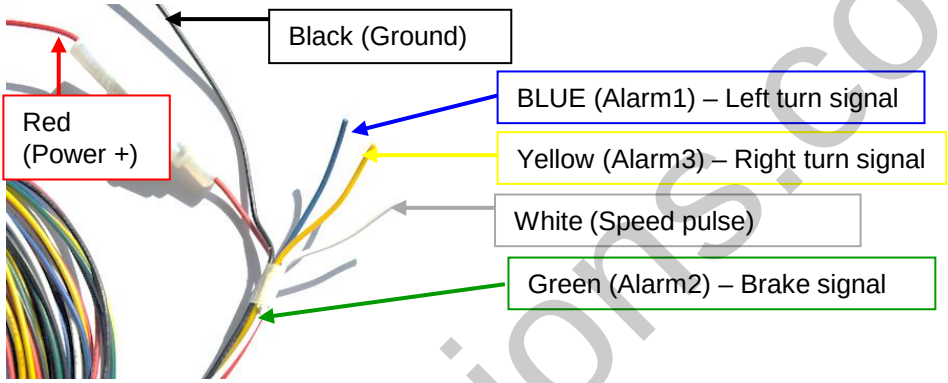




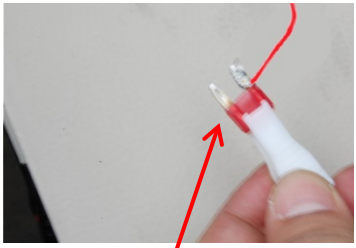
HARDWARE INSTALLATION cont'd

7) Connect desired digital inputs

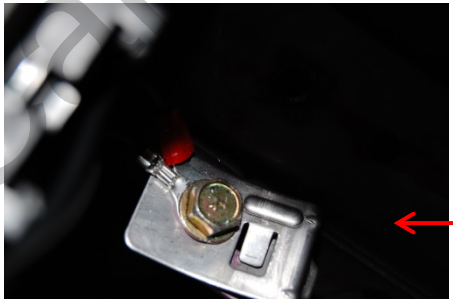
Default connection are as below but other 5V low-high inputs, such as door, taxi meter, dome light, can be connected. Ex) BLUE-front door, YELLOW-taxi meter, GREEN-back door.



8) Make sure vehicle ignition is off before connecting power. Connect RED (power +) cable to vehicle fuse that is powered with ignition (e.g. radio). Connect Black (ground) cable to car chassis.



Red Power Cable (+)
Connected to vehicle fuse

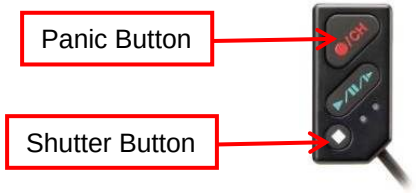


Black Ground Cable (-)
Connected to car chassis

HARDWARE INSTALLATION cont'd (CALIBRATION)

9) After installation, calibrate the internal G-Sensor for accurate readings. This process detects the installed direction of the BX4000. A monitor (sold separately) is required for calibration.

Press and hold [PANIC] & [SHUTTER] button together and then power on. (turn on ignition). Follow instructions on monitor.



This G-Sensor calibration is needed at first use and whenever repositioned.

Hold the two buttons until you hear beeping and blue LED flashing. Press any single button to escape.

↓

Park vehicle on a flat surface with at least 50 meters of space directly ahead. When ready press panic button once.

↓

Move directly forward slowly accelerating until beeping speed changes.

↓

If G-Sensor calibration is successful, press any button or wait 30 seconds to reboot.

If G-Sensor calibration failed, retry.

10) With the monitor connected, check if all the cameras are working and the angle of view covers the desired areas for recording

FUNCTION OVERVIEW

Automatic Start

Make sure the main unit and all components are properly connected.
BX4000 will automatically start when vehicle is powered on.

⚠ Notice : BX4000 requires about 30 seconds for the built-in power backup system to charge. During this time the blue LED will illuminate and remain solid for about 20 seconds and then start blinking quickly. When complete, a beep will sound and the blue LED will blink slowly noting that it is operational.

Normal record (Continuous record)

The default normal recording records continuously but marks events on the progress bar when playing back, helping to ease searches for desired information.

Event and Panic Recording

Motion detection from all cameras, alarms 1 ~ 3, and G-sensor activities can be set to trigger event recordings.
In case of emergencies, the [Panic] button can be set to record when pressed.

Dual record (Event & Normal record)

Dual recording provides the benefits of both normal and event recordings and will create data files for both modes separately.

⚠ Notice : Different recording modes can be set for each camera and different frame rates can be set for different recording modes.

Parking Mode

With parking mode activated and on normal recording mode, the BX4000 will change to parking mode when the vehicle is still for more than 5 minutes, recording at 1 FPS.

Live Screening or Playback of Recrodings

With an external monitor attached, the BX4000 offers the option to screen video live or playback previous files.

Built in Power Backup

Internal super-capacitor ensures data is stored when power is suddenly cut

PC Viewer Software

For greater data security, all data require access through the PC Viewer program.

FUNCTION OVERVIEW

SD Card Format from Main Device

Corrupt SD cards can be formatted from the main device

⚠ Notice : Once formatted, all data will be deleted and the configurations will default to the factory settings. Make sure you have installed the PC Viewer software, preloaded on the SD card, before you format the card.

BLUE LED (RECORD)

The blue LED shows the power is on.
The blue LED blink during event recording.

RED LED (Overwriting)

The red LED will be turned on when start overwriting.

Buzzer

"Beep" sound will occur when event/panic recording starts (this can be turned off In the setting menu on the PC viewer, if required).
This also signals any system error.

VIDEO LOSS (warning)

"Beep" sound will occur continuously when video loss.
Check the camera and camera connection and turn off and on the unit to solve it.
And make sure the number of cameras that you connect before turn on the unit.
The number of cameras can be set in the settings menu on the PC viewer.

OPERATION

1. To start, make sure that the power cable is properly connected and SD card is plugged in securely. Turn the car ignition on to activate the device.

2. The blue LED will illuminate solid for about 20 seconds and then blink quickly for about 10 seconds while the back-up power system is being charged. When complete, a beep will sound and the blue LED will blink slowly noting that it is operational.

3. Recording will depend on mode settings. The default mode is normal (continuous) recording but this can be changed to event or dual recording mode on the PC Viewer device settings menu.

4. The event recording will automatically begin when triggered by Motion Detection, Alarm1 to 3 or by the G-sensor and will begin with one short “Beep” sound.

5. The panic recording can be started by pressing the [PANIC] button.

OPERATION – Main Unit

Start

1. To start, make sure that the power cable is properly connected and SD card is plugged in securely. BX4000 will power on automatically when car ignition is turned on.

2. The blue LED will illuminate solid for about 20 seconds and then blink quickly for about 10 seconds while the back-up power system is being charged. When complete, a beep will sound and the blue LED will blink slowly noting that it is operational.

3. The default recording is normal and at this setting, recording will start once BX4000 is operative. Recording mode can be changed on the PC Viewer settings menu.

Recording Modes

Normal (Continuous): Commences recording immediately after the device boots and continues until power off. Data will be stored in the [normal] folder under the specific channel.

Event: Depending on settings, records when triggered by motion detection, digital inputs 1 ~ 3, and G-sensor activities for a set amount of pre and post seconds. A long beep will sound when activated and the blue LED will blink rapidly while recording. Data will be stored in the [event] folder under the specific channel.

Panic: Records when [Panic] button is pressed for a set amount of pre and post seconds. A long beep will sound when activated and the blue LED will blink rapidly while recording. Data will be stored in the [panic] folder under the specific channel.

Dual: Performs all recording mode options.

Parking: During normal or dual modes, when the vehicle is stationary for more than 5 minutes, the device will switch to parking mode and record at 1 FPS until the vehicle starts moving.

- Event, panic, normal data are saved separately when set to respective modes. When events or panics are triggered during normal recording mode, data is not recorded separately but marked on the normal data and can be searched for during playback.

OPERATION

SNAPSHOT RECORD BY SHUTTER BUTTON

When in need of a snapshot from camera 1, either for installation or for evidence collection, press the [SHUTTER] button once. A short beep will sound and a snapshot of 1 image with 5 seconds audio will be recorded into the [memo] folder which can be viewed through the PC Viewer. The snapshot.jpg in the [snapshot] folder is typically used for installation report purposes and is the latest snapshot taken.

SYSTEM ERROR INDICATOR

When a system error is detected, the following chart shows the alarm indicators.

	Beep	Blue LED	Red LED
Camera error	0.5 sec	1 sec	1 sec
Panic folder full	2 sec	OFF	Continuous
SD Card error	Continuous	1 sec	0.5 sec

To disable the alarms, press the [Panic] button. Recording may not resume and the alarms will continue after rebooting if corrections are not made.

PANIC RECORD BY PANIC BUTTON

The panic recording by [PANIC] button will start by pressing the [PANIC] button with one short “Beep” sound. Blue LED will be blinking during the panic recording.

BX4000 doesn’t make a separate panic file during the continuous recording. It will mark the panic area by [PANIC] button in the continuous recording file which can be easily searched for during playback.

OPERATION – On Screen Display

The following displays can only be seen when a monitor is connected.

Settings Information

Press [PLAY] button to view settings information on the monitor.

	CAM1	CAM2	CAM3	CAM4
Activated	√	√	√	√
Record Mode	Normal	Normal	Event	Event

System : NTSC
Resolution : 720X480
Quality : Super
FPS : 5
Overwrite : ON
Audio : ON
G-Sensor Level : X:3, Y:3, Z:3
G-Sensor Calibration :
Firmware Version : 2.3.1
Current Time : 14:50:07 23 JAN 2013

To exit menu immediately, press [PLAY] button or [SHUTTER] button or wait 30 seconds.

LIVE VIEW

The default display is 2*2 with all cameras shown, to change, press [PANIC] button to select which camera to view. Each press will change the camera on display with the last option being all camera views.

CAM 1 => CAM 2 => CAM 3 => CAM4 => 4 Cameras (2*2)





OPERATION

PLAYBACK

Playback is possible if a monitor is connected to the BX4000. Press and hold [PLAY] button for more than 2 seconds to view the latest recorded file.

- Recording will halt during playback.

Playback control

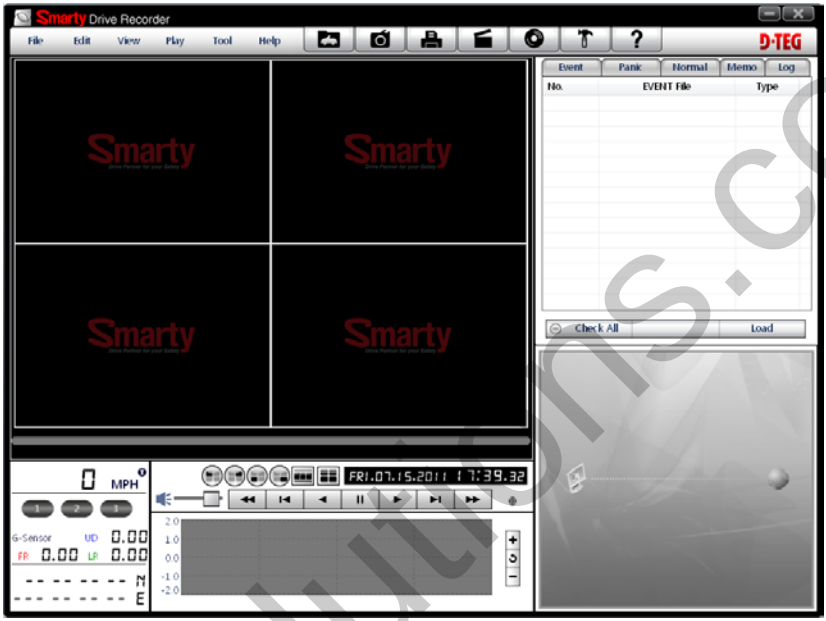
Channel change: Press [PANIC] button.
Move to the previous file: Press and hold [SHUTTER] & [PLAY] button.
Move to the next file: Press and hold [PANIC] & [PLAY] button.
PLAY/PAUSE: Press [PLAY] button.
SLOW PLAY: Press [PLAY] button more than 1seconds.
Exit and resume record: Press and hold [SHUTTER] button more than 2seconds.

Playback data priority

Panic data	Event data	Normal data	Playback
(o)	(o)	(o)	Only Panic data playback
(o)	(o)	(x)	Only Panic data playback
(o)	(x)	(x)	Only Panic data playback
(x)	(o)	(o)	Only Event data playback
(x)	(o)	(x)	Event data playback
(x)	(x)	(o)	Normal data playback

PC Viewer

BX4000 PC Viewer Window



[PC SYSTEM REQUIREMENT]

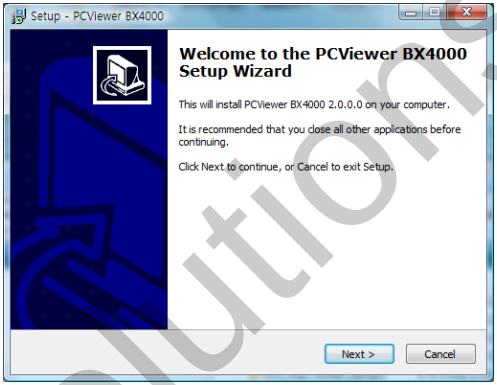
OS	Windows 2000, Windows XP, Windows Vista, Windows 7, Windows 8
CPU	Pentium4 2.6GHz or higher
RAM	512MB or higher
Interface	SD Memory Card Reader
HDD Free space	Install 20MB or higher Backup 2GB or higher
Display	1,024 x 768 pixel/High Color(16bit) or higher

- The PC Viewer may not function properly if the PC system requirements are not met.

INSTALLING PROCEDURES

The PC Viewer software can be found on the provided SD card. If you wish to upgrade to more resent versions, please visit our website at www.d-teg.com.

1. Plug in SD card into PC and open the “My Computer”
2. Select “DRIVEREC4” drive and open [pcsw] folder
3. Double click [setup.exe]
4. Select language and then follow the dialog box.



5. Check to creating a desktop icon for easier launch of the PC Viewer

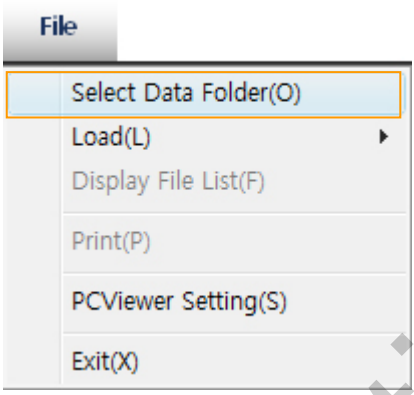
➢ To un-install the PC Viewer BX4000, open the Control Panel, select [remove program], and remove [PC Viewer BX4000].

Access data on SD card

1. Plug in SD card to PC or separate SD card reader (not provided).

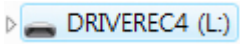
2. Launch PC Viewer BX4000

3. Select [File] and then [Select Data Folder] or Click [OPEN] button on the top command tab



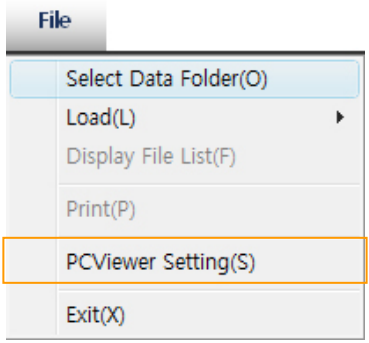
[OPEN] button

4. Select SD card drive [DRIVEREC4] itself and not any of the lower folders.



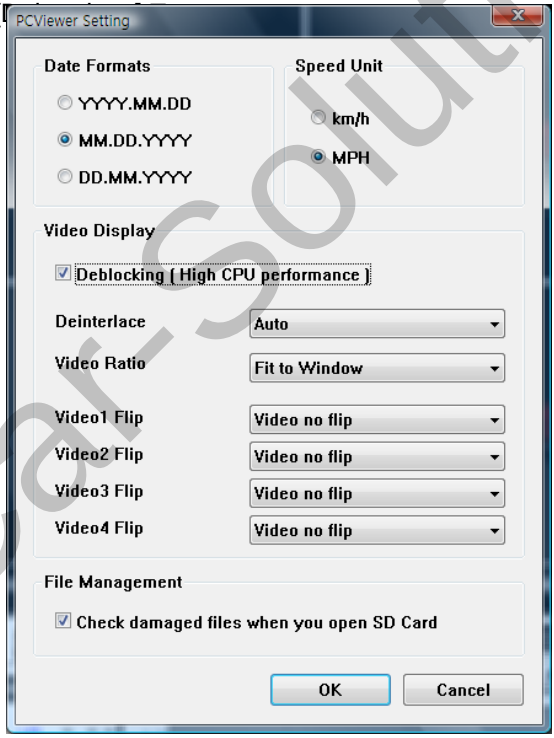
PC VIEWER SETTING

To set PC Viewer select [File] and then click" PC Viewer Setting"
This setting is for the PC Viewer software itself.
To set the recorder, refer to page 27.



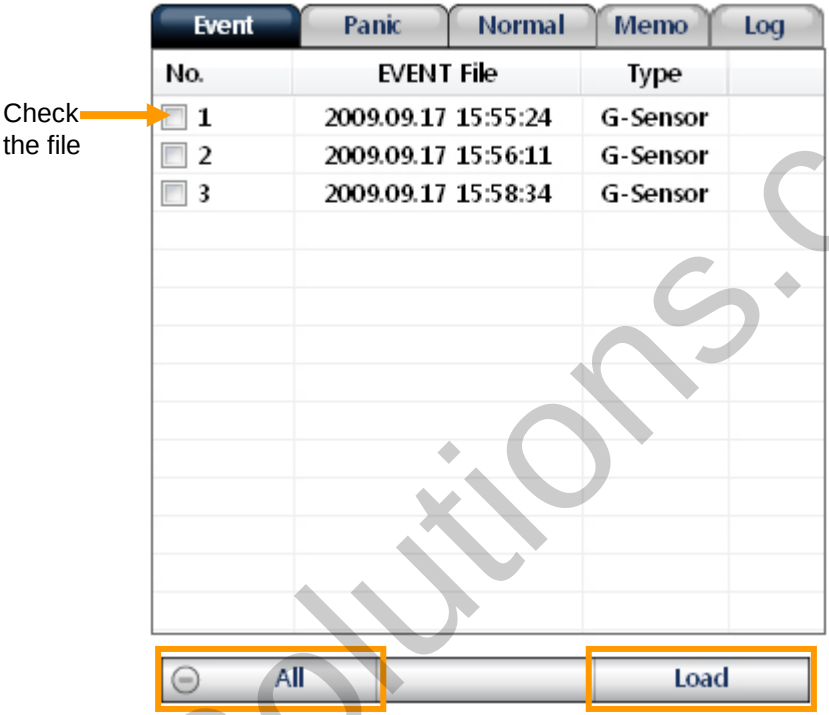
The date format and speed unit will be set automatically according to the PC Windows setting but can be manually changed on this menu.

To improve playback quality on your PC, check [Deblocking] box and set [



FILE LOADING

Check the file from the list using mouse or click [All] button.
And then click [Load] button.



All recordings and snapshot files will appear the file area under the tab:

The **Event** file list recorded by G-sensor Motion detection, or Alarm1~3.

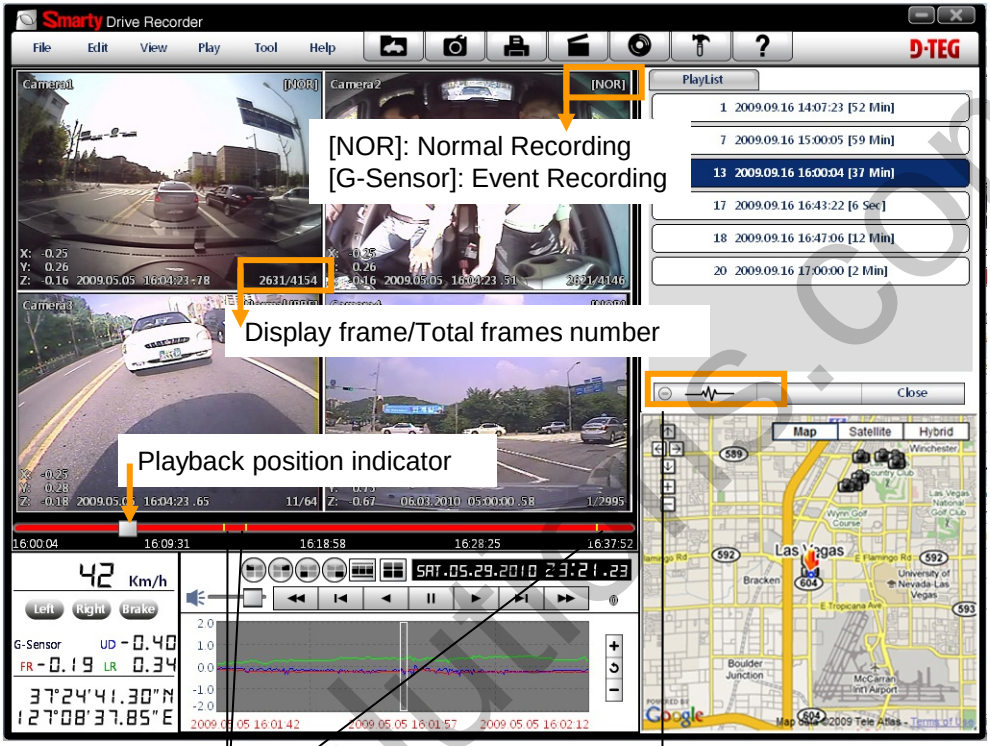
The **Panic** file list recorded by pressing the [PANIC] button.

The **Continuous** record file list.

The **Snapshot** file saved by pressing the [SHUTTER] button.

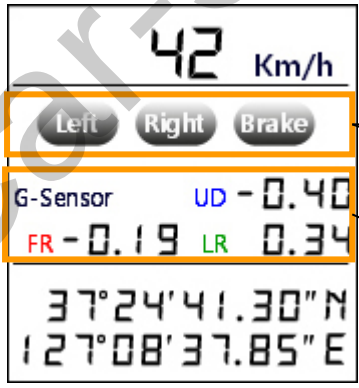
The **Log** file list.

PLAYBACK SCREEN



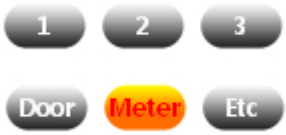
The Yellow mark indicates there is an Event triggered by the G-sensor, Alarm1~3 or the [PANIC] button.

Event data search button is enabled when playing back Normal recorded files.



The 'icon name' can be changed in the setting menu.

Eg:

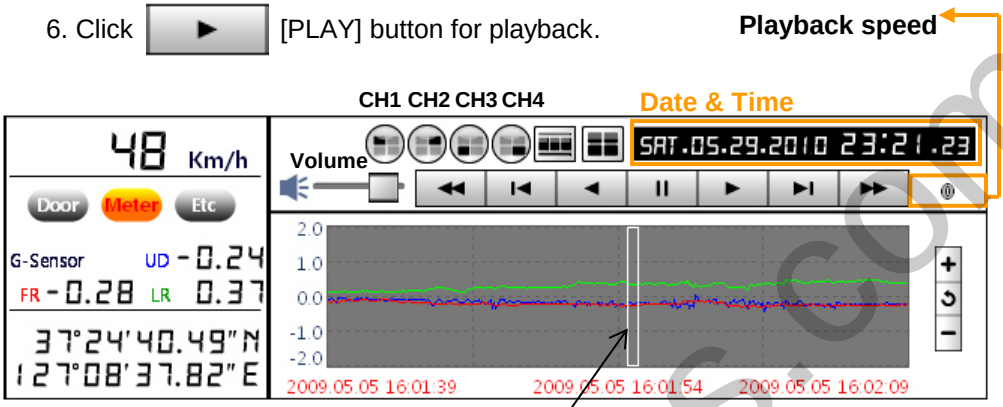


G-Sensor Data
UD: Up/Down direction
FR: Front/Rear direction
LR: Left/Right direction

GPS location information(the north latitude, the east longitude)

PLAYBACK

6. Click [▶] [PLAY] button for playback.



Drag & Move the white line to move the playback position.

Playback buttons

X2, 4, 8, 16 Fast Reverse | **X0.5, 1 Reverse** | **X0.5, 1 Play** | **X2, 4, 8, 16 Fast Forward**

◀◀ | ⏮ | ◀ | ⏸ | ▶ | ⏭ | ▶▶

Previous Image | **Pause** | **Next Image**

Sing View (CH1, CH2, CH3, CH4) **Quad View**

4x4 Multi View (Thumb-nail function)

Zoom In G-sensor graph

Reset Zoom

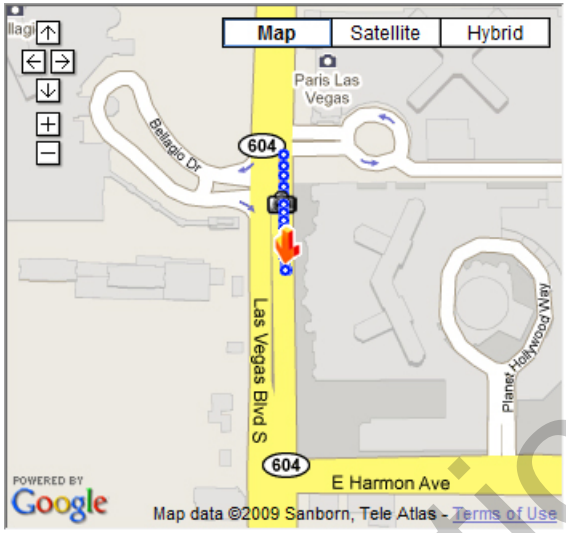
Zoom Out G-sensor graph

NOTE: PC Keyboard hot buttons

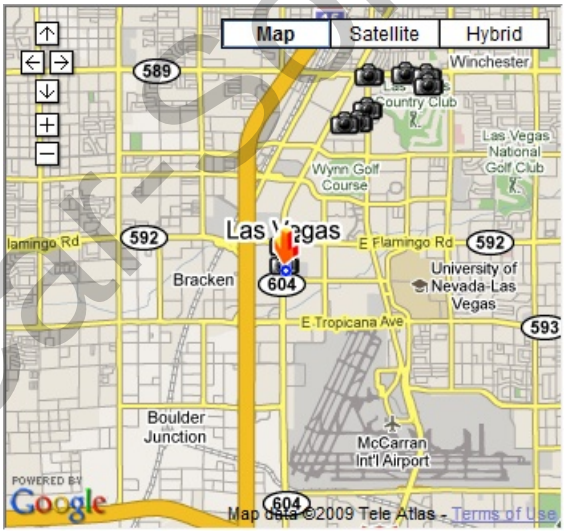
Function	PC keyboard hot buttons
1024x768 mode	Enter Return to the previous mode: Enter
Full screen mode	Alt + Enter Return to the previous mode: Enter
Playback speed control	Ctrl + F 0.5 => 1
Reverse playback speed control	Ctrl + B 0.5 => 1
Pause / Play	Space
Previous Image	→ direction button.
Next Image	← direction button

Google map (Event Recording File)

The route taken will be displayed on the Google map at lower right corner of the software.



Zoom Out



⚠ To see the route & position on the Google map, the GPS data should be recorded with video.

To see the map, the PC should be connected to the Internet.

The playback position will be shown on the map with an arrow. The blue markings show the route taken.

Double click the blue mark to change the video playback position to that point.

The camera icon indicates that there is a recorded file.

The total camera icons shown will be less than 100, even if there are more than 100 events.

When the unit is set to Normal recording mode, there is no route & camera icon on the map.

Thumb-nail Function

7. Click  button for 4x4 multi view (Thumb-nail function)

Click the thumb-nail image to change the playback position.
Click right button of mouse to go back to single/Quad image playback mode.

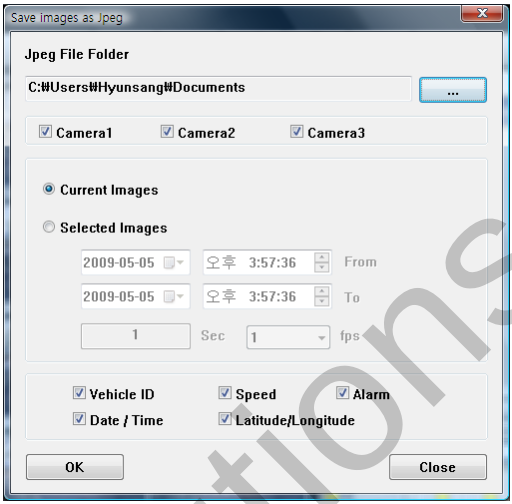
8. Click [Close] button to quit the event playback.

Click [Close] to finish the event playback. Then the [PlayList] window will be changed to the initial status.

Save JPG file & AVI file

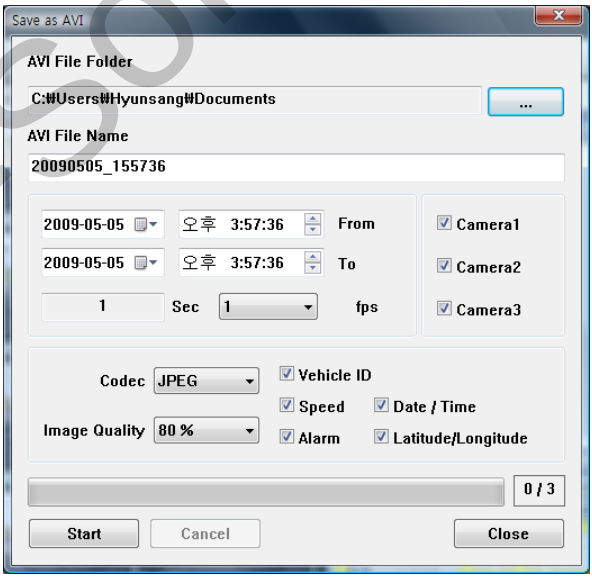
Pause the playback and click ‘Save Image’ icon to make a JPG file.

‘Save Image’ icon



Pause the playback and Click ‘Save AVI’ icon to make a AVI file.

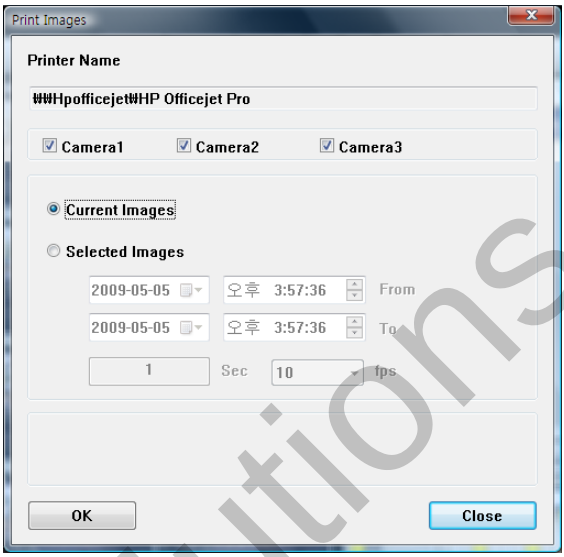
‘Save AVI’ icon



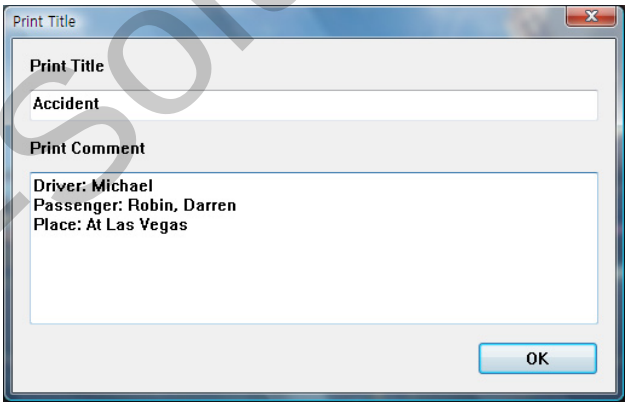
Print image

11. Pause the playback and click ‘Print Image’ icon.

Print image icon

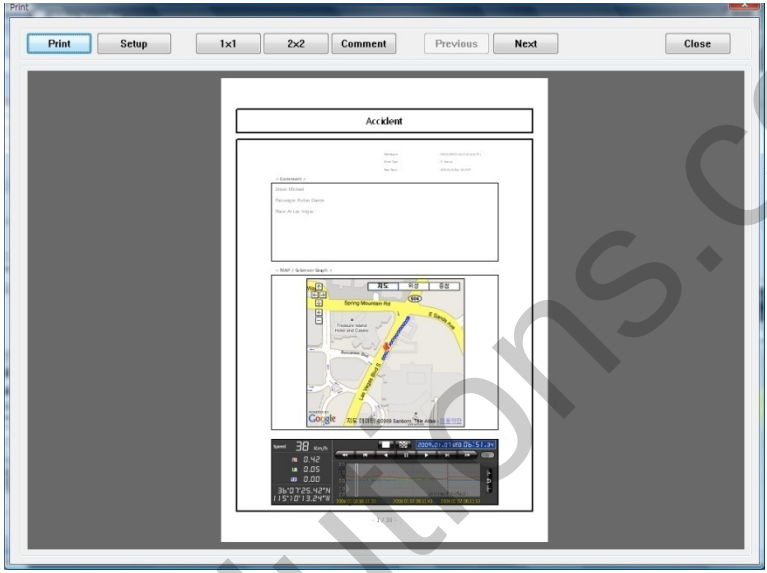


Input [Print Title] & [Print Comment] using Keyboard.

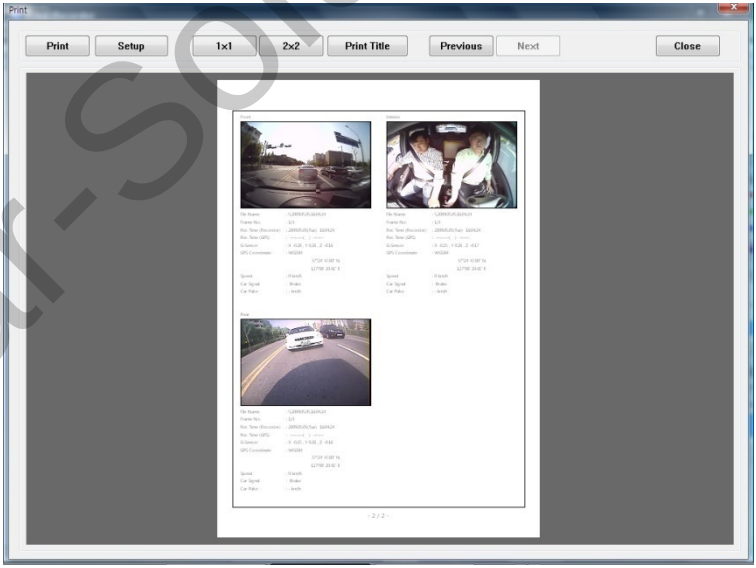


Total Print Comment window allows up to 7 lines total.

12. Click [Print] button in the print preview windows for printing.
[Print Title] & [Print Comment] & G-sensor graph & map will be printed on the first page.



Click [2x2] and then click [Print] to print 4 images in one page.

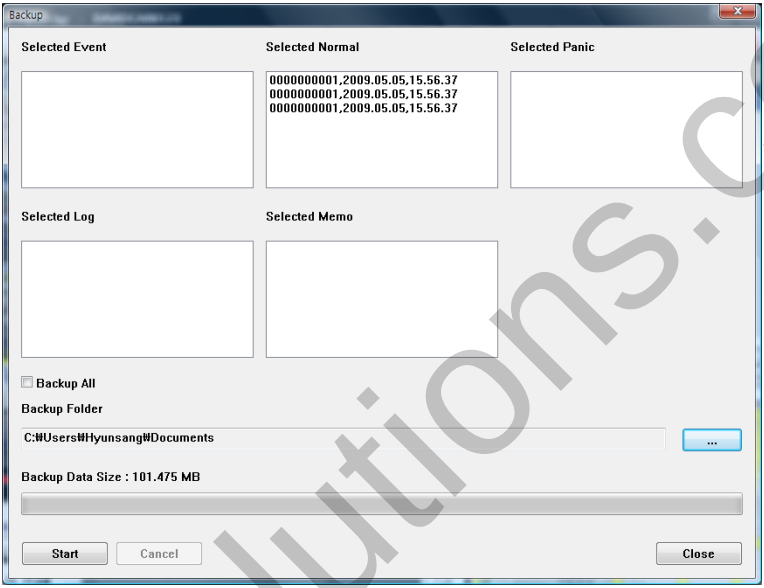


To print CH1~3 together select 1frame only.

Backup

13. Click [Backup] icon to backup the files to the PC.

 [Backup] icon

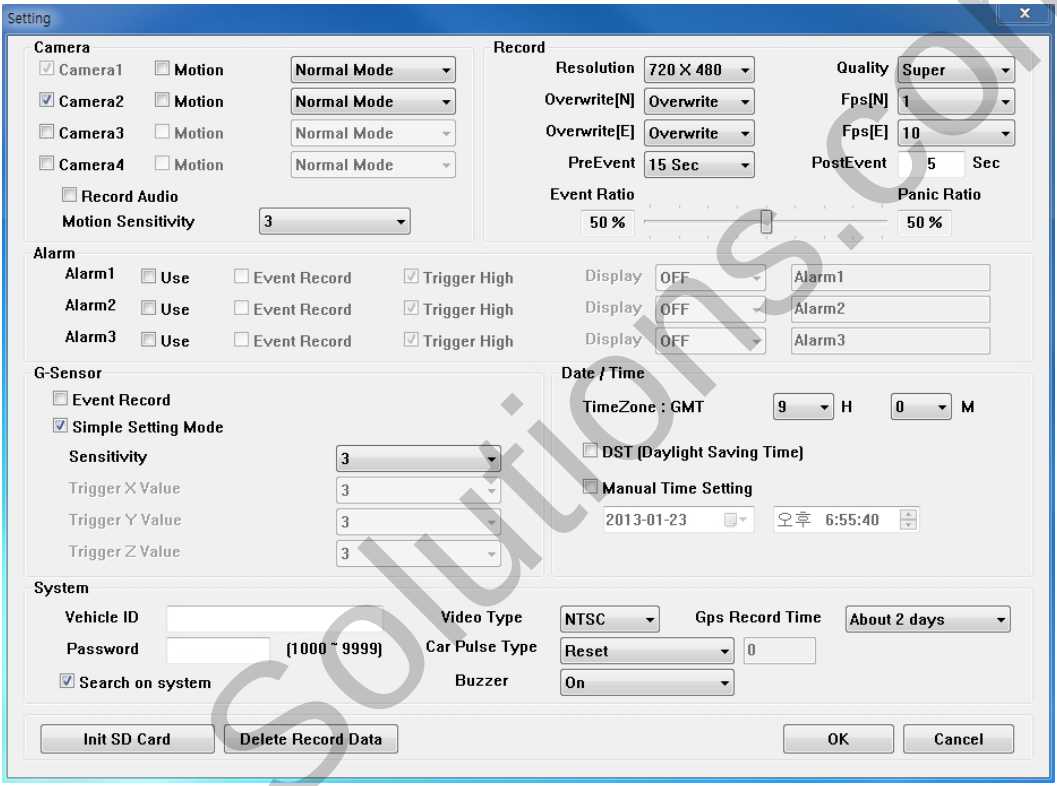


Check & Load [Event], [Normal], [Panic] [Log] & [Memo] data first, before clicking the [Backup] icon. The selected files will appear in the lists in the Backup windows.
OR
Check [Backup All] and press [Start] button to backup all files.

Setting Drive Recorder

14. Click [Setting Drive Recorder] icon for setup.

[Setting Drive Recorder] icon



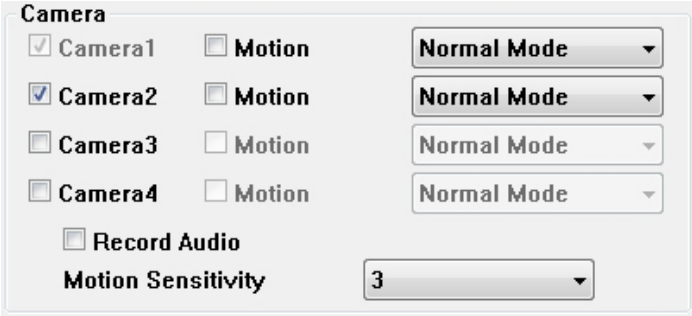
Caution

Backup SD card data first, before clicking initialize SD card button or before changing the Record Mode from Normal Mode to Event Mode or vice versa. All normal recording data or all event recording data in SD card will be automatically deleted to make a free space on the SD card. Once done, the old data cannot be recovered.

Initialize SD card : All data will be deleted and set the configuration of Drive Recorder will default to the factory settings.

Record Mode Change: All normal recording data or all event recording data in SD card will be automatically deleted to make a free space at SD.

Setting Drive Recorder



To record Camera2 or Camera3, Camera4 check “Use” box.
To record Audio, check “Record Audio” box.
To use Motion Detection as an Event, check “Motion” box per camera.

Record Mode	Normal Mode: Continuous recording will automatically start after booting the BX4000. Event Mode: Recording by Motion Detection, G-sensor, Alarm1~3 or [PANIC] button. Dual Mode: Continuous recording will automatically start after booting and make a separate event recording file when there is an event.
Motion Sensitivity	Select Motion Detection Sensitivity from 1 to 5. 5 (High): The most sensitive 4 3 (middle): Default value 2 1 (LOW): Insensitive

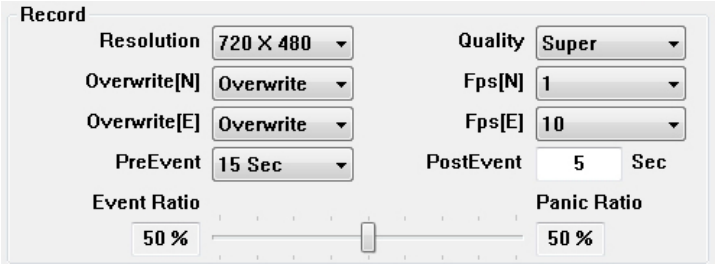
⚠ To record by Motion Detection

Check Motion per camera and set Record Mode as Event Mode.

⚠ Dual Recording and Dual Mode

If you set dual record mode or different record modes per camera, like camera1 set as Event record and camera2 set as Normal record, then camera1(Event record) will work according to the Fps(E) setting for example 10frames per second recording and camera2(Normal record) will work according to the Fps(N) setting for example 1 frames per second recording or same as Fps(E) setting.

Setting Drive Recorder



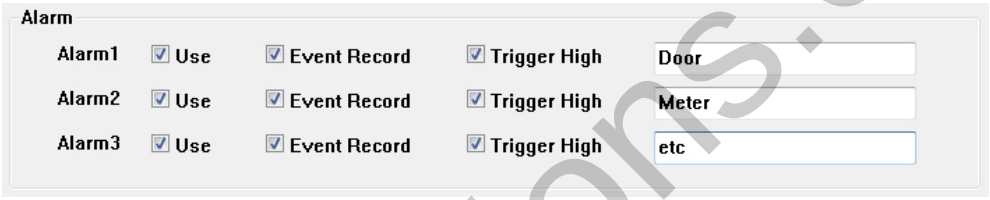
Resolution	PAL: 720x576, 720x288 NTSC: 720x480, 720x240
Frame Rate	1 Camera supports 1~25 fps@ 720x576, 1~25 fps @ 720x288 1~30 fps@ 720x480, 1~30 fps @ 720x240 2 Cameras supports 1~12 fps @ 720x576, 1~25 fps @ 720x288 1~15 fps @ 720x480, 1~30 fps @ 720x240 3 Cameras supports 1 ~ 8 fps @ 720x576, 1~12 fps @ 720x288 1~10 fps @ 720x480, 1~15 fps @ 720x240 4 Cameras supports 1 ~ 4 fps @ 720x576, 1~12 fps @ 720x288 1 ~ 5 fps @ 720x480, 1~15 fps @ 720x240
Quality(4 level)	Super (Large file size, but good picture quality) Low (Small file size, but low picture quality)
Pre Event Post Event	Pre-record/Post-record time can be set here. Pre-record time is 5~30sec, if total frame rate is below 8fps @ 720x576 or 10fps @ 720x480. Pre-record time is 5~25sec, if total frame rate is 12fps @ 720x576 or 15fps @ 720x480. Pre-record time is 5~15sec, if total frame rate is 25fps @ 720x576 or 30fps @ 720x480. Post-record time is 5~300sec
Overwrite	Overwrite (The image data is overwrites the oldest files when the SD memory is full.) One time (The recording stops automatically when the SD memory is full.)
Event Ratio Vs. Panic Ratio	Set the Event data percentage and the Max Number of Panic event data percentage.

If you set the event record mode only, then 100% of SD card capacity is for the Event recording data.
If you set the normal record mode only, then 100% of SD card capacity is for the Normal recording data.
If you set dual record mode or different record modes per camera, like camera1 set as Event record and camera2 set as Normal record, then 30% of SD card capacity is for the Event recording data and 70% of SD card capacity is for the Normal recording data.
The total number of Event Data (including Panic and Event) recorded cannot exceed 1,600.

Setting Drive Recorder

To record the car signal with video, set the Alarm configuration as below,

To use the Alarm as an Event trigger, (i.e: so Event recording will start when a door is open or Meter is on) set the Alarm configuration as below,

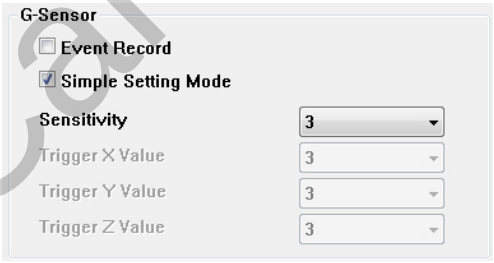


To use the Alarm as a changing live Display trigger, set the Display configuration,

G-Sensor setting

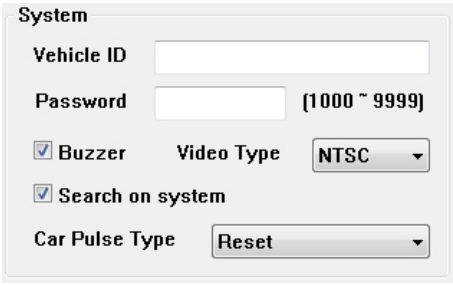
If G-sensor sensitivity value is too high like 5, it becomes too sensitive, so it will detect even a light impact or light turn. If G-sensor sensitivity value is too dull, so it might no detect a notable incident.

So, sensitivity should be set in consideration of a vehicle's suspension, condition and also the road condition.

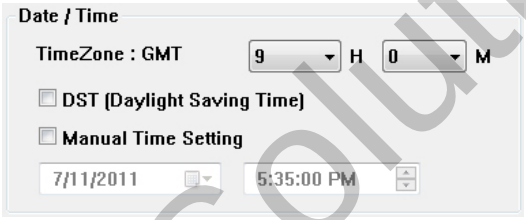


If you don't want to record an Event triggered by G-sensor, un-check Event Record box.

Setting Drive Recorder



Vehicle ID	Type in your Vehicle ID
Password	Enter 4 numbers from 1000 to 9999 as a password [Search on system] function (Playback on a car) will not work after set the password.
Buzzer	“Beep” sound ON/OFF when Event recording starts
Video Type	This should be set by Camera Video type.
Search on system	To use the playback function on the recorder.



To record the exact time, this time zone setting is important.

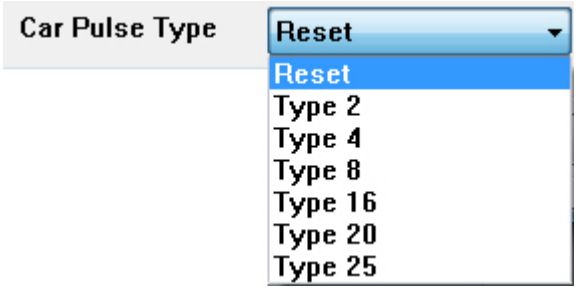
Once you set the time zone, automatically synchronize time using GPS time. However Manual time setting is also available.

Select GPS Record Time (the total log file size)

About 2days (80MB)

About 7days (280MB)

About 31days (1,240MB)



Before using “Car Pulse Type”, connect the White (Speed pulse) cable to the speed pulse line on your car. Please consult your car manufacturer or a car repair shop regarding this connection.

To receive the speed from the car using the White (Speed pulse) line, select the speed pulse type of your car.

If you don’t know the speed pulse type of your car, select “Reset” and drive for more than 30 minutes.

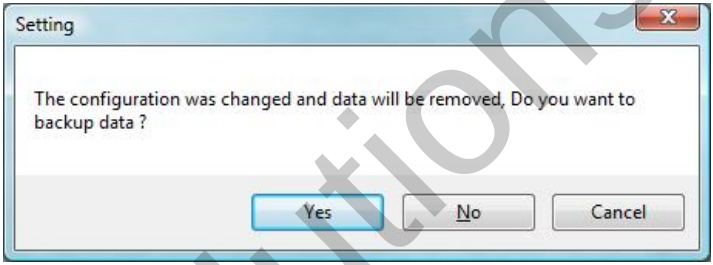
The BX4000 will compare the speed pulse and GPS speed and automatically set your car pulse type.

Setting Drive Recorder

Initialize SD card : All date will be deleted and set the configuration of Drive Recorder will default to the factory settings.

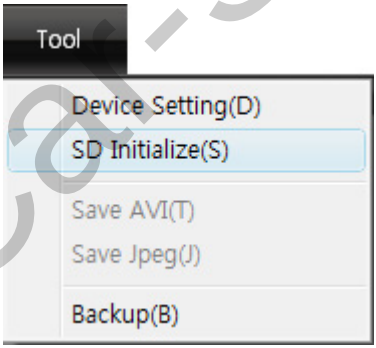
Delete Record Data : All date will be deleted.

⚠**Caution** **Once the record setting was changed, all recorded data in SD card will be removed automatically.**



Select Backup [YES] or [NO] before lost the all recorded data.

NEW SD Memory card initializing should be done using Tool menu.

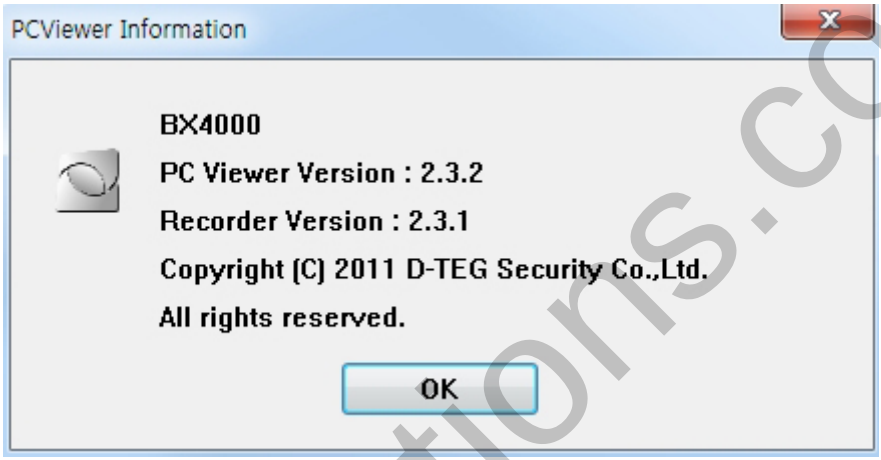


STEP1. Insert new SD memory card into the PC.
STEP2. Run “PC Viewer BX4000”
STEP3. Select [Tool] and then click [SD Initialize]

We recommend the [SD initialize] at least once per month to prevent the BX4000 from any software errors.

15. Click [About] icon to check the product information.

 About icon

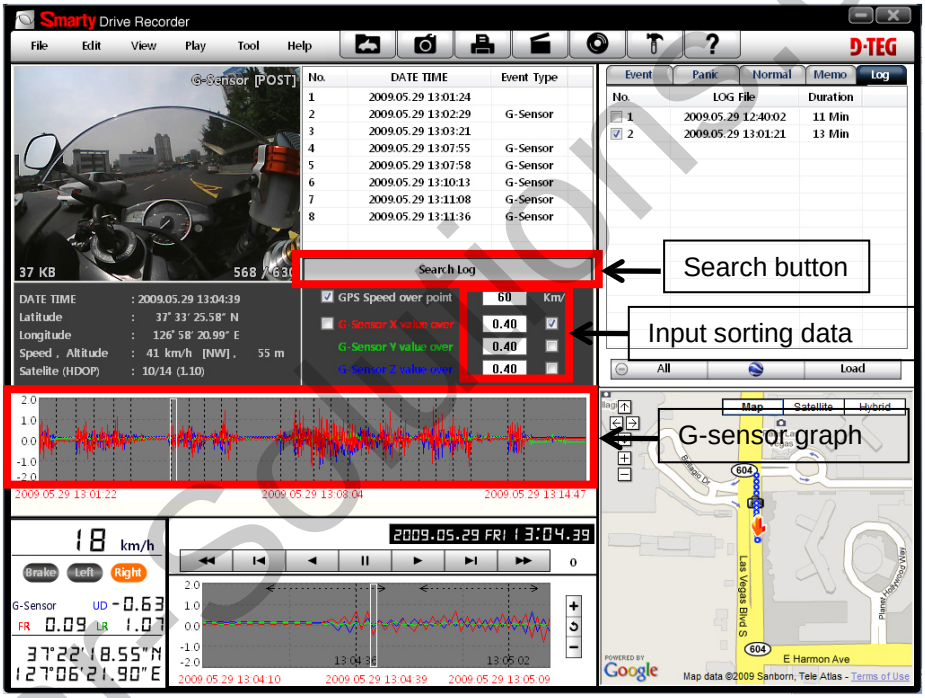


LOG FILE PLAYBACK

16. Select [LOG] tab windows and then check the log from the log list using mouse or click [Check All] button. Then click [Load] button.

Log data

Log data will be recorded during driving even if there are no events. The total log data size can not exceed 48MB. The unit overwrites the oldest data when 48MB is reached. Using this log data, we can use the data sorting function to help find specific data (for example, to find all the times when the vehicle was travelling at more than 80mph(or 80km).



GPS speed, G sensor X value, G sensor Y value, G sensor Z value data can be used to narrow a search for journey information. The small check box at right side of each value should be ticked before the data for search is inputted. If any recorded video data matches the search query, a list will show up with [Switch] or [G Sensor] indicators to show how the recording was triggered.

G sensor X value: Front/Back movement (like a harsh brake or quick start)
G sensor Y value: Left/Right movement (like a harsh turn)
G sensor Z value: Up/Down movement (like a bump or depression)

GPS LOG TO KML CONVERTER (for Google Earth)

Google Earth icon

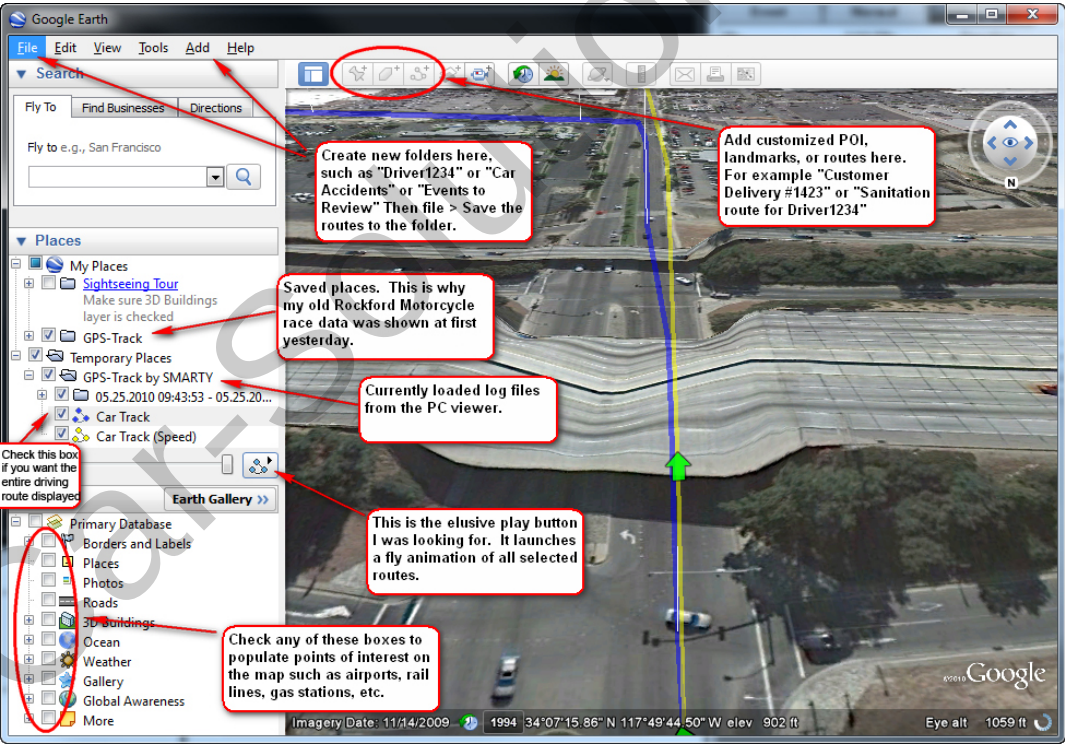
To see the whole route on Google Earth, select a log file and click Google Earth button.

STEP1. Install the Google Earth on your PC. It is free of charge.
(http://earth.google.com/)

STEP2. Check the log file

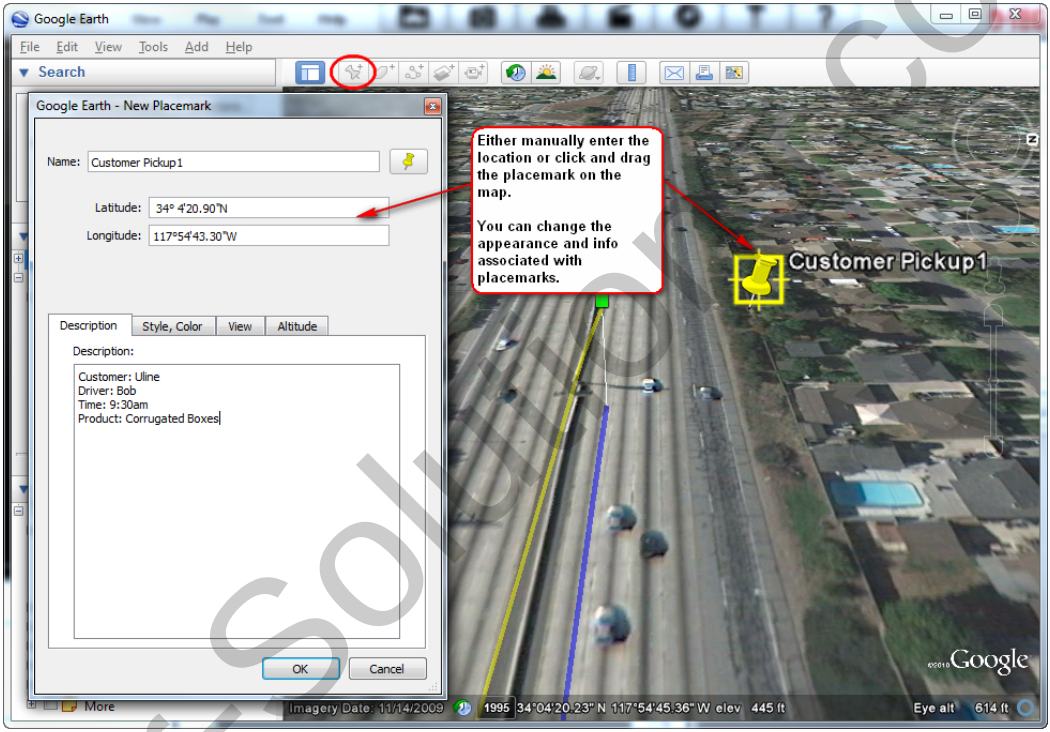
STEP3. Click Google Earth button

Then the route will be exported to Google Earth, which will automatically launch.



GPS LOG TO KML CONVERTER (for Google Earth)

Google Earth lets you import the log data and save routes, add place marks (i.e. customer pick up locations, or other points of interest), add driving routes (to compare with the actual route taken, and it lets you save it all within Google Earth for easy and free data management!



You can view and download Google Earth tutorials and user guides here:

http://earth.google.com/support/bin/static.py?page=guide_toc.cs

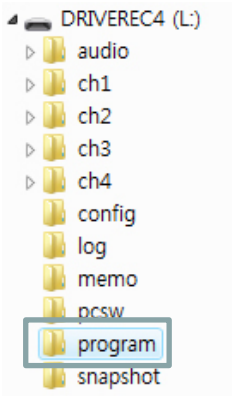
APPENDIX (Firmware Upgrade)

First, upgrade the BX4000 main unit,
Second, install new PC viewer software on your PC,
and then initialize the SD card using new PC viewer software.

[NOTE] To get the upgrade firmware, please contact your local distributor. New firmware is released occasionally by D-TEG.

1. Preparing Firmware

Make [program] folder at SD root folder as below,



Copy “BX4000_X.X.X.bin” file in to the SD card [program] folder.

2. Upgrade BX4000

Insert the prepared SD card to BX4000 Series and turn on the power.

The Blue & Red LED will be quickly blink while the unit is upgrading.
It will also “Beep” continuously, Upgrading the unit usually takes about 2 to 3 minutes.

Warning: Do not turn off the power during upgrading.
If the upgrade fails, the “BX4000” unit should be returned to your local distributor.

Once the upgrading is finished, the unit will automatically turn off and on the power.

If BX4000 records as normal, turn off the power.
Insert the SD card into your PC and initialize it using the software once you have successfully tested the unit.

APPENDIX (Upgrade)

3. Uninstall the old version PC Viewer from the PC

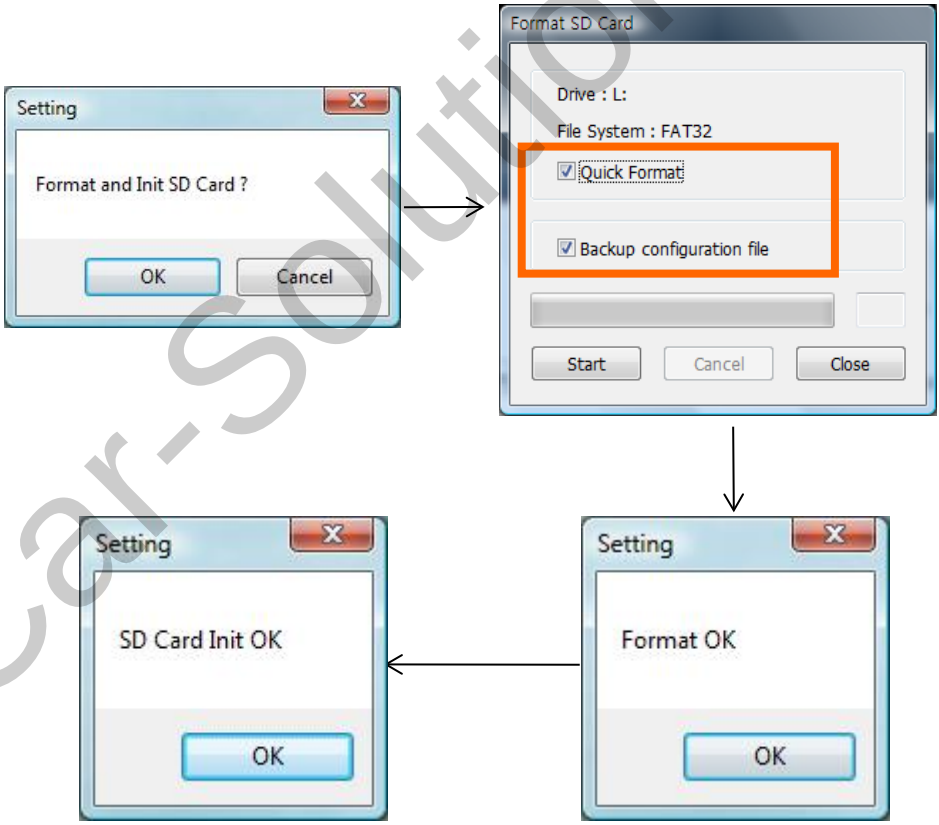
PC Windows [Start] => [Control panel]
And uninstall [PCViewer]

4. Install the new PC Viewer

Run setup.exe and install the new PC Viewer X.X.X.X

Note: After installation the new PC Viewer, initialize the SD card. The new software will automatically be copied to [pcsw] folder at SD card.

To initialize the SD card.
Run the 'PC Viewer' software and select [Tool] > [SD initialize]



Recording / Storage Time Table (NTSC)

Note: This is a guideline only. Actual results may very depending on a variety of factors (Video signal, image, etc.)

1 Camera Continuous Recording

Resolution	Quality	FPS per Camera	4GB	8GB	16GB	32GB
720x480 (D1)	High	30	2 hours	4 hours	9 hours	18 hours
		15	4 hours	8 hours	16 hours	32 hours
		10	6 hours	11 hours	22 hours	44 hours
		5	9 hours	17 hours	34 hours	69 hours
		3	11 hours	22 hours	45 hours	89 hours
		2	13 hours	26 hours	52 hours	105 hours
		1	16 hours	32 hours	64 hours	127 hours
720x240 (Half D1)	High	30	4 hours	9 hours	18 hours	36 hours
		15	8 hours	16 hours	32 hours	64 hours
		10	11 hours	22 hours	44 hours	87 hours
		5	17 hours	34 hours	69 hours	137 hours
		3	22 hours	45 hours	89 hours	178 hours
		2	26 hours	52 hours	105 hours	210 hours
		1	32 hours	63 hours	127 hours	254 hours

Resolution	Quality	FPS per Camera	4GB	8GB	16GB	32GB
720x480 (D1)	Low	30	3 hours	5 hours	11 hours	22 hours
		15	5 hours	10 hours	20 hours	40 hours
		10	7 hours	14 hours	27 hours	55 hours
		5	11 hours	22 hours	44 hours	89 hours
		3	15 hours	30 hours	59 hours	119 hours
		2	18 hours	36 hours	71 hours	142 hours
		1	22 hours	44 hours	89 hours	178 hours
720x240 (Half D1)	Low	30	5 hours	11 hours	22 hours	43 hours
		15	10 hours	20 hours	40 hours	79 hours
		10	14 hours	27 hours	55 hours	110 hours
		5	22 hours	44 hours	89 hours	178 hours
		3	30 hours	59 hours	119 hours	237 hours
		2	36 hours	71 hours	142 hours	285 hours
		1	44 hours	89 hours	178 hours	356 hours

2 Cameras Continuous Recording

Resolution	Quality	FPS per Camera	4GB	8GB	16GB	32GB
720x480 (D1)	High	15	2 hours	4 hours	8 hours	16 hours
		10	3 hours	6 hours	11 hours	22 hours
		5	4 hours	9 hours	17 hours	34 hours
		3	6 hours	11 hours	22 hours	45 hours
		2	7 hours	13 hours	26 hours	52 hours
		1	8 hours	16 hours	32 hours	64 hours
720x240 (Half D1)	High	15	4 hours	8 hours	16 hours	32 hours
		10	5 hours	11 hours	22 hours	44 hours
		5	9 hours	17 hours	34 hours	69 hours
		3	11 hours	22 hours	45 hours	89 hours
		2	13 hours	26 hours	52 hours	105 hours
		1	16 hours	32 hours	63 hours	127 hours

Resolution	Quality	FPS per Camera	4GB	8GB	16GB	32GB
720x480 (D1)	Low	15	2 hours	5 hours	10 hours	20 hours
		10	3 hours	7 hours	14 hours	27 hours
		5	6 hours	11 hours	22 hours	44 hours
		3	7 hours	15 hours	30 hours	59 hours
		2	9 hours	18 hours	36 hours	71 hours
		1	11 hours	22 hours	44 hours	89 hours
720x240 (Half D1)	Low	15	5 hours	10 hours	20 hours	40 hours
		10	7 hours	14 hours	27 hours	55 hours
		5	11 hours	22 hours	44 hours	89 hours
		3	15 hours	30 hours	59 hours	119 hours
		2	18 hours	36 hours	71 hours	142 hours
		1	22 hours	44 hours	89 hours	178 hours

3 Cameras Continuous Recording

Resolution	Quality	FPS per Camera	4GB	8GB	16GB	32GB
720x480 (D1)	High	10	2 hours	4 hours	7 hours	15 hours
		5	3 hours	6 hours	12 hours	23 hours
		3	4 hours	7 hours	15 hours	30 hours
		2	4 hours	9 hours	18 hours	35 hours
		1	5 hours	11 hours	21 hours	42 hours
720x240 (Half D1)	High	10	4 hours	7 hours	15 hours	29 hours
		5	6 hours	11 hours	23 hours	46 hours
		3	7 hours	15 hours	30 hours	59 hours
		2	9 hours	17 hours	35 hours	70 hours
		1	11 hours	21 hours	42 hours	85 hours

Resolution	Quality	FPS per Camera	4GB	8GB	16GB	32GB
720x480 (D1)	Low	10	2 hours	5 hours	9 hours	18 hours
		5	4 hours	7 hours	15 hours	30 hours
		3	5 hours	10 hours	20 hours	40 hours
		2	6 hours	12 hours	24 hours	47 hours
		1	7 hours	15 hours	30 hours	59 hours
720x240 (Half D1)	Low	10	5 hours	9 hours	18 hours	37 hours
		5	7 hours	15 hours	30 hours	59 hours
		3	10 hours	20 hours	40 hours	79 hours
		2	12 hours	24 hours	47 hours	95 hours
		1	15 hours	30 hours	59 hours	119 hours

4 Cameras Continuous Recording

Resolution	Quality	FPS per Camera	4GB	8GB	16GB	32GB
720x480 (D1)	High	5	2 hours	4 hours	9 hours	17 hours
		3	3 hours	6 hours	11 hours	22 hours
		2	3 hours	7 hours	13 hours	26 hours
		1	4 hours	8 hours	16 hours	32 hours
720x240 (Half D1)	High	5	4 hours	9 hours	17 hours	34 hours
		3	6 hours	11 hours	22 hours	45 hours
		2	7 hours	13 hours	26 hours	52 hours
		1	8 hours	16 hours	32 hours	64 hours

Resolution	Quality	FPS per Camera	4GB	8GB	16GB	32GB
720x480 (D1)	Low	5	3 hours	7 hours	14 hours	27 hours
		3	4 hours	7 hours	15 hours	30 hours
		2	4 hours	9 hours	18 hours	36 hours
		1	6 hours	11 hours	22 hours	44 hours
720x240 (Half D1)	Low	5	7 hours	14 hours	27 hours	55 hours
		3	7 hours	15 hours	30 hours	59 hours
		2	9 hours	18 hours	36 hours	71 hours
		1	11 hours	22 hours	44 hours	89 hours

Recording / Storage Time Table (PAL)

Note: This is a guideline only. Actual results may very depending on a variety of factors (Video signal, image, etc.)

1 Camera Continuous Recording

Resolution	Quality	FPS per Camera	4GB	8GB	16GB	32GB
720x576 (D1)	High	25	3 hours	5 hours	10 hours	21 hours
		12	5 hours	10 hours	19 hours	38 hours
		8	6 hours	13 hours	26 hours	51 hours
		4	10 hours	19 hours	39 hours	78 hours
		2	13 hours	26 hours	52 hours	105 hours
		1	16 hours	32 hours	63 hours	127 hours
720x288 (Half D1)	High	25	5 hours	10 hours	21 hours	42 hours
		12	10 hours	19 hours	38 hours	76 hours
		8	13 hours	26 hours	51 hours	102 hours
		4	19 hours	39 hours	78 hours	155 hours
		2	26 hours	52 hours	105 hours	210 hours
		1	32 hours	63 hours	127 hours	254 hours

Resolution	Quality	FPS per Camera	4GB	8GB	16GB	32GB
720x576 (D1)	Low	25	3 hours	6 hours	13 hours	25 hours
		12	6 hours	12 hours	24 hours	47 hours
		8	8 hours	16 hours	32 hours	65 hours
		4	13 hours	25 hours	51 hours	102 hours
		2	18 hours	36 hours	71 hours	142 hours
		1	22 hours	44 hours	89 hours	178 hours
720x288 (Half D1)	Low	25	6 hours	13 hours	25 hours	51 hours
		12	12 hours	24 hours	47 hours	95 hours
		8	16 hours	32 hours	65 hours	129 hours
		4	25 hours	51 hours	102 hours	203 hours
		2	36 hours	71 hours	142 hours	285 hours
		1	44 hours	89 hours	178 hours	356 hours

2 Cameras Continuous Recording

Resolution	Quality	FPS per Camera	4GB	8GB	16GB	32GB
720x576 (D1)	High	12	2 hours	5 hours	10 hours	19 hours
		8	3 hours	6 hours	13 hours	26 hours
		4	5 hours	10 hours	19 hours	39 hours
		2	7 hours	13 hours	26 hours	52 hours
		1	8 hours	16 hours	32 hours	63 hours
720x288 (Half D1)	High	12	5 hours	10 hours	19 hours	38 hours
		8	6 hours	13 hours	26 hours	51 hours
		4	10 hours	19 hours	39 hours	78 hours
		2	13 hours	26 hours	52 hours	105 hours
		1	16 hours	32 hours	63 hours	127 hours

Resolution	Quality	FPS per Camera	4GB	8GB	16GB	32GB
720x576 (D1)	Low	12	3 hours	6 hours	12 hours	24 hours
		8	4 hours	8 hours	16 hours	32 hours
		4	6 hours	13 hours	25 hours	51 hours
		2	9 hours	18 hours	36 hours	71 hours
		1	11 hours	22 hours	44 hours	89 hours
720x288 (Half D1)	Low	12	6 hours	12 hours	24 hours	47 hours
		8	8 hours	16 hours	32 hours	65 hours
		4	13 hours	25 hours	51 hours	102 hours
		2	18 hours	36 hours	71 hours	142 hours
		1	22 hours	44 hours	89 hours	178 hours

3 Cameras Continuous Recording

Resolution	Quality	FPS per Camera	4GB	8GB	16GB	32GB
720x576 (D1)	High	8	2 hours	4 hours	9 hours	17 hours
		4	3 hours	6 hours	13 hours	26 hours
		2	4 hours	9 hours	17 hours	35 hours
		1	5 hours	11 hours	21 hours	42 hours
720x288 (Half D1)	High	8	4 hours	9 hours	17 hours	34 hours
		4	6 hours	13 hours	26 hours	52 hours
		2	9 hours	17 hours	35 hours	70 hours
		1	11 hours	21 hours	42 hours	85 hours

Resolution	Quality	FPS per Camera	4GB	8GB	16GB	32GB
720x576 (D1)	Low	8	3 hours	5 hours	11 hours	22 hours
		4	4 hours	8 hours	17 hours	34 hours
		2	6 hours	12 hours	24 hours	47 hours
		1	7 hours	15 hours	30 hours	59 hours
720x288 (Half D1)	Low	8	5 hours	11 hours	22 hours	43 hours
		4	8 hours	17 hours	34 hours	68 hours
		2	12 hours	24 hours	47 hours	95 hours
		1	15 hours	30 hours	59 hours	119 hours

4 Cameras Continuous Recording

Resolution	Quality	FPS per Camera	4GB	8GB	16GB	32GB
720x576 (D1)	High	4	2 hours	5 hours	10 hours	19 hours
		2	3 hours	7 hours	13 hours	26 hours
		1	4 hours	8 hours	16 hours	32 hours
720x288 (Half D1)	High	4	5 hours	10 hours	19 hours	39 hours
		2	7 hours	13 hours	26 hours	52 hours
		1	8 hours	16 hours	32 hours	63 hours

Resolution	Quality	FPS per Camera	4GB	8GB	16GB	32GB
720x576 (D1)	Low	4	3 hours	6 hours	13 hours	25 hours
		2	4 hours	9 hours	18 hours	36 hours
		1	6 hours	11 hours	22 hours	44 hours
720x288 (Half D1)	Low	4	6 hours	13 hours	25 hours	51 hours
		2	9 hours	18 hours	36 hours	71 hours
		1	11 hours	22 hours	44 hours	89 hours

Buzzer / LED specification

*** Buzzer specification**

Condition	Buzzer No.	Buzzer On	Buzzer Off
Event	1	1 sec	-
SHUTTER(Snap shot)	1	200 msec	-
Press button and then changed mode	1	200 msec	-
SD card fail	continuously Stop by pressing [PANIC] button	500 msec	500 msec
SD card full at [One time] record mode	continuously	2 sec	2 sec

*** LED specification**

Status		Blue LED	Red LED
Power on		ON	ON
Booting		ON/OFF	ON/OFF
Before Overwriting	Pre Event recording Continuous recording	ON	OFF
	Event recording	ON/OFF Quickly	OFF
	Event recording during continuous recording mode. (5seconds)	ON/OFF Quickly	OFF
	SHUTTER recording	ON/OFF Quickly	OFF
During Overwriting	Pre Event recording Continuous recording	ON	ON
	Event recording	ON/OFF Quickly	ON
	Event recording during continuous recording mode. (5seconds)	ON/OFF Quickly	ON
	SHUTTER recording	ON/OFF Quickly	ON
One Time record mode (When SD card full)		OFF	ON/OFF Slowly
During Playback OSD menu		ON/OFF	ON/OFF
SD Card fail		ON/OFF Slowly	ON/OFF Slowly

SPECIFICATION

Model: BX4000	
Video In	CH1- 5V camera in, CH2- 5V camera in, CH3- 5V camera in, CH4- camera in (power
Audio In	1CH (Internal or External Microphone)
AV Out	1 Video out, 1 Audio out
Continuous record Event record	NTSC: 720x480 (30fps) 720x240 (60fps) PAL: 720x576 (25fps) 720x288 (50fps)
Recording time	2hours ~ 356hours (14days 20hours)
Shutter record	Still Image + Audio (5 sec)
Main memory	4GB SDHC (support 32GB SDHC)
GPS	External GPS Module
G Sensor	Internal 3-axis G-Sensor
RTC	Internal battery
Car Signal	Brake, Left Turn, Right Turn, Speed Pulse
Alarm Input	3 (Both level and edge triggers can be used e.g. door, lights, etc)
Compression	MPEG4 (Continues recording) MJPEG (Event recording)
Remote controller	PANIC button, PLAYBACK button, SHUTTER button
LED	2 (Red/Blue)
Analysis Software	PC Viewer (support Google Earth)
Super Capacitor	Enable recording last file and shut down
Power consumption	8.3W (when recording 4cameras)
Size/Weight	70mm X 99 mm X 21mm, 100g,

Technical Support & Warranty

TECHNICAL SUPPORT

For Technical Support, please contact your local distributor.

LIMITED WARRANTY

This product is supplied with 1 year warranty. The Warranty excludes products That have been misused, (including accidental damage) and damage caused by normal wear and tear. In the unlikely event that you encounter a problem with this product, it should be returned to the place of purchase.

Optional Item

DTR-100 	DC 5V, CMOS camera for BX4000 1/4" CMOS Digital Sensor 310K pixels Angle of View: 170° [horizontal(131°) vertical (96 °)] Effective Pixel: 648 (H) x 488 (V) (NTSC/PAL) Min. Illumination: 1 lux Input Voltage: 5V, Power consumption: 0.5W 30mm x 35mm x25mm, 50g, Wire : L=5000±10mm
STR-100 	DC 5V, CCD camera for BX4000 1/3" Sony Super HAD CCD II Angle of View: 90° Effective Pixel: 510(H) X 492(V) (NTSC), 500(H) X 582(V) (PAL) Min. Illumination: 0.1 lux Input Voltage: 5V, Power consumption: Max 200mA 43mm x 38mm x 35mm, 70g, Wire : L=5000±10mm
STR-100IR 	DC 5V, CCD IR camera for BX4000 1/3" Sony Super HAD CCD II Angle of View: 145° Effective Pixel: 510(H) X 492(V) (NTSC), 500(H) X 582(V) (PAL) Min. Illumination: IR LED On 0 lux Input Voltage: 5V, Power consumption: Max. 320mA(LED ON) 43mm x 38mm x 35mm, 70g, Wire : L=5000±10mm
STC-300 	DC 5V, CCD camera for BX4000 1/3" Sony Super HAD CCD II Angle of View: 90° Effective Pixel: 510(H) X 492(V) (NTSC), 500(H) X 582(V) (PAL) Min. Illumination: 0.1 lux Input Voltage: 5V, Power consumption: Max 200mA Φ80 x 61 mm 300g, Wire : L=5000±10mm
STR-131 	CMOS Rear View Camera, Waterproof (IP 68) 1/4" Hi Resolution CMOS, Angle of View: 162° Effective Pixel: (H)640 x (V)480 (NTSC / PAL) Video out: 1.0 Vp-p (Composite), Min. Illumination: 1 lux Operating Temperature: -30°C ~ 85°C Input Voltage: DC 12V (±20%), Low Power consumption: Max. 35mA 28.00 x 29.00 x 26.00 mm, 113g, Include 8m extension cable
MIC-100 	External Microphone for BX4000 Sensitivity : -36±5dB(finished product) At 3V, 2.2Kohm, 0dB=1V/Pa 1KHz Impedance : 2.2K Ohm@1KHz Frequency : 100~10,000Hz Current Consumption : 0.5mA Max. Operating Temperature: -40°C ~ 85°C Dimension : Φ9.7 x 5.0mm Plug: Φ3.5mm, mono straight shape, Wire : L=2600±10mm
SLB-100 	Locking Steel Housing for BX4000 Dimension : 155.00 x 130.00 x 24.00 mm, 330g
SH-100 	Steel Housing for BX4000 Dimension : 155.00 x 130.00 x 24.00 mm, 330g

Optional Item (Safe Power Cable)

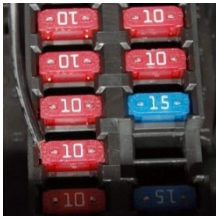
Model name: DPWR-300

The Safe Power Supply Cable can avoid car ignition problem caused by battery low volt.

The Safe Power Supply Cable will automatically cut off the battery power when battery voltage dropped below 12V or 24V

Fuse: 250V 2A

Input Voltage	12V~32V		
Output Voltage	12V~32V (Same with input voltage), Max capacity: 12V 2A or 24V 1A		
Operation Temp.	-20℃ ~ 60℃		
[When it use at 12V car]		[When it use at 24V car]	
Initial Voltage (To turn on the unit)	13V	Initial Voltage (To turn on the unit)	24V
Power Cut Voltage	12V(±0.2V)	Power Cut voltage	22V(±0.4V)



Connect (+) to the fuse box.
It should be connected to an battery circuit.

The ground cable should be connected to car chassis.