



Full HD (1080P) Vehicle Accident Camera

SVC1080-LCA

User Guide

CONTENTS

GPS Function	5
1. Overview	6
2. Introduction	7
Unit Parts	8
Wiring Description	8
3. Contents	9
4. LED Guide	10
5. Functions	12
6. Installation	14
Camera Installation	14
Wiring Installation	14
7. SD Card Functions	16
8. Software Installation	17
9. SD Card Initialise	19
10. Software User Guide	20
Settings	20
About	23
Viewing Settings	24
File Loadng	25
Playback Screen	27
Log File Playback	28
Google Maps	29
Save JPEG & AVI File	30
Print Image	31
Backup Files	32
Cloud Backup	33

GPS Log to KML Converter	35
Driver Reporting	36
Analysis Criteria Settings	38
Grading Criteria Settings	39
Grading Method	43
Graph Display Settings	45
11. Specifications	46
Appendices	
Appendix 1 - Mac OS Playback Software	47
Appendix 2 - Recording Timetable	49
Appendix 3 - Firmware Upgrade	50
Appendix 4 - SD Card Maintenance	52

SAFETY ADVICE



CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN



DO NOT REMOVE THE COVER
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL



Please ensure your vehicle is not powered when connecting the unit to your desired power source.



Install the product where it does not block the driver's view of the road. Please refer to the installation section in the user manual for a full guide on where to install product.



Damages caused by production malfunction, loss of data or other damages that may occur while using this product is not the responsibility of the manufacturer. When malfunction occurs, the product may not save all videos and the sensor may not recognise shock impacts.

WARNING:

DO NOT EXPOSE PRODUCT TO RAIN OR MOISTURE

GPS RECEPTION

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

For commercial purposes, the GPS has an average range error of more than 15 metres and the range error could be more than 100 meters depending on environmental conditions like buildings and 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 recognise 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 windshield
- 3) If equipment generating electromagnetic waves that interfere with the GPS signal are installed in the vehicle e.g. other GPS devices including certain types of wireless activated alarms, MP3 and CD players and camera alarms using GPS.
- 4) If you are using a receiver connected by a cable, electrical 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.

1. OVERVIEW

The SVC1080-LCA is a Vehicle Accident camera with Full HD (1080P) recording. In addition to this, the camera is equipped with a 3 Axis Shock Sensor & GPS for measuring braking, acceleration, driving style and recording location.

The camera includes alarm outputs for telematics integration and permanent wiring. As well as this, the unit includes a transparent locking case to prevent tampering with evidence.

This evidence can protect a driver from many of the issues faced on the roads today:

- Cash for Crash / Pre-meditated staged accidents
- False/Exaggerated Whiplash Claims
- Conflicting Reports of Actual Events
- Lack of Witnesses
- Driving Offence Allegations (Speed Cameras, Traffic Signal Violations etc...)

Features:

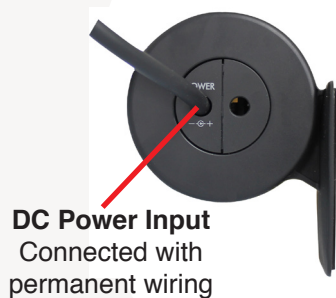
- Continuously records the driver's view via a 170° high-quality lens
- Continuously records braking/acceleration/collision G-forces
- Approved for installation in commercial vehicles
- Built-in GPS receiver ensures the highest accuracy for vehicle location and speed
- Simple DIY installation
- E-mark, EMC, CE and FCC approved for extra peace of mind
- VOSA and Data Protection Act compliant

2. INTRODUCTION

FRONT



RIGHT



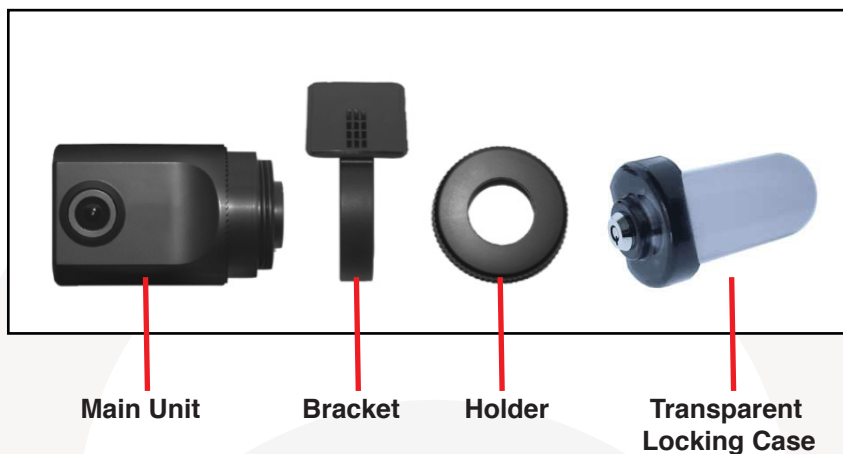
LEFT



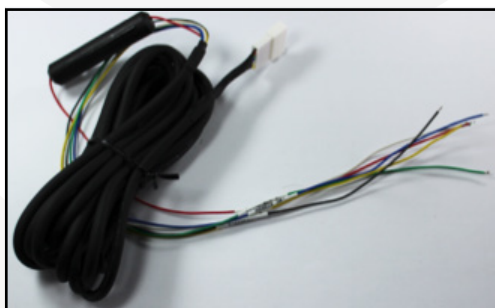
REAR









UNIT PARTS



WIRING DESCRIPTION



	Remote SW+
	Remote SW-
	Battery -
	Alarm Out 1
	Alarm Out 2
	Battery+ (Connect to ignition)

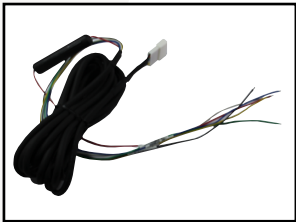
3. CONTENTS



1x SVC1080-LCA Vehicle Accident Camera with locking case



1x 3m Mounting Sticky Pad



1x Power Cable



1x Locking Case Keys



1x User Manual

4. LED GUIDE



BLUE LED (Record)

The Blue LED indicates that the unit is on.

In continuous recording mode, the LED will come on for 4 seconds, then off for one second and repeat.

In event recording mode, the LED will come on for 0.5 seconds, off for 0.5 seconds and then repeat.

In parking mode, the LED will be on for 8 seconds, off for 1 second and repeat.

RED LED (Warning LED)

The Red LED will turn on to indicate a system failure on the unit.

Buzzer

The buzzer will sound when the event recording begins. This can be turned off if required using the settings on the SVC1080-LCA software.

See the table below for an explanation of the LED status changes on the back of the recorder.

No.	BLUE LED	RED LED	Buzzer	Meaning
1	On	On	Off	System Booting Up
2	Double Blink	Double Blink	Off	Upgrade
3	4 Second on 1 Second off	Off	Off	Continuous Recording Mode
4	0.5 Second on 0.5 Second off	Off	Beep once	Triggered Event Recording
5	Off	0.5 Second on 0.5 Second off	Off	SD Card Fault
6	On	On	Off	System Fault
7	On	Off	Beep Twice	SD Unmount
8	On	Off	Beep Twice	SD Reset
9	Off	Off	Off	SD Format
10	Off	2 Second on 2 Second off	Off	SD Card Full
11	Off	Off	Beep once for 1 Sec	Auto Calibration
12	8 Seconds on 1 Second off	Off	Off	Parking Mode
13	Off	Off	Off	Power Off

5. FUNCTIONS

Automatic Booting

Once the SVC1080-LCA has been wired to your car power source, the unit will automatically turn on when the car's ignition is switched on. The system boot up will take around 1 minute before the unit is ready to record. If there is no SD card, the unit will beep and both LEDs will flash.

The default setting for recording is continuous at 30fps with 720P resolution. This setting allows for separate event and panic recordings.

On this setting, the SD card's storage will be used up quicker and depending on the settings, it may overwrite or stop recording when full. To avoid losing valuable data, we recommend that you back up the data onto a separate storage device or PC/Mac.

Recording Mode (Continuous)

This is the only recording mode. In this setting, the unit will begin recording after the system has booted up and record the entire time the unit is powered (SD card has to be present).

However, if you change the resolution to 1080I or 720P you will have continuous recording and event recording. The SVC1080-LCA will automatically create event files based on the below scenarios:

1. Continuously records 720P @ 30fps in the normal folder and overwrite.
2. Up to 10 G-sensor event files will be recorded in the shock folder.
3. Up to 10 Panic event files will be recorded in the panic folder.
4. If you check the parking mode function, then the continuous record frame rate will be changed to 1fps if the car doesn't move for 5 minutes.

Please note that event files will not be created in 1080P mode.

The resolution and frame rates can be set as per your requirements using the SmartWitness software. To do this, please refer to the 'Settings' section on page 20.

Parking Mode

The parking mode function allows you to record data when your vehicle is parked. If the G-sensor value changes are less than 50mg for 5 minutes, the recording frame rate will drop to 1fps.

When the vehicle starts to move again, the parking mode will switch off automatically and starts continuous recording immediately.

G-Sensor Calibration

To begin the G-sensor calibration, follow the steps below;

1. Install the unit and park the vehicle on a flat surface.
2. Turn on the unit and press the blue button once.
3. Then the calibration can begin when the buzzer beeps.

For this function, please check the G-sensor and calibration functions using the settings on the software.

Built-in Power Backup (Super Capacitor)

In the event of the power failing on the unit, the SVC1080-LCA will remain on to create the last data file using the internal super capacitor.

Time and Date

The SVC1080-LCA gets the time and date information from the GPS satellites, so there is no need to set this manually. However, you can set this using the SVC1080-LCA software.

6. INSTALLATION

CAMERA INSTALLATION

1. Attach the double sided adhesive tape to the unit.
2. Secure the SVC1080-LCA to the windscreen behind the rear view mirror. Please make sure that the surface is clean and dry before attaching.



Tip:
Hold in position
with firm
pressure for
30 Seconds

3. Adjust camera view and make sure the lens has an unobstructed view.
4. Arrange the power cord neatly alongside the windshield and door pillar trim. Use the provided wire splice clip.



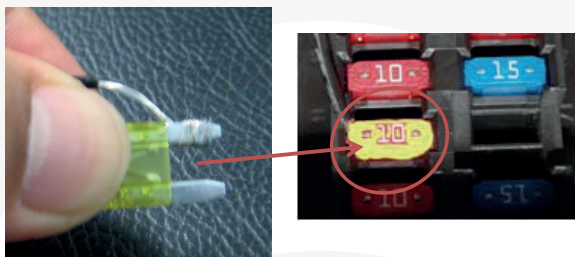
WIRING INSTALLATION

For permanent wiring, we recommend that you use professional installers unless you are familiar with vehicle wiring.

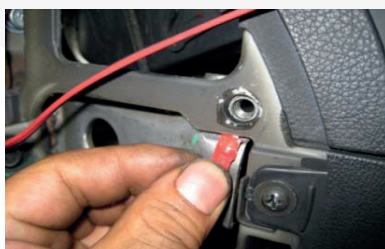
If you wish to wire the camera yourself, please follow the instructions on the next page.

1. Connect the red Fuse Cable (+) to the Fuse box in the vehicle. This should be connected to a battery circuit.

We recommend that the SVC1080-LCA is wired so that it is only powered when your ignition is turned on. If you wish to power permanently, then please use our SVCSPWK as this will help to reduce battery drain.



2. Connect the black Ground cable (highlighted by the Y pin connector) to the chasses of the car or ground point i.e battery negative terminal.



7. SD CARD FUNCTIONS

The SD card can be removed in the SVC1080-LCA using 2 different methods;

1. Turn the ignition off and remove the SD card
2. Take out the SD card when the unit is on using the safe SD card removal mode.

1. Turn the ignition off in the vehicle and take out the SD card

Turn the ignition off in the vehicle and check the Blue LED light. Once the LED light has gone out, you can safely remove the SD card.

2. Safely remove & insert the SD Card when the unit is powered

Press the blue button for 3 seconds to enter into the safe SD card removal mode. After, the blue LED will illuminate continuously. Now you can safely remove and re-insert the SD card.

After you re-insert the SD card, press the 'SD Reset' button and then press the blue button for 3 seconds and release it.

Format SD Card

To format the SD card, firstly turn the unit off and press the 'SD Card Format' button and hold. Then, connect the power for initialisation and hold the 'SD Card Format' button during the boot up.

Once complete, all video and log files will be deleted and the configurations will be defaulted to the factory settings.

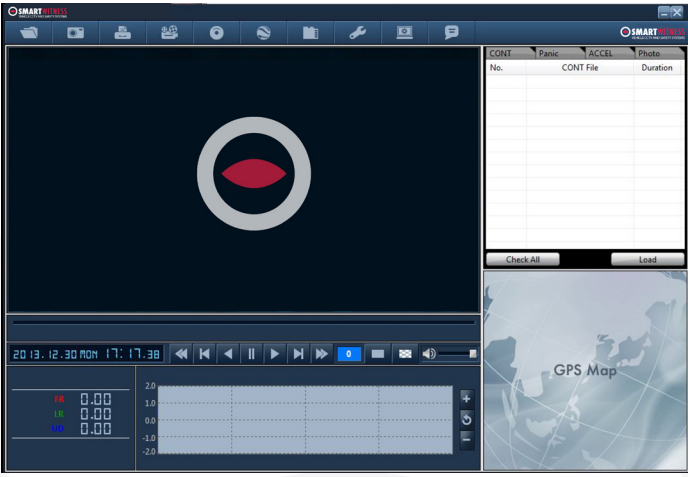
Auto Format SD Card

The SVC1080-LCA has an auto format feature meaning that if the unit detects any corrupted files on the card, it will format the card so that it can continue to function.

PLEASE NOTE

When formatting, you will lose all recorded data on the card, so please perform regular backups of the data.

8. SOFTWARE INSTALLATION



PC SYSTEM REQUIREMENT

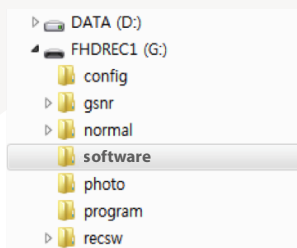
Recommended PC specifications for PC Viewer software

OS	Windows Vista, Windows 7, Windows 8/8.1, MAC OS 10.7/10.8/10.9 (Mac S/W Viewing Only)
CPU	Core 2 Duo 2.5GHz or Higher
RAM	2GB or higher
Interface	SD Memory Card Reader
HDD Free Space	Install 55MB or higher Backup 4GB or higher
Display	1024 x 768 pixel / True Colour or higher (Depending on SD Card)

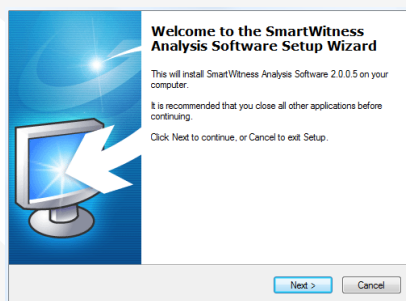
If the PC does not meet the minimum system requirements, the Analysis Software may not function properly.

The SVC1080-LCA software will come supplied on the SD card (if you have purchased one) in the 'software' folder. Or you can download it from our website www.smartwitness.com.

1. Plug the SD card into your computer.
2. Open the 'FHDREC1' file.



3. Open the 'Software' folder.
4. Select the 'setup.exe' file to bring up the following screen.



5. Select the language and then follow the on-screen dialog box.
6. The 'SVC1080-LCA Software' icon will now be displayed on your desktop.



NOTE: To Un-install the PC Viewer

Make sure the program is not running and open the 'Control Panel'. Select 'Remove Program' and remove SVC1080-LCA Software

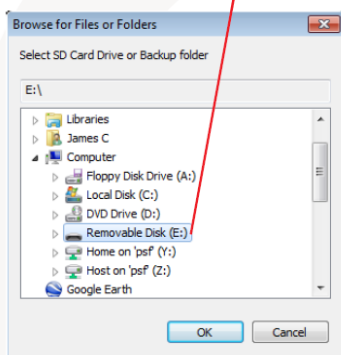
9. SD CARD INITIALISE



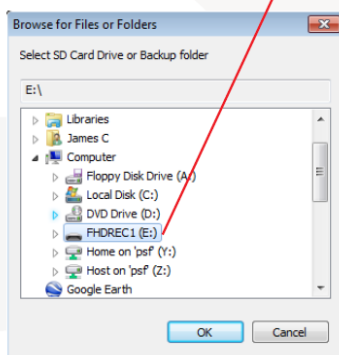
'Initialise SD Card' icon

To initialise the SD card, click on the 'Initialise SD Card' icon and you will be presented with the screen below.

Blank Card

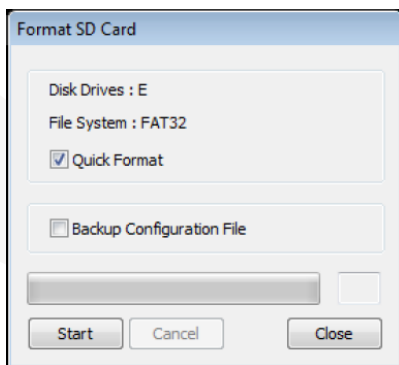


Pre Initialised Card



Then, choose a card to initialise.

When selected, click the 'OK' button. On the following screen, select the 'Quick Format' button and uncheck the 'Backup Configuration File'.



Click the 'Start' button to begin initialisation.

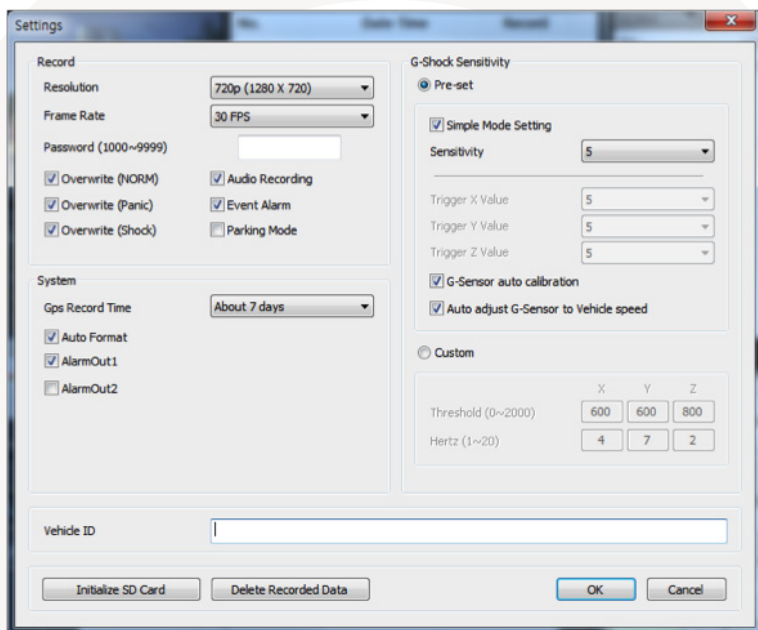
10. SOFTWARE USER GUIDE

SETTINGS



'Settings' icon

This option allows you to adjust the settings on the recorder. Click the above icon to bring up the following screen.



Resolution

Adjust the resolution on the recorder from VGA (640x480), 720P (1280x720), HD (1440x1080) or 1080P HD (1920x1080).

Frame Rate

Adjust the frame rate from 30fps, 15fps, 10fps, 1fps.

Password

Enter 4 numbers from 1000 to 9999 as a password (This is for the SD Card).

Overwrite

This function allows the unit to overwrite old files on the SD Card automatically. You can overwrite the Continuous, Panic or G-Sensor recorded files.

Audio Recording

Turn the audio recording on or off.

Event Alarm

Turn on the event alarm to make the unit 'beep' when the G-sensor has been shocked and the unit will start to record.

Parking Mode

You can use the SVC1080-LCA even when your vehicle is parked. For this function, you will need to use a permanent power source that will not disconnect when the ignition is turned off.

When in Parking mode the SVC1080-LCA will record at a low frame rate until it detects movement then it will increase the frames for smooth recording, ultimately saving storage space on the SD card.

GPS Record Time

Set the GPS record time on the unit. The default time is 7 days.

Auto Format

The auto format feature allows the user to set the SD Card to automatically format itself if there is an error on the card.

To enable this function in the settings option, check the "Auto Format" function (Below).

☒ Auto Format

To disable this feature, uncheck the "Auto Format" feature.

Alarm Outs

The Software allows the user to set 2 alarm outputs on the unit.

The Alarm Output is triggered when either of the following are triggered:

- Alarm Input
- G-Sensor
- Emergency Record button

When this happens the alarm will signal 3rd party devices connected to it, such as a Tracker or Telematics unit.

To turn this feature on, check the “AlarmOut1” option in the settings menu.



G Sensor Sensitivity

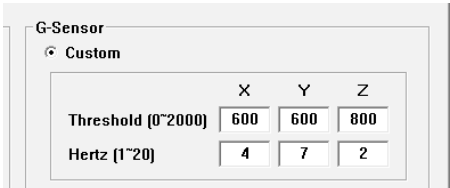
The shock sensor sensitivity can be set to ‘Pre-set’ or ‘Custom’. Set to easy allows you to set the sensitivity to 9 (High), 5 (Medium) or 1 (Low). In custom set, you can set 3 different shock sensor values individually.

Custom

The custom section allows you to set the user defined G-Sensor options. This allows you to adjust the G-Sensor settings to suit your needs.

For example, vehicles that drive slower will have lower G-Sensor threshold and therefore a custom setting would be more beneficial.

To set the G-Sensor to custom, check the “Custom” option and select the threshold levels. This is shown on the following page.



Vehicle ID

Set an ID for the unit.

Initialise SD Card

When the settings have been adjusted, you can initialise the SD Card to save the settings and transfer to the SVC1080-LCA. Please backup all the data files that you wish to keep before doing this.

Delete Recorded Files

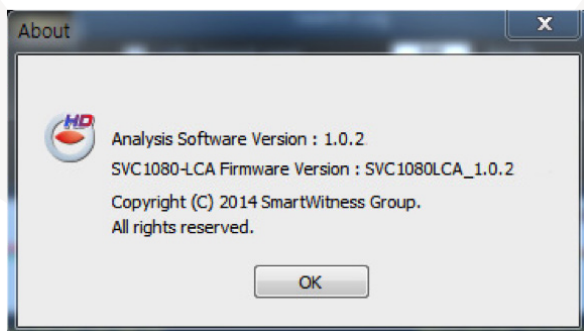
Click this option to delete all recorded files on the SD card. Please back up all the data files that you wish to keep before doing this.

ABOUT



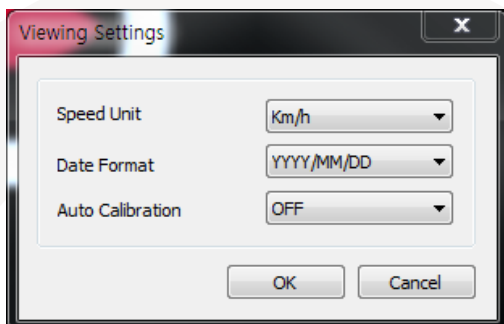
'About' icon

This option allows you to view the analysis software version, as well as the current firmware of the SVC1080-LCA if the card was taken from it.



VIEWING SETTINGS

This setting is for the SmartWitness software. To set the SVC1080-LCA unit, please refer to page 20.

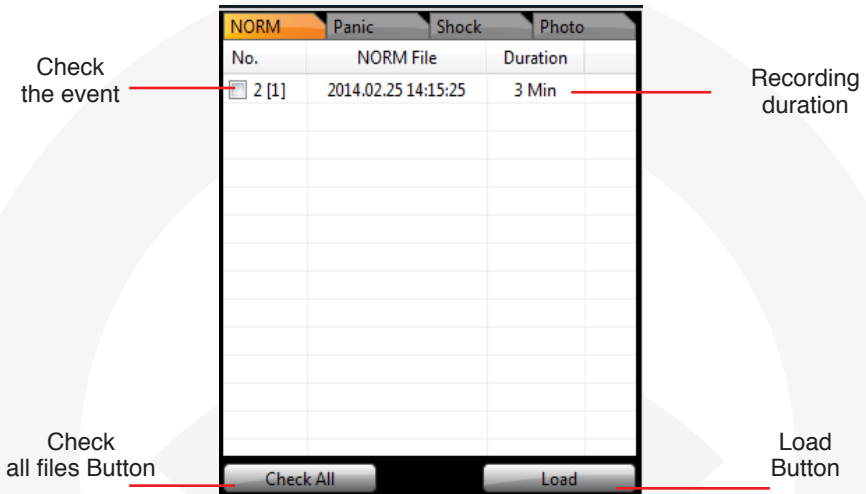


The speed unit and date formats will be set automatically according to the PC window settings. To change these, click on the drop down menu and choose a different option.

The auto-calibration can be set to on or off. When off, the G-sensor graph will display in its original format. When set to on, the graph will show the differentiated value.

FILE LOADING

When Record Method is set to 'Continuous record'



Check the Event or Normal recorded data file from the list using your mouse or click 'All' button. Then, click the 'load' button.

After you have clicked the 'load' button, the 'file list' tab will change to the playlist (shown on the following page).

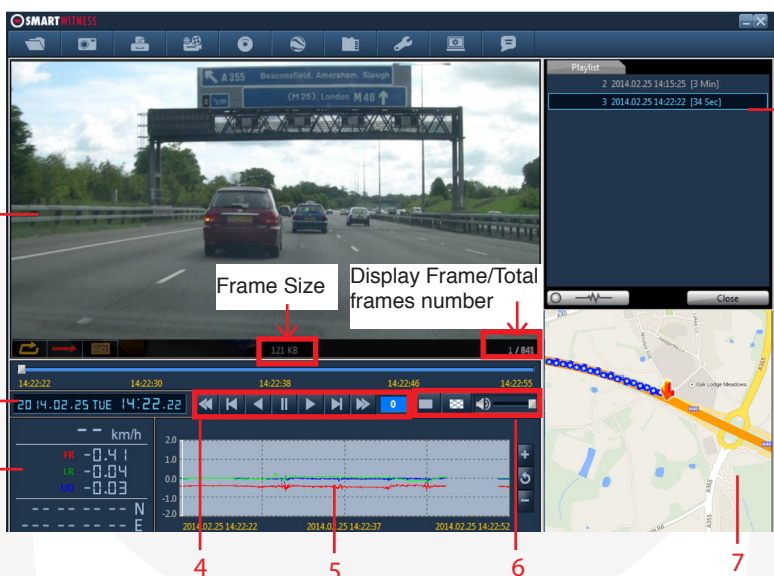
When Record Method is set to 'Continuous record'

The screenshot shows a 'Playlist' window with a list of 10 items. The first item is highlighted in black. Below the list is a control bar with several buttons. Red lines and text annotations point to specific elements:

- Select this file to playback**: Points to the first item in the playlist.
- Check this button to playback all files**: Points to the first button in the control bar.
- Event data search in the playback file**: Points to the third button in the control bar, which is highlighted with a red box.
- Return to the File List**: Points to the 'Close' button in the control bar.

Item	Date	Time	Duration
2	2009.07.13	13:10:00	[10 Min]
3	2009.07.13	13:20:00	[10 Min]
4	2009.07.13	13:30:00	[10 Min]
5	2009.07.13	13:40:00	[4 Min]
6	2009.07.14	20:02:38	[4 Min]
7	2009.07.14	20:07:56	[2 Min]
8	2009.07.14	20:10:00	[10 Min]
9	2009.07.14	20:20:00	[10 Min]
10	2009.07.14	20:30:00	[10 Min]

PLAYBACK SCREEN



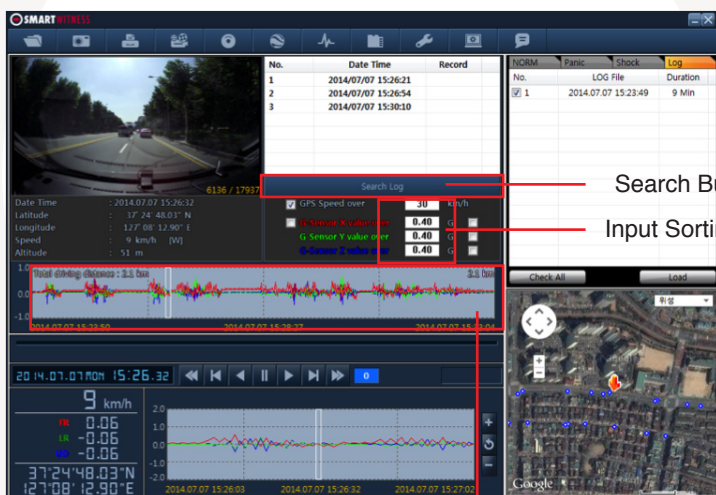
Number	Icon	Description
1	Video Display	Shows video data
2	Date & Time	Displays time and date of video data
3	Driving Info	Shows speed, accelerometer values on the 3-axes and GPS co-ordinates
4	Video Controls	Video playback controls, playback speed options: x1, x2, x4, x8, x16
5	Accelerometer Graph	Displays accelerometer values on graph
6	Display and sound controls	Select display to be continuous or frame by frame and sound level
7	Map	Shows location and route using Google Maps
8	Data File List	Select files to view: Continuous, panic, shock, Photo

LOG FILE PLAYBACK

Select the 'Log' tab and select a log file or select the 'Check All' button. Then click 'Load' to play that file.

Log Data - Log data will be recorded during driving, even if there is no events. The total log data size can be set from 2 days to 31 days.

The log data overwrites the oldest data. Using this log data, you can use the data sorting function, which helps to find a specific data file (i.e. when the vehicle travels at more than 80 mph).



Search Button

Input Sorting Data

G-Sensor Graph

GPS speed, G sensor X value, G sensor Y value, G sensor Z value, can be checked first on the small check box at the right side of each value.

Then you can input data for data sorting. If there is recorded video data, [Switch] or [G Sensor] mark will be displayed on list.

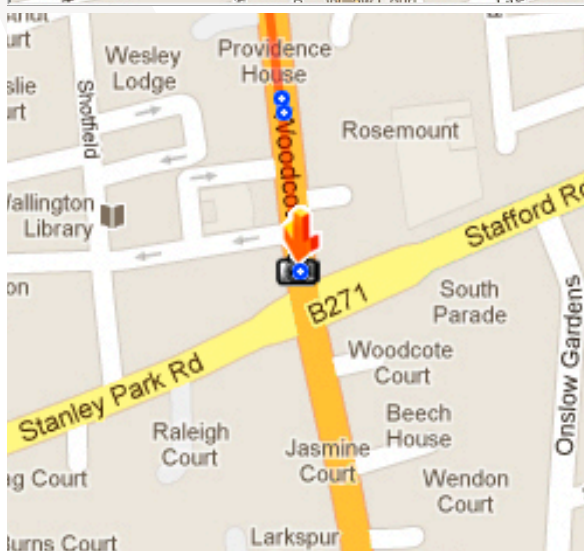
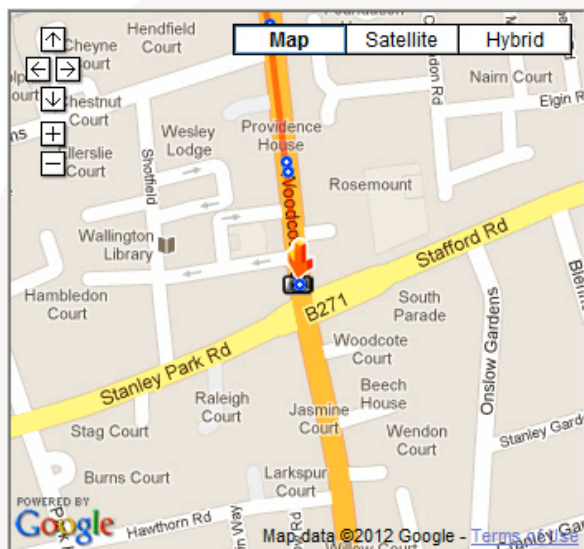
G sensor X value: Front & Back (like Quick brake or Quick Start)

G sensor Y value: Left & Right (like Quick Turn)

G sensor Z value: Up & Down (like prominence and depression)

GOOGLE MAPS

The route taken will be displayed on the Google map located at the lower right corner of the software. To see Google Maps, the PC should be connected to the Internet.



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

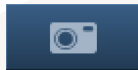
The Playback position will be shown on the map with an arrow. The blue markings show the route taken.

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

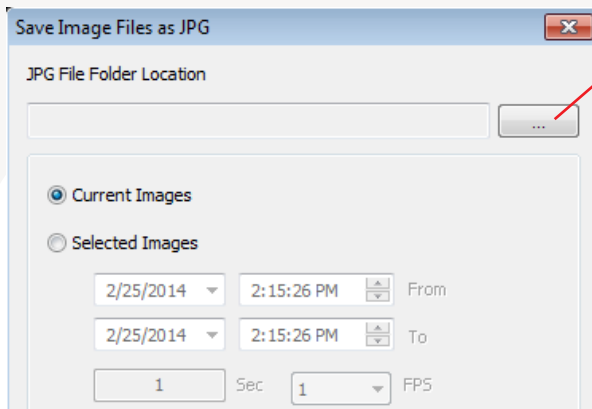
The camera icon indicates that there is a recorded file.

SAVE JPEG & AVI FILE

Pause the playback and click 'Save JPG' icon to make a JPG file.



'Save JPG' Icon

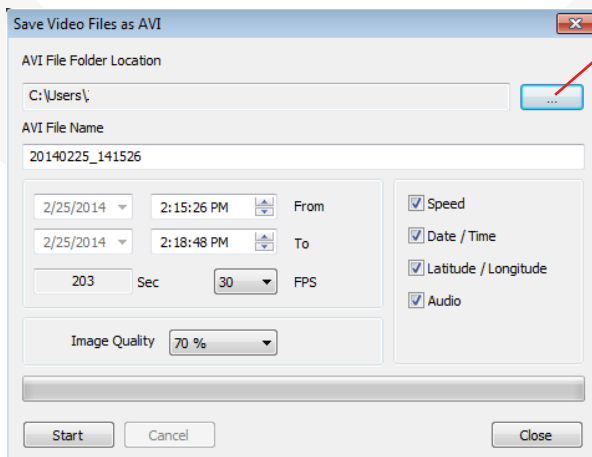


Click the '...' to choose a save location

Click 'Save AVI' icon to make a AVI file.



'Save AVI' Icon



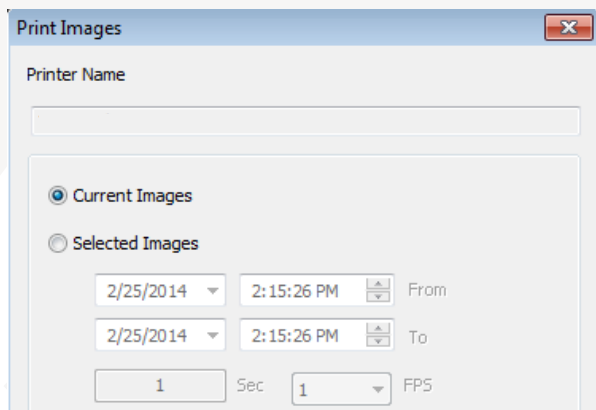
Click the '...' to choose a save location

PRINT IMAGE

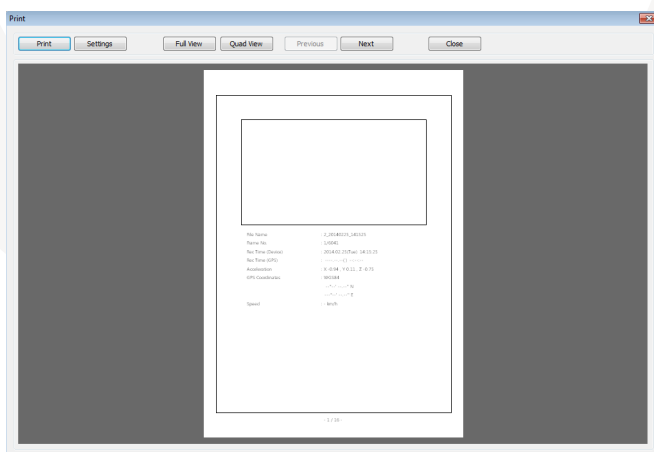
Pause the playback and click 'Print Image' icon.



'Print Image' Icon



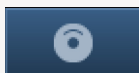
Choose to print the current image or select another image from the same file you are in by searching the time and date.



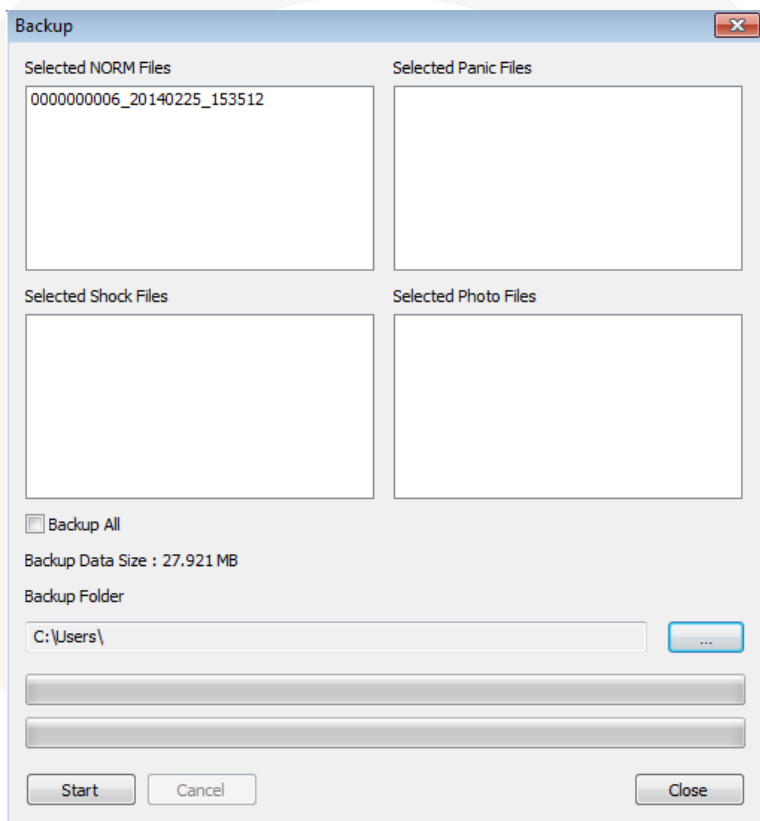
See a preview of the printed image and alter the printer settings to change paper size/orientation etc.

BACKUP FILES

Click the Backup files icon to backup the files to the PC.



'Backup Event/Log Files' Icon



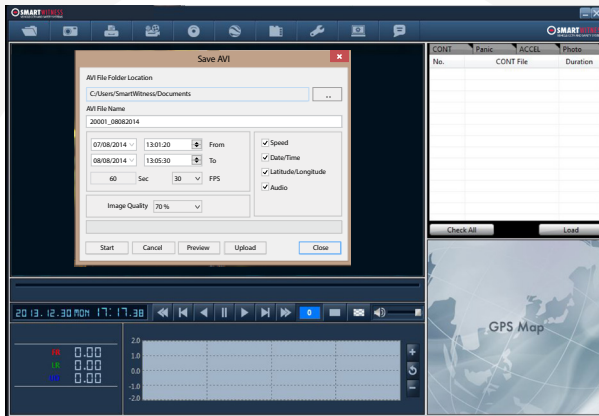
Select 'Continuous', 'Panic', 'Shock' or 'Photo' and then select the backup folder location. To begin, click the 'start' button.

To backup the whole data from the SD card to the PC, check the 'Backup All' option.

CLOUD BACKUP

SmartWitness offers a Cloud backup service allowing you to store backed up footage.

To do this, simply create an AVI file back up as shown on the previous page and press the 'Cloud Upload' button (shown below).



When you have clicked the 'Upload' button, you will be presented with the form below to complete.

Upload avi to SmartWitness cloud server

SMARTWITNESS Evidence Upload Demonstration
VEHICLE CCTV AND JOURNEY RECORDERS

Name *
First Last

Company Policy Number *

Contact Number * Email

Registration Number * Accident Date *
25/07/2014

Notes

Aut C:\Users\Robert T\Documents\12013_230204.avi Size 58.5 Mb

Send Cancel Close

SMARTWITNESS www.smartwitness.com 0844 947 1000

Fill in the relevant details and your email address that you wish all correspondence to go to. Please make sure you enter the correct email address, as the link to your uploaded footage will be sent to this address.

When completed, you will see a pop-up confirming the upload is finished as well as an email (shown below).

SVC1080LCA [1234567] Evidence upload is completed.
SmartWitness-SVC1080LCA <cloud@smartwitness.com>

File : http://cloud.smartwitness.com/20140729_170000_1234567_33af85706c.avi
Registration Number : 1234567
www.smartwitness.com

PLEASE NOTE

The video footage will only be stored on our servers for 7 days from the upload date.

GPS LOG TO KML CONVERTER

To see the whole route on Google Earth, select the log file and click the Google Earth™ icon, as shown below.



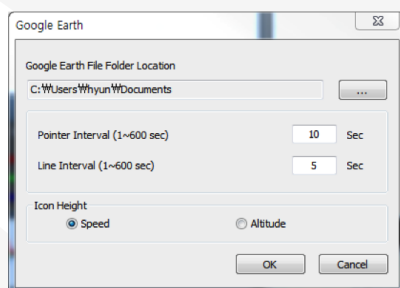
'Google Earth™' Icon

STEP 1. Install Google Earth™ on your PC. (<http://www.google.com/earth/>)

STEP 2. Check the log file

STEP 3. Click the Google Earth button

NORM	Panic	Shock	Log
No.	LOG File	Duration	
<input checked="" type="checkbox"/> 1	2014.07.07 15:23:49	9 Min	



Select the folder location for the KML file.

Then, click 'OK' and the route will be shown on Google Earth™

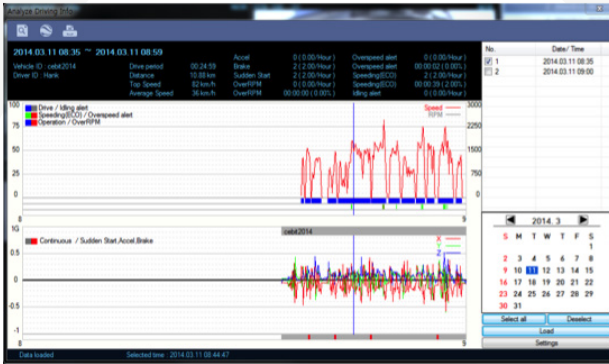
For this function to run properly, we recommend that you use Google Earth™ version 5.0 or above.

DRIVER REPORTING



'Driver Report' Icon

When in playback mode, you click on the above icon to access the driver report function.



From the calendar in the bottom right corner, choose the date you wish to view among the dates highlighted in blue. Dates that are not highlighted in blue, do not have the relevant data.

All data from the selected date will be automatically chosen from the selection on the right. You can unselect data that you do not need. When data is selected, click the 'Load' button to load the data.

A summary of information can be found on the top of the window including; vehicle ID, user ID, total duration and total distance. In addition to this, you can analyse the number of over-accelerations, over-decelerations, sharp turns, over-speeding, over-RPMs that exceeded the pre-set limit.

Top Graph

The top graph shows the speed (red) and RPM (grey) and below are three indicator bars that show driving patterns. The first bar shows driving (blue) and idling (grey) and the second bar shows the speed.

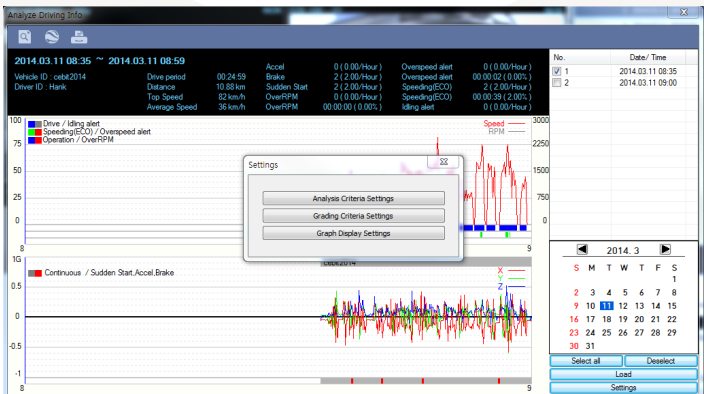
White means that the vehicle was within both the permitted speed and eco-speed limit, green means above eco-speed but within permitted speed limit, and red means above the legal speed limit. The last bar shows the state of the engine. White means the engine is off, blue means it is running properly within the pre-set RPM limit, and red means over acceleration, i.e. exceeding the pre-set RPM limit.

Bottom Graph

The lower graph shows the G-sensors. The x-axis is in red, y-axis in blue, and z-axis is green.

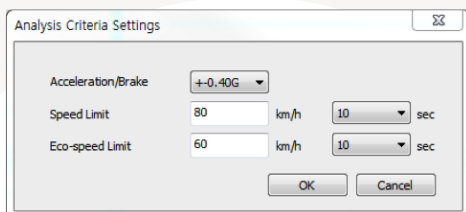
The indicator bar on the previous page shows jolts in the G-sensor values, i.e. G-sensor values that exceed the pre-set limit. The grey line means normal conditions, red means jolts in the x-axis direction, blue in the y-axis direction, and green in the z-axis direction.

Configurations for this function can be set by clicking the 'Setting' button in the right bottom corner. This will bring up the pop up menu (shown below). Here, you can set the limits for G-sensor, permitted speeding, excessive RPM. Eco-speeding can be set under the 'Analysis' tab and ranges for the two graphs can be set under the 'Component' tab.



ANALYSIS CRITERIA SETTINGS

This option allows you to adjust the change the analysis criteria settings. To access this menu, go to 'settings', click 'analysis criteria settings' and you will be presented with the following screen.



The screenshot shows a dialog box titled "Analysis Criteria Settings" with a close button (X) in the top right corner. Inside the dialog, there are three settings:

- Acceleration/Brake:** A dropdown menu set to "+0.40G".
- Speed Limit:** A text input field containing "80" followed by "km/h", and a dropdown menu set to "10" followed by "sec".
- Eco-speed Limit:** A text input field containing "60" followed by "km/h", and a dropdown menu set to "10" followed by "sec".

At the bottom of the dialog are two buttons: "OK" and "Cancel".

Acceleration/Deceleration

This sets the criteria for excessive acceleration and deceleration. This is measured in G-force, so if acceleration or deceleration exceeds the G-force limit, it will be counted as excessive.

Speed Limit

This option allows you to set the criteria for excessive speeding. You can set the value limits between 0-999km/h. In the example above, the limit has been set to 80km/h for 30 seconds, so therefore if the vehicle goes over this speed for over 30 seconds, it will count as excessive speeding. If you go over that speed but for under 30 seconds, it will not count as excessive speeding.

RPM Limit

Set the limit for excessive RPM. The RPM limit can be set from 0-9999 RPM and the time can be set by selecting the drop down menu. In the example above the limit has been set to 2400 RPM for 30 seconds. If this limit is exceeded, it will count as excessive.

Eco-speed Limit

Set the criteria for eco-speed limit. The eco-speed limit can be set higher or lower than the speed limit and can be set from 0-999 km/h and the time can be set by selecting the drop down menu. In the example on page 37, the limit has been set to 60km/h for 30 seconds. If this limit is exceeded, it will count as excessive.

Idle Time Limit

Set the criteria for eco-speed limit. The idle time limit can be set for any length of time. In the example on page 37, the limit has been set to 30 minutes. If this limit is exceeded, it will count as excessive idling.

All of the above criteria are used in the grading process for grading driver's safety and eco-score.

GRADING CRITERIA SETTINGS

The criteria for grading driver's safety and eco-score can be set in these settings.

The safety and eco-grading criteria have 7 and 8 separate components respectively. A weighted average of these component scored are used to determine an overall score.

Grading for each criteria is set to 4 levels (A,B,C & D), if the driver's score is lower they will receive an F for fail. Each criteria can be given a different weight depending on the importance you place on each one but all weights must add up to 100.

To get into this menu, enter the 'Settings' menu, and click the 'Grading Criteria Settings'.

	A	B	C	D
Sdn Start Cnt (per hour)	0.40	0.60	0.80	1.00
Accel Count (per hour)	0.40	0.60	0.80	1.00
Brake Count (per hour)	0.40	0.60	0.80	1.00
Speeding Count	0.40	0.60	0.80	1.00
Speeding Duration Ratio	20.00	30.00	40.00	50.00
Peak Speed Relative to Speed Limit	10	20	30	40
Avg Speed Relative to Speed Limit	-50	-20	-10	0
Excess Eco-speed Count (per hour)	0.40	0.60	0.80	1.00
Excess Eco-speed Duration Ratio	20.00	30.00	40.00	50.00
Excess RPM Count (per hour)	0.40	0.60	0.80	1.00
Excess RPM Duration Ratio	20.00	30.00	40.00	50.00
Idling Count (per hour)	0.40	0.60	0.80	1.00

Buttons: Point/Weight Set, Export, Import, OK, Cancel

Sudden Start Count

This option sets the grading criteria for the amount of sudden starts per hour. The assessment of this criteria is based on the (acceleration/deceleration). For example, if a driver drove for 8 hours in one day and had 4 sudden starts during that time, their score for that criteria will be 0.5 and based on the settings in the image above, they would be graded as B.

This criteria is used in both safety and eco grading, but the weights can be set separately.

Sudden Acceleration Count

This option sets the grading criteria for the amount of times there is a sudden acceleration per hour. The assessment of this criteria is based on the (acceleration/ deceleration) measurements. For example, if a driver drove for 8 hours in one day and had 4 sudden accelerations during that time, their score for that criteria will be 0.5 and based on the settings in the image on the previous page, they would be graded as B.

This criteria is used in both safety and eco grading, but the weights can be set separately.

Sudden Deceleration Count

This option sets the grading criteria for the amount of times there is a sudden deceleration per hour. The assessment of this criteria is based on the (acceleration/ deceleration) measurements. For example, if a driver drove for 8 hours in one day and had 4 sudden decelerations during that time, their score for that criteria will be 0.5 and based on the settings in the image on the previous page, they would be graded as B.

This criteria is used in both safety and eco grading, but the weights can be set separately.

Speeding Count

This option sets the grading criteria for the amount of times the driver exceeds the speeding limit for the amount of time set in the 'criteria settings'. The overall value is set as a ratio of the amount of time speeding to the time driving as a percentage. For example, if a driver drove 8 hours in a day but was speeding for 1 hour in total, their score for this criteria would be 12.5% and based on the image on the previous page, they would be graded as A.

This criteria is used in both safety and eco grading, but the weights can be set separately.

Peak Speed Relative To Speed Limit (kmh/mph)

This option sets the grading criteria for speeding and calculates the peak speed the driver drove, relative to the speed limit. The value can be set from 0-999km/h. The assessment of this criteria is based on the speed limit option in the 'Analysis Criteria Setting'. This criteria is used for safety grading.

Average Speed (kmh/mph)

This option sets the grading criteria for speeding and calculates the average speed of the vehicle, relative to the speed limit. The value can be set from 0-999km/h.

The assessment of this criteria is based on the speed limit option in the 'Analysis Criteria Setting'. This criteria is used for safety grading.

Excess Eco-speed Count

This option sets the grading criteria for eco speeding and is calculated per hour. For example, if a driver drove 8 hours in a day but exceeded the eco-speed limit 4 times, their score for this criteria would be 0.5 and based on the image on page 39, they would be graded as B.

The assessment of this criteria is based on the eco-speed limit option in the 'Analysis Criteria Setting'.

This criteria is used for eco grading only.

Excess Eco-speed Duration

This option sets the grading criteria for eco speeding and is calculated as a ratio of time speeding and is set as a percentage. For example, if a driver drove 8 hours in a day but exceeded the eco-speed limit for 1 hour, their score for this criteria would be 12.5%. Based on the image on page 39, they would be graded as A.

The assessment of this criteria is based on the eco-speed limit option in the 'Analysis Criteria Setting'. This criteria is used for eco grading only.

Excess RPM Count

This option sets the grading criteria for excessive RPM and is calculated per hour. For example, if a driver drove 8 hours in a day but exceeded the RPM limit 4 times, their score for this criteria would be 0.5 and based on the image on page 39, they would be graded as B.

The assessment of this criteria is based on the RPM limit option in the 'Analysis Criteria Setting'. This criteria is used for eco grading only.

Excess RPM Duration Ratio

This option sets the grading criteria for excessive RPM over the RPM limit. This value is estimated as a percentage of the amount of time driving. For example, if a driver drove 8 hours in a day but was exceeding the RPM limit for 1 hour, their score for this criteria would be 12.5% and based on the image on page 39, they would be graded as A.

The assessment of this criteria is based on the RPM limit option in the 'Analysis Criteria Setting'. This criteria is used for eco grading only.

Idling Count

This option sets the grading criteria for idling and is calculated per hour. For example, if a driver drove 8 hours in a day but exceeded the idle time limit 4 times, their score for this criteria would be 0.5 and based on the image on page 39, they would be graded as B.

The assessment of this criteria is based on the RPM limit option in the 'Analysis Criteria Setting'. This criteria is used for eco grading only.

GRADING METHOD

PLEASE NOTE

Once the grading criteria settings has been adjusted and saved, it can be exported into an 'ini' file and then imported into another version of the analysis software.

This means that you can set each SVC1080-LCA quicker than manually adjusting the settings in each version of the software.

Grades

Each criteria is given a grade of A, B, C or D and anything lower is given a grade of F for fail. Therefore each grade will be assigned a limit that if exceed, the score will go down to the next grade. If the driver exceeds the limit for the D grade, they will be given an F.

Weights

Each criteria can be given a different weight when calculating the safety and eco grades to provide flexibility to the operator in assessment.

Grading & Scores

Each grade is assigned a score; A=100, B=80, C=70, D=60, F=50. With this score, the safety and eco-scores are assessed by a weighted average of the relevant criteria scores. The total score is an average of the safety and eco scores.

Below is an example of how scores can be calculated for each criteria.

Eco Grade	Weight	Driver 1	Driver 2
Sudden Start Count	20	A (100)	C (70)
Sudden Acceleration Count	10	A (100)	A (100)
Sudden Brake Count	20	C (70)	A (100)
Speeding Count	20	A (100)	C (70)
Speeding Duration Ratio	10	C (70)	A (100)
Peak Speed	10	A (100)	A (100)
Average Speed	10	A (100)	A (100)
Eco Score		91	88
Eco Grade		A	B

Scoring Break Down

Driver 1:

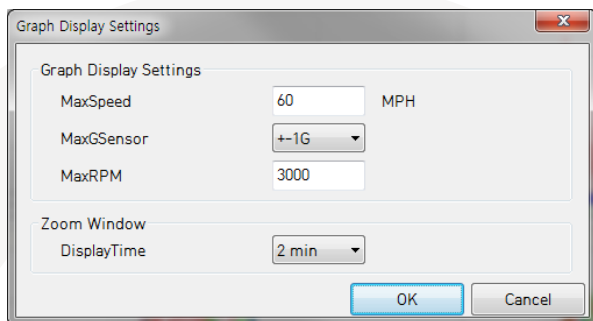
Eco Score = $20 \times 100/100 + 10 \times 100/100 + 20 \times 70/100 + 10 \times 70/100 + 10 \times 100/100 + 10 \times 100/100 = 91$ Eco Grade A

Driver 2:

Eco Score = $20 \times 70/100 + 10 \times 100/100 + 20 \times 100/100 + 20 \times 70/100 + 10 \times 100/100 + 10 \times 100/100 = 88$ Eco Grade B

As you can see, each driver got 2 C grades, however as they were weighted differently, their eco grades are different.

Graph Display Settings



Max Speed: This sets the maximum value of the graph's speed scale.

Max G-Sensor: This sets the maximum value of the graph's G-Sensor scale.

Max RPM: This sets the maximum value of the graph's RPM scale.

Zoom Window Display Time: This sets the time period, in minutes, displayed on the zoom graph.

The graph settings will be applied to the following window displays: Manual Mode, Data Search, Driving Data and the Zoom Graph.

Default settings are: Max Speed (100 km/h), Max G-Sensor (+-1G), Max RPM (3000).

11. SPECIFICATIONS

Image Sensor	1/3" 3 Megapixel CMOS Sensor
DSP	Standard DSP
Angle of View	170°
Video Resolution	VGA (640x480), 720P (1280x720), 1080P (1440x1080), 1080P Full HD (1920x1080)
Recording Speed	Up to 30fps
Recording Modes	Normal (Continuous) Parking Mode
Recording Time	4GB (Max: 1,138 Minutes) 32GB (Max: 167 Hours) Refer to recording table in Appendix 2.
Backup	SD Memory Card
Memory	Supports Cards of up to 32GB (Class 10)
GPS	Internal GPS
G-Sensor	Internal 3-Axis G-Sensor
RTC	Internal Battery
Buzzer	Recording Start, Error
LED	2 LEDs (Record, Overwrite)
PC Software	Available from the Smart Witness Website
Power Input	DC 12V to 24V Permanent Wiring Camera
Power Consumption	3.6W
Size (WxHxD) in mm	88x50x50
Weight	0.10 KG
Operation Temp	-10°C~60°C


MAC OS PLAYBACK SOFTWARE

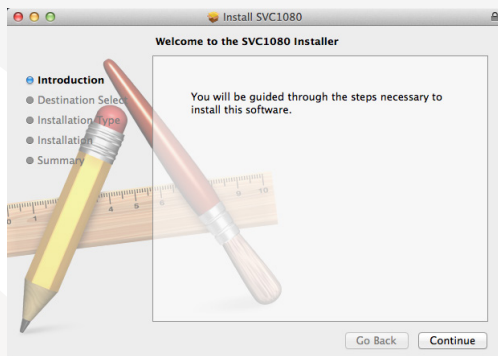
The Mac OS version of the SVC1080 software is available from the SmartWitness website (www.smartwitness.com).

Please note that the Mac software can only be used for playback of video data. If you wish to configure the settings, this needs to be done using the Windows software.


To install the Mac version of the software, please follow the steps below:

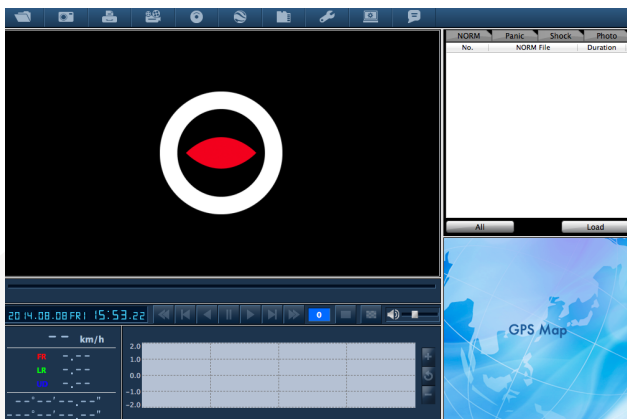
1. Download the software from the SmartWitness website.

2. Open your downloads folder and double click the  icon to be presented with the installation setup.



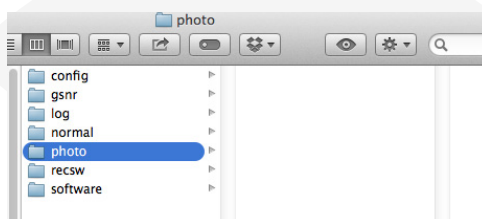
3. Follow the setup instructions and choose the folder where you would like the software to be saved. When you are finished, click 'Continue' to begin installation.


4. When the installation is complete, click on the  icon to open the software.

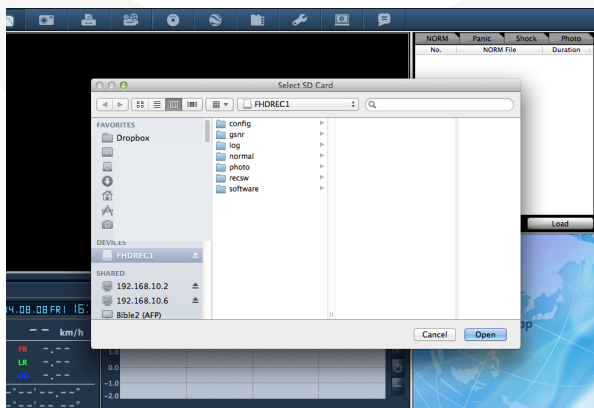


5. Insert your SD card into your Mac using an SD card reader.

6. Open the SD card and create a folder called 'photo', as shown below. This folder must be created in order for the software to recognise the SD card.



7. Click the  icon on the software to choose the SD card and click 'Open'. Refer to the section 'File Load' on page 24, for details on how to play back and other features.



RECORDING TIMETABLE

Resolution	FPS	SD Card (in minutes)			
		4GB	8GB	16GB	32GB
1080P Full HD	30	57	123	257	523
	10	73	218	508	1,089
	Parking Mode	228	683	1,593	3,413
HD	30	47	142	332	711
	10	85	256	897	1,280
	Parking Mode	310	931	2,172	4,655
720P	30	72	215	502	1,076
	10	163	488	1,138	2,438
	Parking Mode	427	1,280	2,967	6,400
VGA	30	213	640	1,493	3,200
	10	245	735	1,716	3,677
	Parking Mode	1,138	3,413	7,964	10,020

PLEASE NOTE

The total recording file number will be less than 1,000.

If the unit records more than 1,000 files, there is a possibility that the booting time will be more than 1 minute. Therefore, the number of files are limited to a maximum of 1,000.

So, the maximum recording time is 167 hours

(1,000 files x 10 minutes = 10,000 minutes = 167 hours)

FIRMWARE UPGRADE

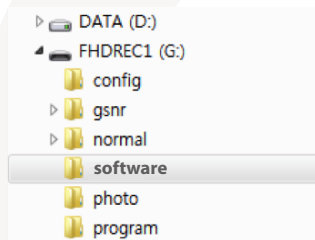
PLEASE NOTE

Only upgrade the firmware if you have been instructed by a SmartWitness technician.

To get the firmware upgrade, please go to www.smartwitness.com

1. Preparing Firmware

Make [program] folder at SD root folder as below



Copy “SVC1080_X.X.X.bin” file in to the SD card [program] folder.

2. Upgrade SVC1080-LCA

Insert the prepared SD card to SVC1080-LCA and turn on the power.

The Blue & Red LED will be blinking together during upgrading.

There will be a continuous “Beep” sound during upgrading.

This will take around 30 seconds.

Do not turn off the power during upgrading.

If the upgrade has failed, the “SVC1080-LCA” should be returned to your local distributor.

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

If the SVC1080-LCA records as normal, turn the power off.

Bring the SD card to your PC and initialise the SD card. To initialise the SD card, please go to page 19.

3. Uninstall the old version of the analysis software from your PC

To do this, go to the 'Start' menu and then 'Control Panel'.

Then find the SVC1080-LCA Analysis Software 1.0.2.5 and click 'Uninstall'.

5. Install the new Analysis Software

Run the setup.exe and follow the instructions to install the new analysis software.

PLEASE NOTE

After installing the new SmartWitness Software, you will need to initialise the new SD card. The new software will automatically be copied to the software folder on the SD card.

6. Initialise the SD card

To initialise the SD card, please go to page 19.

SD CARD MAINTENANCE

SD cards’ lifespan can be reduced and can also corrupt if they are not cared for properly.

Maintaining your SD card is quick and easy and is carried out by regular formatting.

If you experience a card failure, missing or corrupt recordings, then your SD card will need to be formatted. For details on how to format your SD card, please go to page 19.

Please see the table below for guidelines on how often SD cards need to be formatted, depending on the size of the card.

SD Card Size	Manufacturers Recommended Format Frequency	Minimum Format Frequency (Any less than this could cause data loss /corruption or early card failure)		
		<i>Light Use (1-2 hours a day or low fps/events)</i>	<i>Medium Use (2-5 hours a day or medium fps/event)</i>	<i>Heavy Use (5+ hours a day or high fps/event)</i>
4GB	Once a month	Once a year	Once a year	Twice a year
16GB	Once a month	Once a year	Twice a year	Every 3 months
32GB	Once a month	Once a year	Every 3 months	Once a month

TECHNICAL SUPPORT & WARRANTY

Technical Support

For Technical Support, please contact your local distributor.

Limited Warranty

This product is supplied with a 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.

Manufactured Exclusively for:



www.smartwitness.com