SMARTWITNESS
VEHICLE CCTV AND SAFETY SYSTEMS

3G/4G Instant Video Transmission
Vehicle Accident Camera

KP1

User Guide

CONTENTS

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

DO NOT REMOVE THE COVER
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL

At 720P resolution recording, the camera will not create separate event files. Please back up your files regularly, as data might be overwritten.

Connect your vehicle's power cable (Cigarette Jack) to the product after starting the vehicle to avoid damage.

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

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

For commercial purposes GPS has an average range error of more than 15 meters 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 KP1 is the world's most advanced incident camera with powerful 3G/4G instant video transmission, built in tracking and telematics data. The KP1 also features an optional second camera to help provide a comprehensive view of any incident and keep an eye on valuable cargo.

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:

- Wide Angle Lens: 170° - providing pillar-to-pillar view
- Instant remote retrieval of court admissable evidence from both cameras
- Adjustable recording rates
- Easily upgradable comms interface - 3G, 4G, Wifi, WiMax & Bluetooth ready
- Optional Audio Recording
- Integrates seamlessly with 3rd party telematics platforms
- Internal Microphone and Speaker
- Password protected recordings preventing unauthorised access of recordings and data on the SD card
- Lockable tamper resistant cover protects unauthorised access to the SD card and operation buttons

Front

Adjustable Bracket

Lens
(170° Wide Angle Lens)

Locking Cover

Side

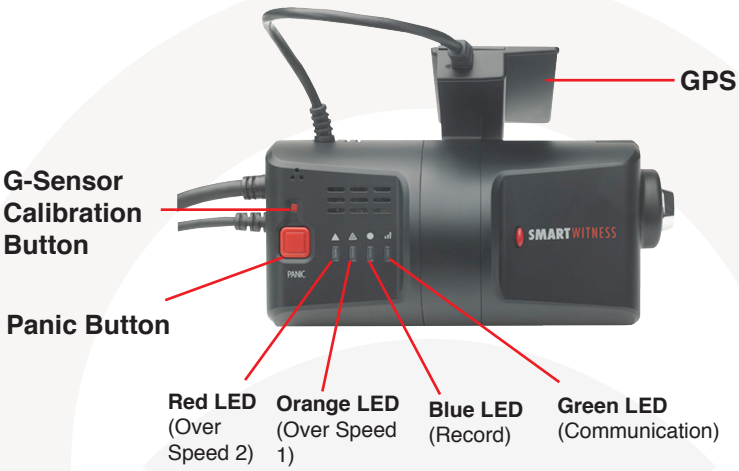
SD Card Slot 2
(Slave SD)

SD Card Slot 1
(Master SD)

USB Interface
(For 3G/4G Dongle)

Molded Cable Interface

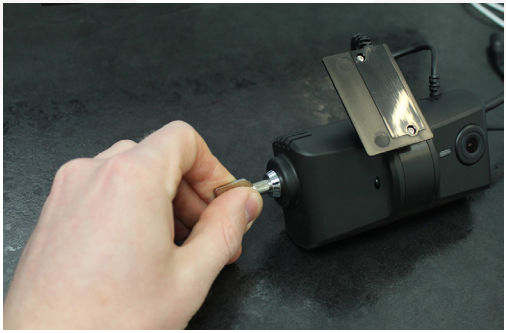
Rear



Bracket

KP1 features a new, easily adjustable bracket designed to give you the ideal viewing angle. To adjust the bracket, follow the steps below.

Remove the locking case using the key and turning anti-clockwise.



Then, pinch the red and black clips and then pull the case away from KP1.

Black clip in identical position on the reverse

Adjust the angle of the bracket to the desired angle and slide in to lock in place.

When you are happy with the angle, slide the case back onto KP1 and lock.

Cables

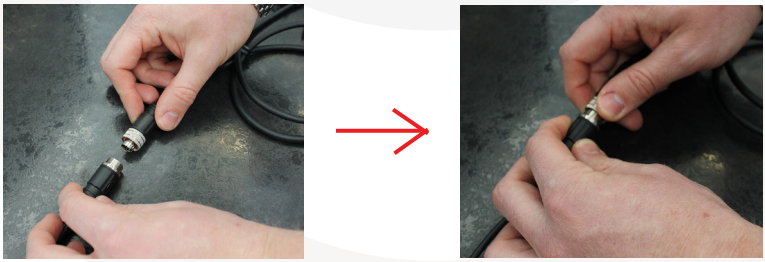
KP1 comes with 2 cables. One cable connects to the cigarette lighter adaptor and either junction box.

The second cable is unique to KP1 and connects to the second camera. This cable allows both power and video to be carried to the secondary camera.

Please note that the second cable is only compatible with the SmartWitness -S cameras (SVA021-S, SVA023-S, SVA025-S, SVA041-S and SVA043-S).

KP1 Main Cable

To connect the cable to either the cigarette lighter adaptor or either junction box, attach by lining up the arrows on each cable and then push together. To secure them together, twist the silver plate as shown below.



Second Camera Input

Contents

1x KP1 3G/4G Transmission Vehicle Camera

1x 3M Pad and Cable Tidy stickers

1x Locking Case

2x Keys for Locking Case

1x User Manual

STEP BY STEP

1. Peel off the reverse 3M pad and attach included bracket to the unit.

2. Insert SD Card into unit. Please take care to have the SD Card the correct way round. Take this time to twist the camera and find the desired angle which works best for your vehicle.

3. Peel off the other side of the 3M pad to reveal the sticky side, then position Camera at the front of the car. Secure to windscreen by applying a small amount of pressure and holding for 15-30 seconds.

4. Plug into Cigarette Lighter Socket, if this is your chosen power method

Automatic Start

Plug the car charger cable into the cigarette lighter adaptor in your vehicle and KP1 will start automatically.

However KP1 will not start recording immediately after the power has been turned on. It takes around 1 minute for the built-in power backup system to be charged. After this, the internal flash memory will be ready to record.

PLEASE NOTE

Please make sure to turn off the power of the KP1 when inserting or ejecting the SD card and the USB 3G/4G dongle.

LED Operation at Start-up

Firstly, the Red LED will be ON (around 6 sec), then, Red LED (Warning) and Orange LED will be ON (around 12 sec)

↓

Red LED, Orange LED, Blue LED, Green LED will be ON in sequence (around 40 ~ 50 sec)
Blue LED On/Off (Starting time: around 60 ~ 70 sec)

↓

(Buzzer sound operation at start-up)

↓

Single ”Beep” after starting (If beep is set to ‘On’ in config settings).

G-Sensor Calibration

After installing KP1, you will need to calibrate the G-Sensor. To do this, turn on KP1 and park the vehicle on a flat surface. Then, press the [G-Sensor Calibration] button for one second.

This G-Sensor calibration is only needed the first time KP1 is used.

Recording Modes

Normal (Continuous)

This is the default and main mode for recording. In this setting the unit will begin recording after boot up and record the entire time the unit is powered. Recording files will be made for 10 minutes. Once a 10 minute file is made, a new file will begin and so on.

When in normal record mode, the BLUE LED will be blinking slowly to indicate normal recording.

Event (Shock and Panic)

The event recording function will be automatically started by G-sensor, panic button or alarm. You can set the G-sensor parameters for the unit on your PC using KP1 config software.

Each event file will contain 20 seconds of footage before, and up to 20 seconds after an incident. The event file can also be extended by a 2nd trigger during event recordings.

When a file is extended by a second trigger, 20 seconds post recording from the event will be added to the data file with a maximum recording time of 3 minutes. Once the 3 minutes has been reached, the file will split and a new file will be created but the data will be continuous.

When in event recording mode, the BLUE LED will be blinking.

The buzzer will also sound twice when the event record has been triggered (If set to 'On' in the config settings).

Dual Record (Event & Normal)

1) Using 1x SD Card

The Normal (continuous) record frame rate is 1fps and the file will be stored on the "Normal" folder.

Event record will work according to the frame rate setting. For example, 30 frames per second recording and the file will be stored on the "Event" folder.

2) Using 2x SD Cards

The Normal (continuous) record file will be stored on the SD slot No. 1.

The Event record file will be stored on the SD slot No.2. There will be no limit to the frame rate when using 2 cards.

In this mode, the BLUE LED will be blinking fast and the buzzer will sound twice when the event recording has been triggered.

PLEASE NOTE

If there are 6 'beeps' sounded from the unit, this means that there is an SD card error or the SD card is full.

Driving File Record

The DRV (Driving) file will be recorded during driving even if there are no events or video. The DRV file consists of GPS and G-sensor data. This helps to find specific data or driving behaviours.

The DRV file overwrites the oldest data. The DRV files will be made every 10 minutes.

Communication

The USB 3G/4G modem is inserted to the USB terminal behind the locking case.

To use the USB 3G/4G modem on KP1, please contact your local distributor.

During communication, the GREEN LED will be on to show you can communicate. The GREEN LED will flash when communication is performed.

The dongle will need to be setup with the correct APN settings using the KP1 config software.

If there is a communication error, the unit will 'Beep' twice.
If there are modem recognition errors, the unit will 'Beep' 3 times.

Over Speed

This function will allow the user to set a speed limit on the unit and alert the driver when the limit has been exceeded.

Excessive speeds can be set in 2 stages. The first limit is **50mph** and the second limit is **70mph.**

When the 50mph limit is reached, the ORANGE LED will be lit for 5 seconds.
When the 70mph limit is reached, the RED LED will be lit for 5 seconds.

The trigger on the unit will sound twice when both limits have been exceeded.

SD Card Initialisation

Insert the SD card you want to initialise then connect the power.

Press and hold the Panic button for more than 3 seconds. Then, the 4 LED will start flashing in sequence about 20 seconds after the power is on.

When the Blue and Green LEDs are flashing at the same time, the initialisation of the SD card will begin.

Initialisation operation of the SD card will take around 90 seconds depending on the size of SD card.When initialisation of the SD card is completed, KP1 will restart automatically.

Once completed, all files will be deleted and the configurations will default to the factory settings.

When the SD Card initialisation is being performed, the BLUE and GREEN LED will flash simultaneously.

PLEASE NOTE

Please do not remove the SD Card during initialisation to avoid damaging or breaking the SD Card.

Inserting The SD Card

To insert the SD card, turn off the power and check the BLUE LED Light is off. Once the LED light is off, you can safely insert the card.

There are 2 SD Card slots for this unit, please insert the first SD card into SD card slot 1.

Removing The SD Card

To safely remove the SD card, please follow the steps below;

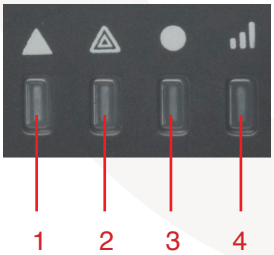
1. Turn off the power and then check the BLUE LED.

2. Press the 'G-Sensor Calibration' button for over 3 seconds and then remove the SD Card.

Inserting 3G/4G USB Modem

Turn off the power and then check the BLUE LED light. Once the BLUE LED light is off, insert the 3G/4G USB modem.

LED/Buzzer Specification



1. Red LED (Over Speed 2)

2. Orange LED (Over Speed 1)

3. Blue LED (Record)

4. Green LED (Communication 3G/4G Signal)

Item			LED				Buzzer Sound
			Red	Orange	Blue	Green	
Start-up			On (6 Seconds)				
			On (12 Seconds)				
			Flashing in sequence (40-50 seconds)				
					On (Start-up Completion)		Beep once
Record	Normal				Flashing (Slow)		
	Event	Before			On		
		Event			Flashing (Fast)		Beep Twice
	Dual	Before			Flashing (Slow)		
		Event			Flashing (Fast)		Beep Twice
3G/4G	Connected					On	
	Sending Data					Flashing (Fast)	
Over Speed	Over Speed 1			On			Beep Once
	Over Speed 2		On				Beep Once
G-Sensor Calibration							Beep 3 Seconds
SD Card Initialisation					Simultaneous Flashing		Beep 2 Seconds
Firmware Upgrade					Flashing Sequentially		
SD Card Full						Flashing - 3 Times (Long Blink)	Beep 3 Times

Continued...

Item		LED				Buzzer Sound
		Red	Orange	Blue	Green	
Error	Record Error	Simultaneous Flashing				Beep 3 Times
	Camera 2 Video Loss	Simultaneous Flashing				
	3G/4G Error				Off	Beep 3 Times
	3G/4G Service Error				Flashing (Slow)	Beep Twice
	Without Driver. inf file					Beep Once
	Without Setting File	4 Seconds simultaneously Flashing (Repeated every minute)			4 Seconds simultaneous-ly Flashing (Repeated every minute)	Beep Twice

Recording When Power is Cut

During continuous recording

The continuous video recording will be recorded up to just before the end of the power is turned off.

During event recording

When the power is off and simultaneously an event is triggered there unit will not be on enough time to record the event file. Therefore, there is a possibility of the last event file will be lost.

During dual recording

The continuous video recording will be recorded up to just before the end of the power.

When the power is off and an event is triggered, there unit will not be on enough time to record the event file. Therefore, there is a possibility of the last event file will be lost.

Configuration Tool

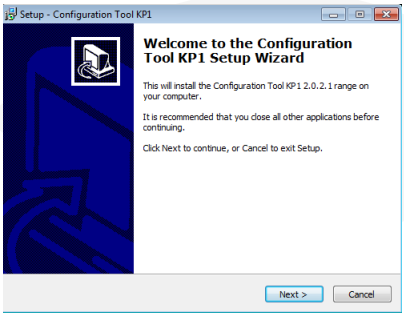
Before using KP1, you will need to install both the configuration software and the analysis software to adjust KP1 settings. If you do not have the software you can download it from www.smartwitness.com.

To install the configuration software, follow the steps below.

1. Insert your SD card into the SD Card reader and plug into your Windows PC.

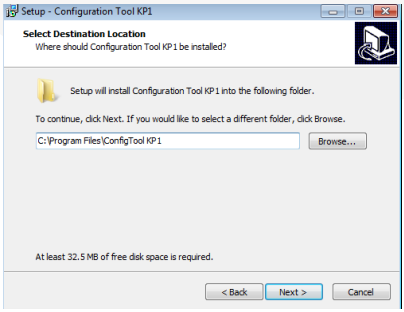
2. Drag the software onto your desktop from the software folder.

3. Double click the software icon to run the software installation software.

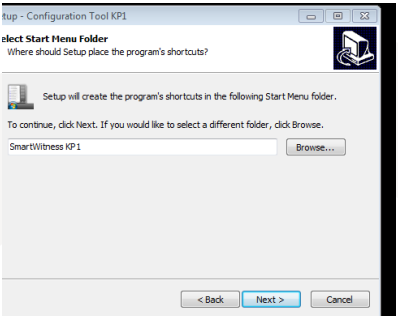


4. When the above pop up comes on screen, click the ‘Next’ button to begin the set-up.

5. Then, select the destination to save the software and click ‘Next’.



6. You can choose to create a desktop icon



7. To finish installation, click the 'Install' button. Then, open the software by double clicking the shortcut icon or going to the folder in your documents.

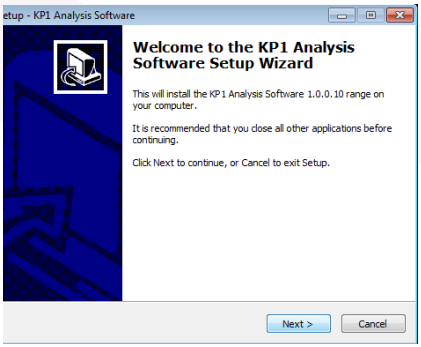
Analysis Software

To install KP1 Analysis Software, follow the steps below. If you do not have the software you can download it from www.smartwitness.com.

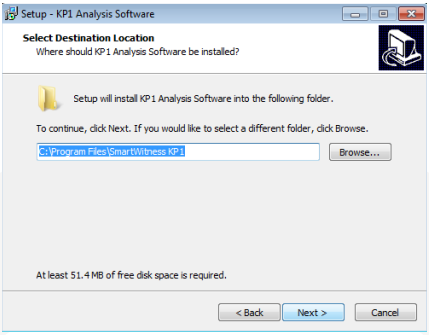
1. Insert your SD card into the SD Card reader and plug into your PC.

2. Drag the software onto your desktop from the software folder.

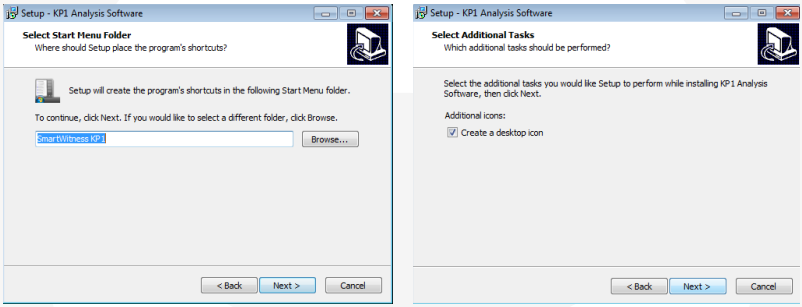
3. Double click the software icon to run the software installation software.



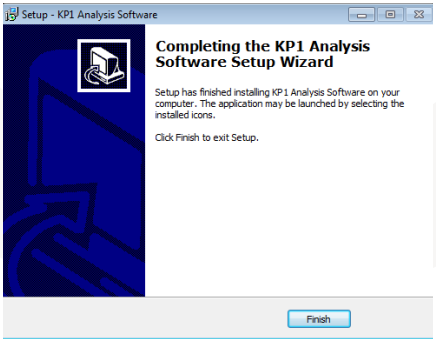
4. Click the 'Next' button to continue.



5. Select a destination to save the software to and click ‘Next’.



6. You can set the software to create shortcuts in both the Start Menu and the Desktop, as shown above.

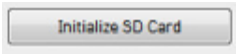


7. To complete the setup, click the ‘Finish’ button. When installed, double click the shortcut icon to open the software.

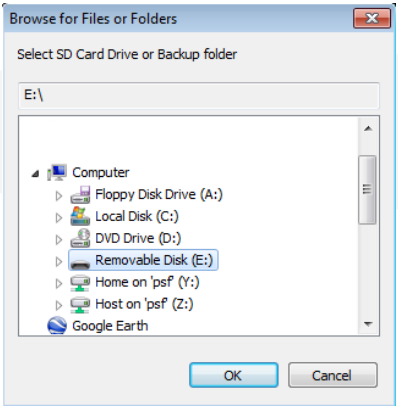
Before using KP1, you will need to open the configuration software to initialise the SD card, configure settings on the unit such as telematics and resolution etc. Before loading the configuration software, insert your SD card into the computer using an SD card Reader.

Initialise SD Card

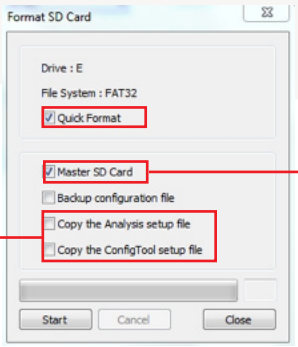
Firstly, on the configuration tool, you can initialise the SD card so it is ready for use in KP1. To do this, click the 'Initialise SD Card' button.



To initialise the SD card, click on the above icon and you will be presented with the following screen to choose the SD card to initialise option.



Click 'OK' when you have selected the SD card. Then, click the 'Quick Format' button and Master SD Card selection (As shown Below).

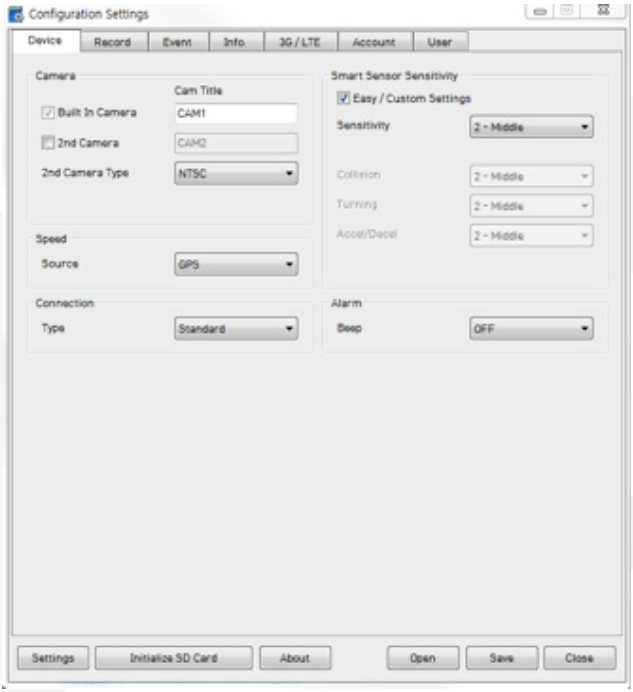


If you want the software copied onto the SD card, please tick these boxes.

SD Slot 1: Master SD Card
SD Slot 2: Slave SD Card

Check 'Master SD Card' when you want to make the SD Card inserted, the Master SD Card.

Device Settings



PLEASE NOTE

Please click save if you make any changes to the configuration options.

Camera

- **Built-in Camera**: Check this box to use the built-in camera.
- **2nd Camera**: Check this box to use both the built-in camera and additional camera.
- **Cam Title**: Rename each camera (maximum 10 digits)
- **2nd Camera Type**: Choose the camera type from NTSC or PAL.

Speed

- **Source**: Select speed source from GPS or Pulse (Car speed pulse)

Connection

- **Type**: Choose the connection source:

    1. Standard: Cigar Power
    2. KP1-INT1: Power Adaptor
    3. KP1-INT2: Junction Box

Smart Sensor Sensitivity

- **Easy/Custom Settings**: Check the 'Easy/Custom' box to set all sensitivity settings to High, Middle or Low.
- **Collision/Turning/Accel/Decel**: Uncheck the 'Easy/Custom' box to set 3 different Smart Sensors for Collision, turning or accell/decel. Each parameter can be set to 1,2 or 3 with 1 being High and 3 being Low.

Alarm

- **Beep**: Turn the alarm beep On or Off.

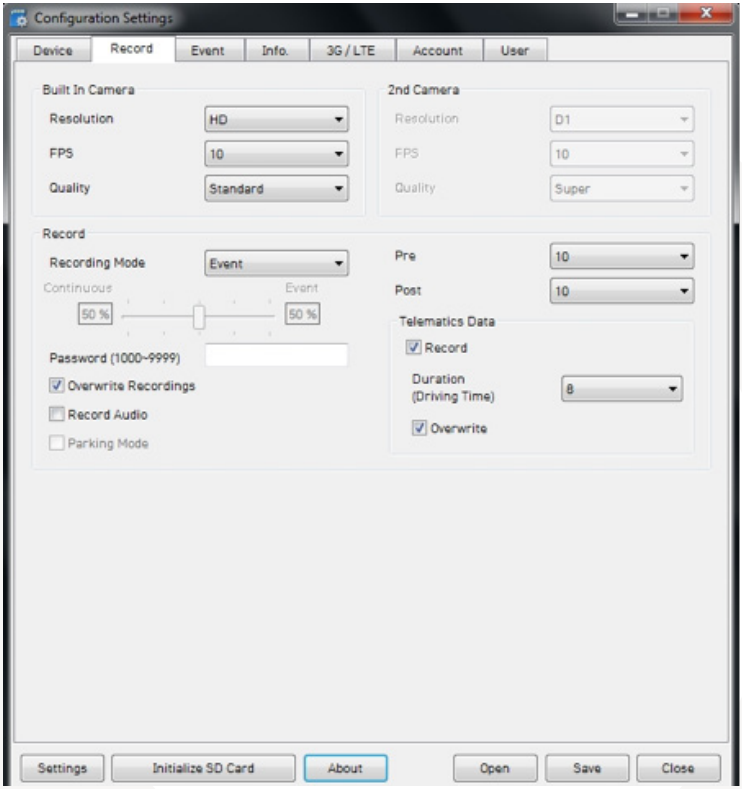
Speedometer

- **Type**: Set the speedometer type - (This is only available when you select the KP1-INT2).

RPM

- **Type**: Adjust the RPM type - (This is only available when you select the KP1-INT2).

Record Settings



Built-in Camera Resolution

HD (1280x720) VGA (640x480) QVGA (320x240)

2nd Camera Resolution

D1 (720x480) HD1 (720x240) CIF (352x240)

Recording Mode

Continuous
Event
Continuous + Event: 1fps continuous recording + Event recording (adjust the 'FPS' from 1fps to 30fps).

Available FPS & Max FPS per Resolution

Single camera mode (Built-in camera only)

Resolution	FPS
HD (720P) 1280x720	30
	15
	10
	5
	4
	2
	1
VGA 640x480	30
	15
	10
	5
	4
	2
	1
QVGA 320x240	30
	15
	10
	5
	4
	2
	1

Two Camera Mode (Built-In Camera + 2nd Camera)

Built-in Camera	
Resolution	**FPS**
HD (720P) 1280x720	15
	10
	5
	4
	2
	1
HD (720P) 1280x720	15
	10
	5
	4
	2
	1
HD (720P) 1280x720	15
	10
	5
	4
	2
	1
VGA (640x480)	30
QVGA (320x240)	30

2nd Camera	
Resolution	**FPS**
D1 720x480	15
	15
	30
	30
	30
	30
HD1 720x240	15
	30
	30
	30
	30
	30
CIF 352x240	30
	30
	30
	30
	30
	30
D1 (720x480)	30
D1 (720x480)	30

Pre Event Recording Time, Post Event Recording Time

Adjust the Pre/Post time from 5 seconds to 20 seconds.

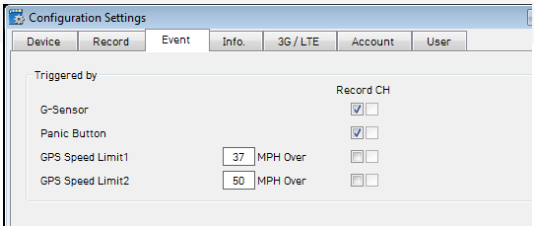
Telematics Data

Adjust Telematics Data recordings duration from 8 hours to 480 hours.

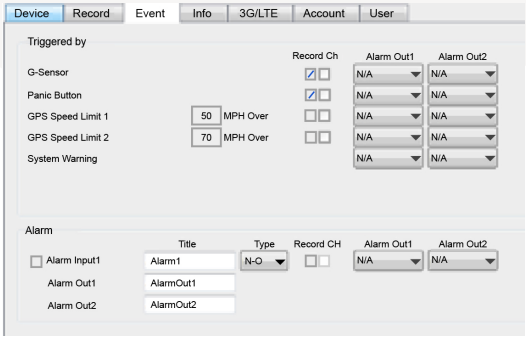
Event Settings

This option allows you to set when the KP1 will record certain events for example when a panic button is pressed or G-sensor is triggered.

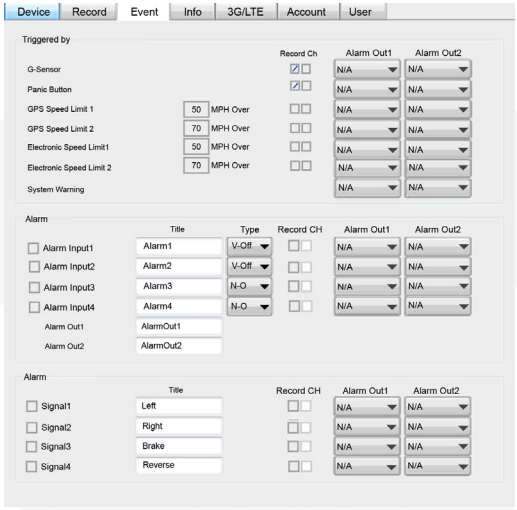
1. When using a standard power cable, you can set the unit to record when triggered by the G-Sensor, Panic Button and/or GPS Speed Limit.



2. When using a KP1-INT1 cable, you can also add an alarm output to the above settings.

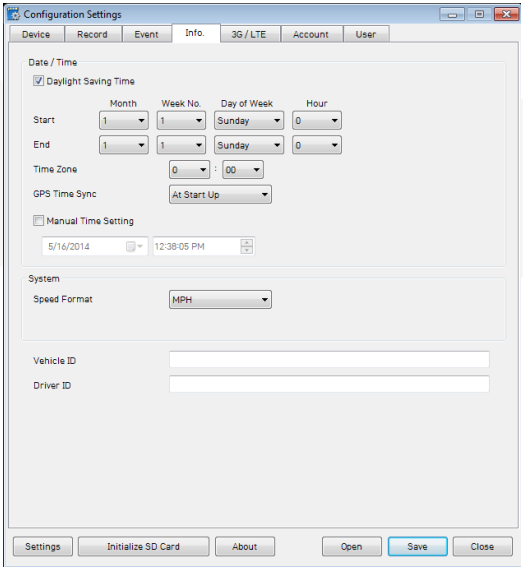


3. When using a KP1-INT2 cable, you can also add an alarm and signal to the standard cable settings (Shown Below).



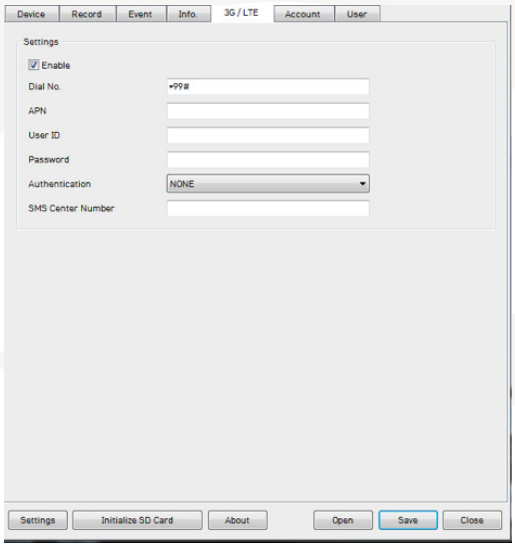
Information Settings

This option allows you to adjust the Time Zone, GPS Time Synchronisation, set your Vehicle ID and also the Driver ID.



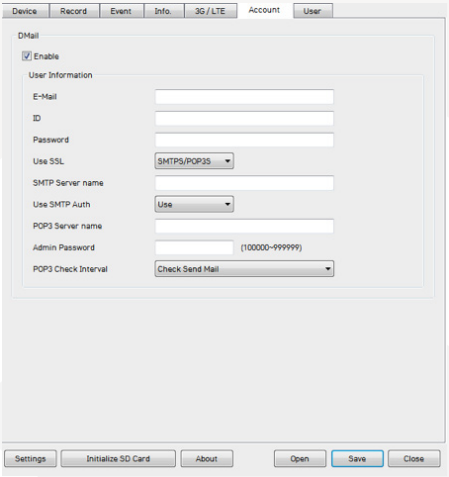
3G/LTE Settings

Enable the 3G/LTE function on KP1 and adjust the settings for use like password, User ID, Authentication etc. Please refer to the 3G/4G Sim Card supplier website for these settings.



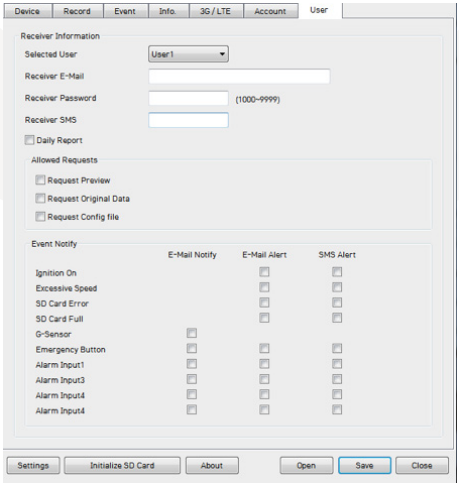
Account Settings

In account settings, you can set an email account for KP1 for when you need to email commands. This account is also the email account KP1 will send emails from.

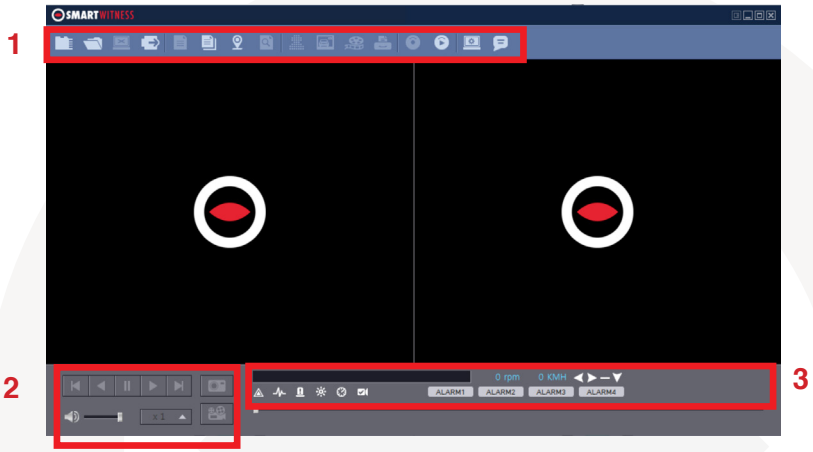


User Settings

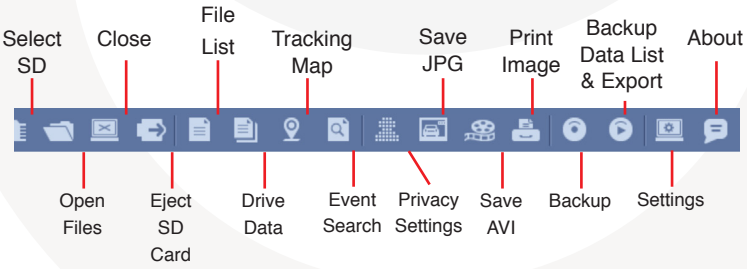
This option allows you to set receiver information such as email or SMS for each user. There can be a maximum of 5 users on the KP1.



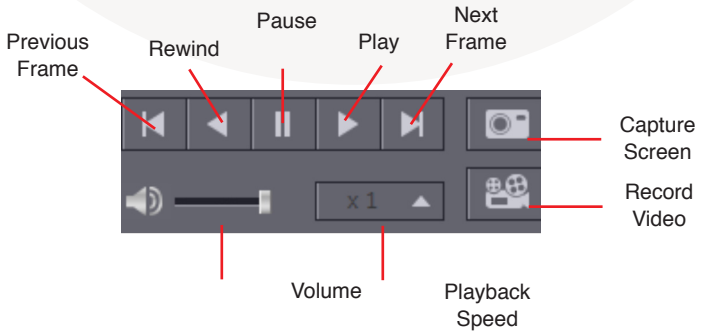
Insert the KP1 SD card and locate the software folder, now install the Analysis software, once installed you can double click on the desktop icon. The main screen will then be displayed as follows:



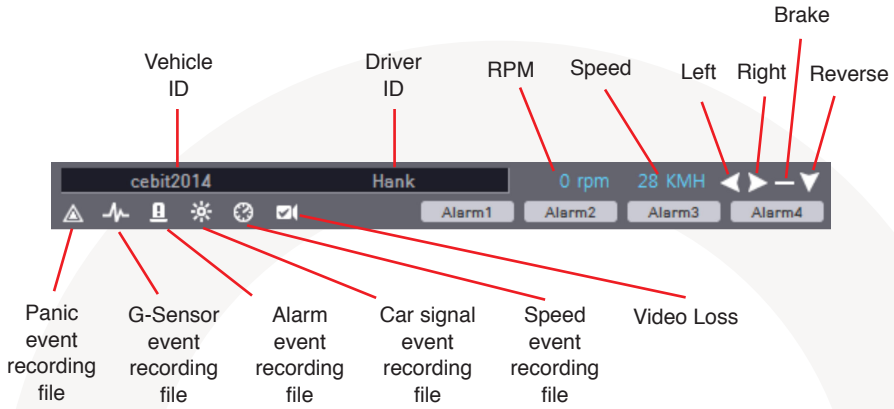
Control Buttons



Playback Control Buttons



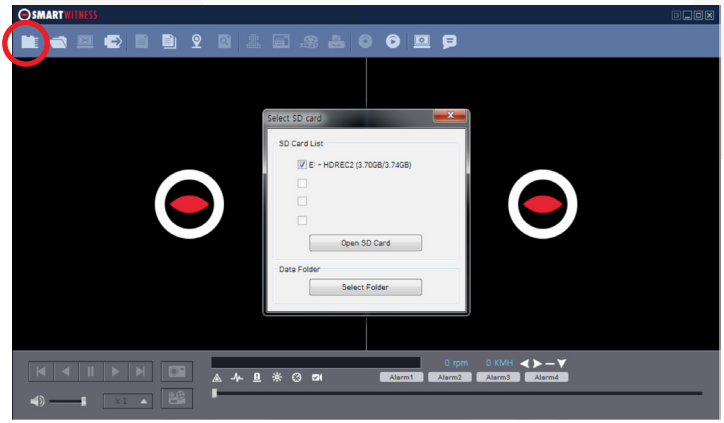
Signal / Alarm Indicator



Playback

Insert the SD Card to your PC. Make sure that the SD Card is properly recognised.

After confirming that SD card is recognised correctly in the PC, open the KP1 analysis software and click the “Select SD Card” button. Then, select the correct SD card from the list (Shown below).



Then, select an SD card and the click the ‘Open SD Card’ button.

The list of data tab “continuous” and “event” is displayed on the right side of the screen.

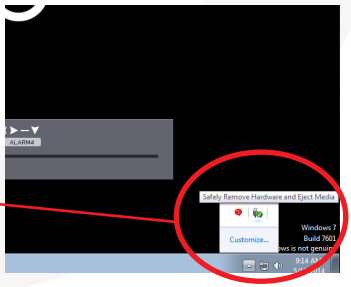
The recorded data is displayed under each tab, as shown below:

The Playback file list can be separated from the main screen and you can hide it or change the position.

In addition, the file list can be displayed on the screen as well by clicking the “File List” button.

You can end the Video playback by clicking the “close” button.

When finished, click the “disconnect safely and removing the SD card” button and remove the SD card from your PC.



Open Files

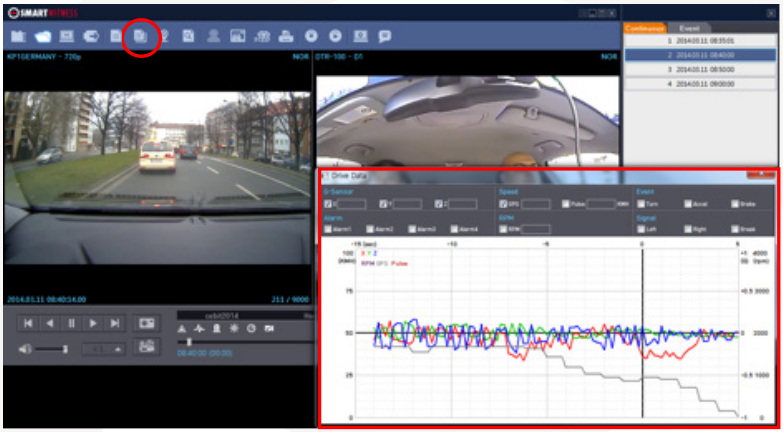
If you want to play a specific file that has been backed up on the PC or SD Card, click the “Open files” button.

Select the specific MDD file you want to play and click the “Open” button. The image of the selected file will then be displayed and you can click the ‘Play’ button to play the file.

Drive Data

KP1 can record not only video and audio, GPS information, speed but also vehicle information like the alarm, G-Sensor, brake, speed Pulse and RPM together.

The recorded information can be analysed and played through the KP1 Analysis software.

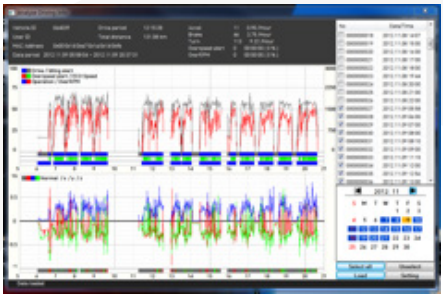


The default setting only displays the G-sensor graphs but other information may be added by checking the boxes in the upper part of the screen. Other information included;

- **G-Sensor:** (X axis: red, Y axis: green, Z axis: blue, based on the positioning of the main unit) is shown with the data reference point zero-point calibrated and positive shocks as (+) and negative shocks as (-).
- **Speed**: GPS measured speed is displayed in grey while the speed-pulse measured speed is displayed in red.
- **RPM**: Displayed in purple.
- **ALL TRIGGERS** (signals and alarms) are displayed on the bottom of the screen with the grey bar meaning the trigger is activated.

Analyse Drive Data

During the viewing, click the Analyse Drive data button to view the below Analyse Drive Data screen.



From the calendar in the bottom right corner, choose the date you wish to inspect 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 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 where 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

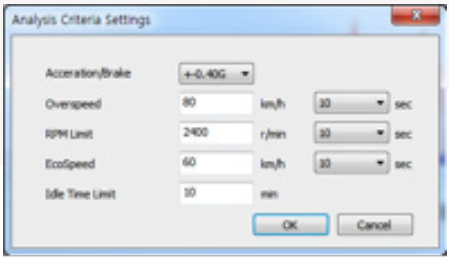
The lower graph shows the G-sensors. The x-axis is in red, y-axis in blue, and z-axis is green.

The indicator bar below shows jolts in the G-sensor values, i.e. G-sensor values that exceed the pre-set limit. Grey 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. The limits for G-sensor, permitted speeding, excessive RPM, and eco-speeding can be set under the ‘Analyse’ 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.



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 43, 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 43, 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.

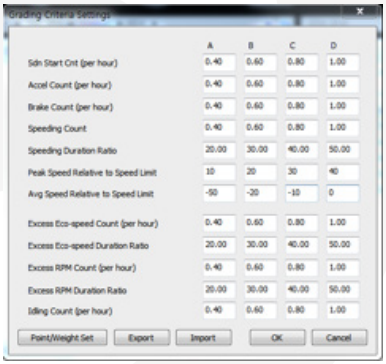
Grading Criteria Setting

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) and if the driver's score is lower then 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'.



Sudden Start Count

This option sets the grading criteria 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 the amount of times there is a sudden acceleration 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 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 the amount of times there is a sudden deceleration 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 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 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 'Analysys 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 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 'Analysys 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 was exceeding the eco-speed limit 4 times, their score for this criteria would be 0.5 and based on the image on page 43, 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 was exceeding the eco-speed limit for 1 hour, their score for this criteria would be 12.5% and based on the image on
page 43, 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 43, 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 set. 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 43, 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 exceeding the idle time limit 4 times, their score for this criteria would be 0.5 and based on the image on page 43, 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.

PLEASE NOTE

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

This means that you can set each KP1 quicker than manually adjusting the settings in each version of the software.

Grading Method

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 exxceed, 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*100/100 + 10*100/100 + 20*70/100 + 10*70/100 + 10*100/100 + 10*100/100 = **91 Eco Grade A**

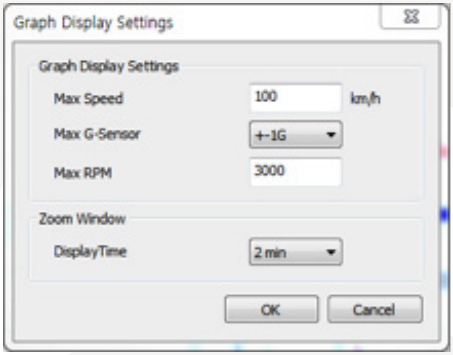
Driver 2:

Eco Score = 20*70/100 + 10*100/100 + 20*100/100 + 20*70/100 + 10*100/100 + 10*100/100 + 10*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

The results of the driver analysis can be shown on a graph. To adjust the graph display, click on the 'Graph Display Settings' option.



Max Speed: Set the graph's upper speed limit (0-999 km/h)

Max G-Sensor: Set the graph's upper G-Sensor limit, by selecting a value from the drop down menu (+-1G, +-2G, +-3G)

Max RPM: Set the graph's upper RPM limit (0-9999)

Zoom Windwo Display Time: Set the time scale for the graph to be in zoom mode by selecting a value from the drop down menu (1 min ~ 10 mins).

The graph settings will 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).

Tracking Map

During playback, if you click the tracking map button, the screen below will pop up showing a map of the region, the route and the location of the vehicle with an orange arrow.

If the map is not displayed, make sure that the PC is connected to the internet correctly.

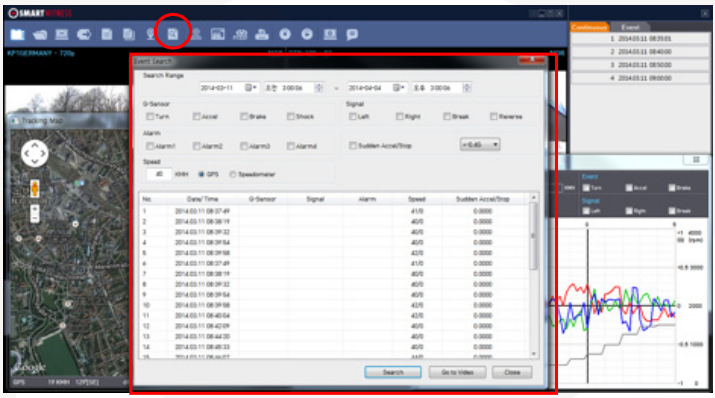
The KP1 Analysis Software is composed of a main screen, drive data screen, drive data analysis screen and the tracking screen. These screens can be displayed independently and their location and size changed to improve the use and management of data.

In addition, it is also possible to display using multiple monitors. By using different screen modes of Viewer software, you can play / analyse video data more efficiently.

Event Search

With the KP1, searching and filtering the data is made easy. Utilising supplementary data such as g-sensor, signals, alarms, speed, and RPM, you can find incidents and events quicker than monitoring the vast amounts of video and audio recordings.

Click the ‘Event Search’ button to access the event search screen.



Firstly, set the search range.

If you select the type of events you want to search for like G-sensor, signal, alarm, speed, etc and then click the ‘Search’ button.

Select the data you want to play from the list and click the ‘Go to Video’ button and the video that you selected will be displayed on the screen.

Privacy Settings

KP1 allows you to set the mosaic area on each channel for privacy protection.

When backing up the data as a JPG or AVI format and playing in the Viewer software, you are able to make a mosaic processing on the area you have set.

To do this, put the pause the video and click the ‘Privacy settings’ button. The privacy setting screen will pop up.

Using the scroll down, select the camera you wish to set up.

On the selected camera view, blur out the area you wish to protect by left-clicking on the sections. You can select multiple areas.

You can also unselect, selected areas by right-clicking the blurred areas.

To select all or clear all, click on the ‘Select all’ or ‘UnSelect All’ buttons on the bottom, respectively.

Save As JPG

This function will create a still frame j-peg back up of any point in the video file.

After finding the precise time you want to save, pause the playback and click the “Save JPG” button and the below screen will pop up.

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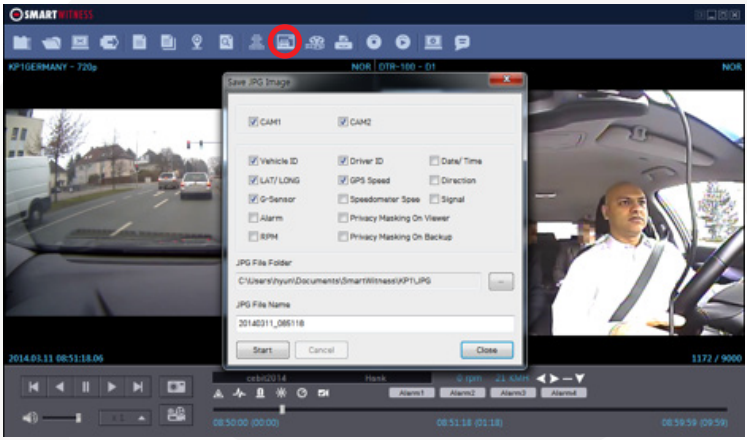


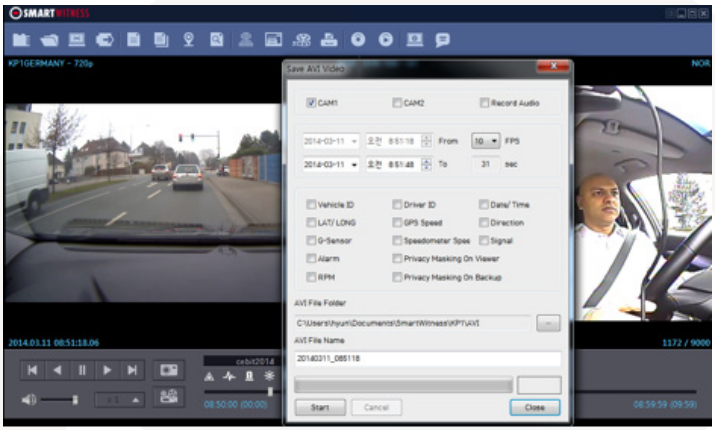
To select the channel you want to save, check all the information you want to include from the options shown. The selected information will be imprinted on the image itself. Choose the folder you want to save the image to and click ‘start’.

The file will be saved in the default folder of “My Documents\SmartWitness\KP1\JPG” if you do not specify a Folder.

If you check “Privacy Masking”, the image will include the blurs.

Save As AVI

This function will create a still frame AVI video back up of any point. To do this, pause the video at where you wish to start saving and click the ‘save AVI’ button.



Check the cameras you wish to convert into an AVI file and if you wish to include audio, check the [Audio Ch] box and scroll down to the channel you wish to include.

* Multiple video channels can be converted but only one audio channel can be recorded and that one audio channel will be included in all AVI conversions. (The starting time is automatically set to the time that was paused at the start of this process and cannot be changed).

Select the frame rate (FPS), from 1 to 30, you wish to use. (For the best video stream, use 30 FPS).

Check the supplementary information you wish to include in the video. The selected information will show up as text on the video itself.

Choose the folder you wish to save the AVI file and type a file name. (The default folder is “My Documents\SmartWitness\KP1\AVI” and the default name is the date and time.)

A video of each camera will be made into an AVI file.

Print Image

You can print selected images with accompanying information for reporting purposes. To do this, when playing the video press the ‘Print Image button’ (Shown below).

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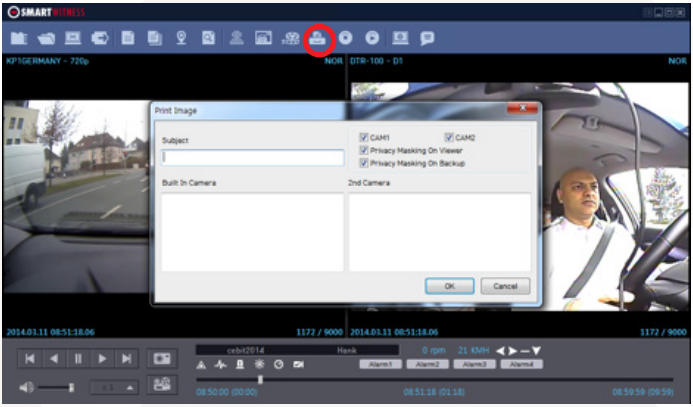
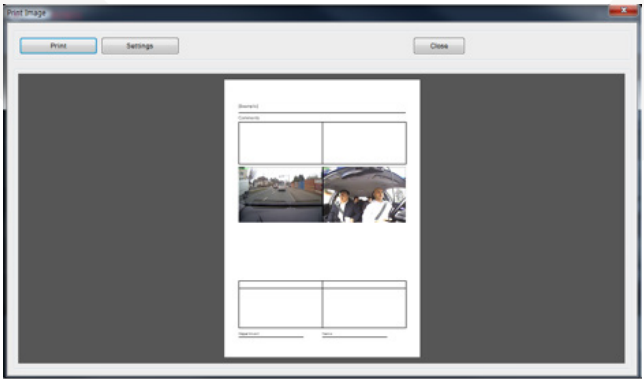


Check all camera images you wish to include in the report. Then, type the title of the report and any comments about the situation or other reminders.

If the Privacy Masking box is checked, the pre-set blur effect will be applied.

When you click ‘OK’, a preview of the report like the one below, will be pop up.



After checking all the information, press the ‘Print’ to print the report.

Backup

You can back up the recorded data on your PC or other data storage media.

KP1 offers an option to store data by type to ease management of data. You can also input additional data such as Vehicle ID, Driver ID, title, and comments to help in administration.

Click the ‘Backup’ button.

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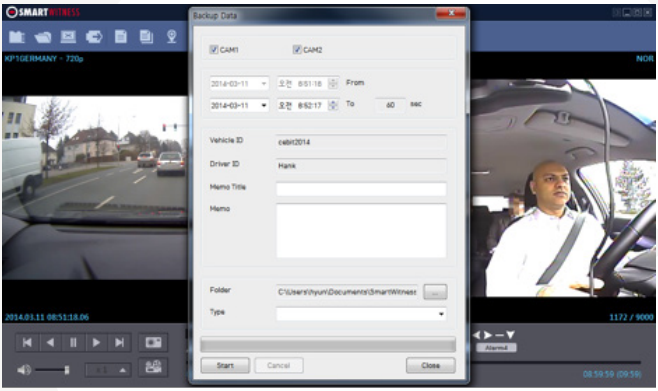


Check all the camera boxes you wish to back up and set the time you wish to backup.

(The start time is when the video was paused and cannot be changed once you start this process).

Input all the information you wish to include in the back up file including Driver ID, User ID, title, and comments.

Then, select the folder where you wish to save the backup file. (The default folder is “My Documents\SmartWitness\KP1\BACKUP”).

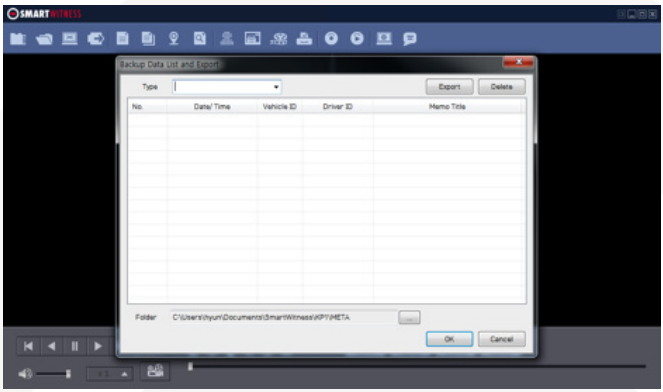
Press [Start] to create the backup file. These backed up files can be accessed from the Backup List.

The maximum amount of time you can back up is one hour.

Backup List

You can use the data backup list to play data files easier that have been backed up. To do this, click the ‘Backup List’ button (below).

.



Choose the folder where the backup files are at the bottom of the screen. (It will automatically show the last folder that was accessed.)

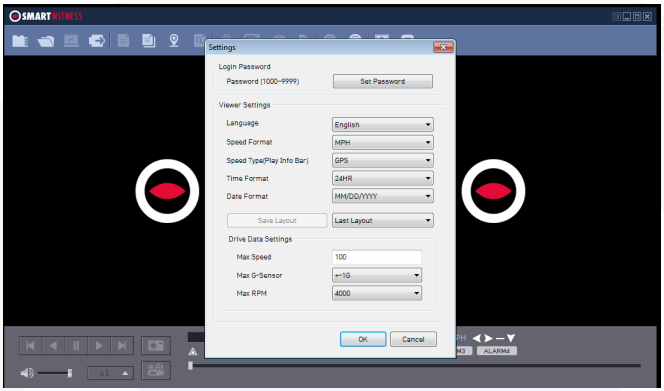
Then, select the report type by scrolling down the options.

The files are listed showing the “Date/Time, Vehicle ID, Driver ID, Title”.

Check the box next to the file you wish to play back and click ‘OK’. Finally, double click the file and video files will show on the Viewer.

Software Settings

You can use the data backup list to play data files easier that have been backed up. To do this, click the ‘Backup List’ button (below).



Click the ‘Set Password’ button. Password for the KP1 Analysis Software can be set with any number between 1000-9999.

[Note] The PC Software will not be able to run without a password, so please make sure to keep the password in a safe place.

KP1 Analysis Software Settings

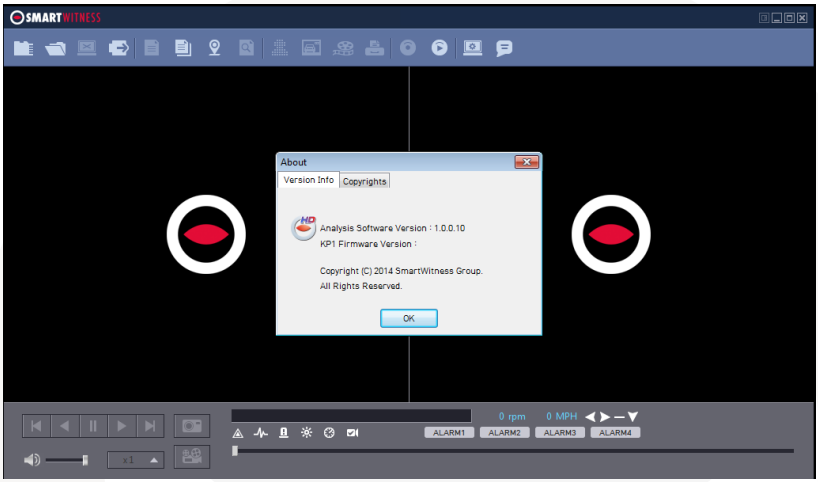
Language: Selectable from “Japanese / Korean / English/ Spanish/ Russian”.
Velocity Form: Select from “km/h” or “mp/h”.
Speed Type (Play information bar): Selectable from the vehicle speed pulse or GPS.
Time Unit: Selectable from “24HR” or “AM / PM”.
Date Format: Selectable from “YY/MM/DD”, “MM/DD/YY” or “DD/MM/YY”.
Default Layout: The program will launch with the Default Layout
Last Layout: The program will launch with the same layout as it was when it was closed.

Drive Data Settings

The graph scales for the Drive Data Window will be modified according to the settings.

About

You can check the version information of the KP1 Analysis software. Click the ‘About’ button to see the below pop up.



Here, you can check the software version and KP1 firmware version number. For updates please check with your supplier/distributor.

Event Notification

Email from KP1

The KP1 will send an email notification when an incident happens. Below explains the content and subject header of the emails.

Email Subject:

ID > Vehicle ID > Event Type > Date-Time

For Example: ID > Y122 VVE > G > 16/04/2014-17:39:17

Email Body:

Type: G
Location: 50 MPH - X=0.3g,Y=0.2g,Z=0.9g
Ok

In the above example, the type will start with the event type. The different types of event are as follows:

G = G-Sensor
P = Panic
A1 = Alarm1
A2 = Alarm2
A3 = Alarm3
A4 = Alarm4

The email will then attach an AVI file of the incident and show as follows:

AVI file (10sec, QVGA): 1st camera only (Pre)4 seconds + (Event)1 second + (Post) 5 seconds

AVI file name: ID_Date_Time.avi
KML file name: ID_Date_Time.kml

KML: Google Earth File

Request Original Data

Send an Email to KP1

Email Subject:

R_ >_Date-Time_>_Password (This is the user password. Set using the congfuration software.)

For example: R_ >_2014/04/16-17:39:17_>_5555

Send Original Data

Email From KP1

Email Subject:

ID > Vehicle ID >V > Date-Time

For example: ID > Y122 VVE > V > 2014/04/16-17:39:17

V= Video

Attach mdd file (The Max file size is 10MB): 1st camera + 2nd camera video

When requesting the video again, the email will attach an MDD file. This file can only be played through the KP1 Analysis Software.

Request Preview

Send an Email to KP1

Email Subject:

Event Type_ >_Date-Time_>_Password

For example: G_ >_2014/04/16-17:39:17_>_5555

Send Preview

Send an Email to KP1

Email Subject:

ID>Vehicle ID >T>Date-Time

For example: ID > Y122 VVE > T > 2013/11/16-17:39:17

T= Thumbnail video

Attach AVI file (10sec, HD or 10sec VGA or 10sec QVGA): 1st camera only (Pre) 4 seconds + (Event)1 second + (Post) 5 seconds

The AVI file resolution can be set in the settings on the analysis software.

AVI file name: ID_Date_Time.avi
KML file name: ID_Date_Time.kml

Remote Configure

- To Change KP1 Settings

Send an Email to KP1

Email Subject:

S_ >_Admin Password

For example: S_ >_555555

Attach setting.ini file

PLEASE NOTE

All commands have to be sent from one of the registered users that can be set in the KP1 Configure Software.

Continuous Mode

Resolution	Quality	FPS	SD Card (in Hours)			
			4GB	8GB	16GB	32GB
HD (720P) 1280x720	Super	30	1.8	3.5	7.1	14.2
		1	8.4	16.7	33.4	66.9
	High	30	2.2	4.4	8.8	17.6
		1	10.2	20.5	40.9	81.9
	Normal	30	2.9	5.8	11.6	23.2
		1	13.2	26.4	52.8	105.7
VGA 640x480	Super	30	4.3	8.5	17	34
		1	18.6	37.2	74.4	148.9
	High	30	5.5	11.1	22.2	44.4
		1	23.4	46.8	93.5	166.7
	Normal	30	8	16	31.9	63.8
		1	31.5	62.9	125.9	166.7
QVGA 320x240	Super	30	14.2	28.4	56.8	113.6
		1	48.1	96.2	166.7	166.7
	High	30	16.8	33.7	67.3	134.6
		1	53.8	107.6	166.7	166.7
	Normal	30	20.6	41.3	82.6	165.1
		1	61	122	166.7	166.7

Camera 1			Camera 2						
Resolution	Quality	FPS	Resolution	Quality	FPS	SD Card (in Hours)			
						4GB	8GB	16GB	32GB
HD (720P) 1280x720	Super	15	D1 720x480	Super	15	2.1	4.3	8.6	17.2
		1			1	6.1	12.2	24.4	48.8
	High	15		High	15	2.7	5.4	10.8	21.6
		1			1	7.6	15.3	30.6	61.1
	Normal	15		Normal	15	3.7	7.3	14.6	29.3
		1			1	10.2	20.4	40.9	81.7
VGA 640x480	Super	30	HD1 720x240	Super	30	2.8	5.7	11.4	22.8
		1			1	13.2	26.3	52.7	105.4
	High	30		High	30	3.6	7.3	14.6	29.2
		1			1	16.5	33	66.1	132.2
	Normal	30		Normal	30	5.1	10.1	20.3	40.6
		1			1	22.1	44.3	88.6	166.7
QVGA 320x240	Super	30	CIF 352x240	Super	30	7.6	15.2	30.5	61
		1			1	31.3	62.6	125.1	166.7
	High	30		High	30	9.2	18.3	36.6	73.2
		1			1	36.3	72.5	145.1	166.7
	Normal	30		Normal	30	11.5	22.9	45.8	91.6
		1			1	43.1	86.3	166.7	166.7

*This is a guideline only. Actual results may very depending on a variety of factors.

Limitation of the total file number

In Event Record Mode:

1 camera recording: The number of files is limited to a maximum of 3,000.
2 camera recording: The number of files is limited to a maximum of 2,000.

In Continuous Record Mode:

Regardless of the number of cameras, the maximum recording number is 1,000.

At the Dual (Continuous + Event) Record mode

1 camera recording, maximum recording number (Event folder: 2,000, Normal folder: 1000)

2 camera recording, maximum recording number (Event folder: 1,500, Normal folder: 1000)

PLEASE NOTE

If the number or recorded files will exceed the maximum (1,000), then they will be overwritten on the SD card starting with the oldest first.

Therefore, please backup data regularly to avoid losing any important files.

Event Mode

Resolution	Quality	FPS	4GB	8GB	16GB	32GB
VGA 640x480	Super	30	750 Events	1500 Events	3000 Events	3000 Events
	High	30	900 Events	1800 Events	3000 Events	3000 Events
	Normal	30	1350 Events	2700 Events	3000 Events	3000 Events

Camera 1			Camera 2						
Resolution	Quality	FPS	Resolution	Quality	FPS	4GB	8GB	16GB	32GB
VGA 640x480	Super	30	D1 720x480	Super	30	375 Events	750 Events	1500 Events	2000 Events
	High	30		High	30	450 Events	900 Events	1800 Events	2000 Events
	Normal	30		Normal	30	700 Events	1400 Events	2000 Events	2000 Events

Dual Recording Mode

Camera 1			Camera 2							
Resolution	Quality	FPS	Resolution	Quality	FPS	Record Folder	SD Card 4GB	SD Card 8GB	SD Card 16GB	SD Card 32GB
VGA 640x480	Super	1	D1 720x480	Super	1	Normal	5 Hours	10 Hours	20 Hours	40 Hours
		30			30	Event	185 Events	370 Events	740 Events	1480 Events
	High	1		High	1	Normal	6 Hours	13 Hours	26 Hours	52 Hours
		30			30	Event	225 Events	450 Events	900 Events	1500 Events
	Normal	1		Normal	1	Normal	9 Hours	18 Hours	37 Hours	74 Hours
		30			30	Event	350 Events	700 Events	1400 Events	1500 Events

9. SPECIFICATIONS

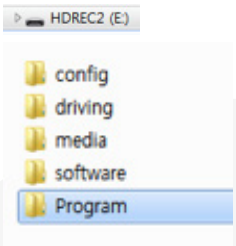
Image Sensor	Megapixel Colour CMOS Sensor
DSP	Standard DSP
Angle of View	170°
Video Resolution	1280x720, 640x480, 320x240
Recording Speed	Up to 30fps per camera
Recording Modes	Normal (Continuous) Event (G-Sensor, Panic, Alarm) Dual (Continuous + Event)
Recording Time	Minimum: 1 Minute Maximum: 167 Hours
Memory	Supports 2 SD Cards of up to 32GB each (Class 10)
GPS	Internal GPS
G-Sensor	Internal 3-Axis G-Sensor
RTC	Internal Battery
Buzzer	Recording Start, Error
LED	4 LEDs (Red, Orange, Blue, Green)
PC Software	KP1 Config Software / KP1 Analysis Software
Power Input	Cigarette Jack: Input - DC 12V/24V 2A, Output: DC 5V 3A Power Adaptor: Input - DC12/24V, Output: DC 5V 3A Junction Box: Input - DC 12V/24V 2A, Output: DC 5V 3A
Size (WxHxD) in mm	110x57x57
Weight	0.15 KG
Operation Temp	-10°C ~ +55°C

Firmware Upgrade

1. To begin the firmware upgrade, you will need to install the KP1 Configuration Tool software on your computer. The firmware can be found on the smartwitness Support/ Product support page. For full details on installation, please go to section 4 on page 23.

2. Then, initialise your SD Card using the configuration software.

3. Make a folder called ‘Program’ on the SD Card as shown below.



4. Copy the “KP1_X.X.X.bin” file into the SD card ‘Program’ folder.

5. Make sure KP1 is turned off and insert the prepared SD card into KP1 SD slot 1 and turn on the power.

Upgrading the unit will usually take about 1 to 2 minutes.

PLEASE NOTE

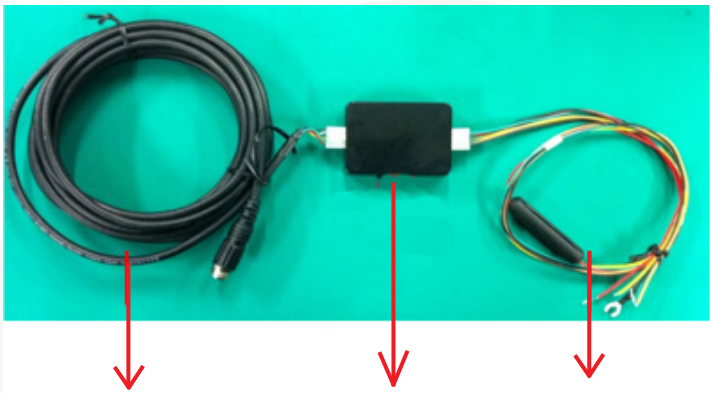
Do not turn off the power during upgrading.

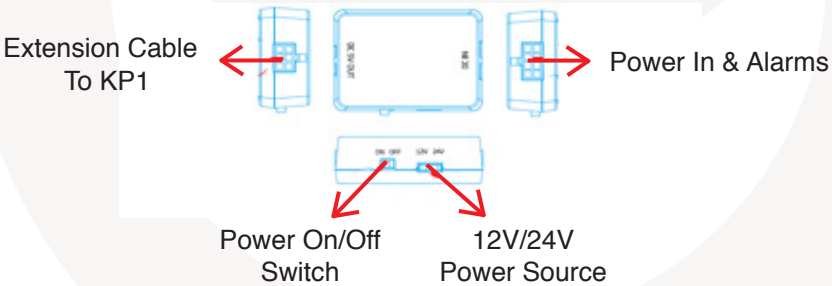
If the upgrade fails, “KP1” unit should be returned to your local distributor.

6. Once the upgrading is finished, KP1 will automatically reboot.

Optional Accessories

Power Adaptor: KP1-INT1





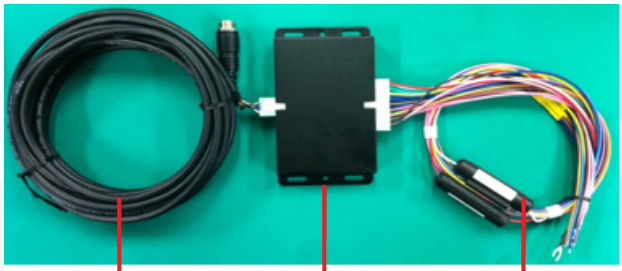
Cable Descriptions

- Battery -
- Battery +
- Alarm
- Alarm Out 1
- Alarm Out 2

Input Voltage	DC 12V / 24V 2000mA		
Output Voltage	DC 5V 3000mA		
Operation Temp.	-20°C ~ +60°C		
When Used at 12V		**When Used at 24V**	
Initial Voltage	12.5V	Initial Voltage	23.2V
Power Cut Voltage	12V	Power Cut Voltage	22V

Optional Accessories

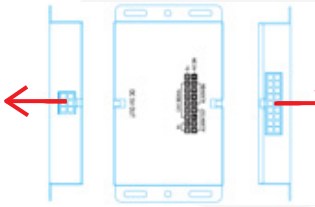
Junction Box: KP1-INT2



Extension Cable To KP1

Junction Box

Signal & Power Cable



Extension Cable To KP1

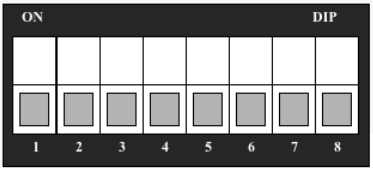
Signal & Power Cable from Vehicle

Cable Descriptions

- Battery -
- RPM
- Speed
- Reverse
- Brake
- Right
- Left
- Battery +
- Alarm Out 1A, 1B, 2A & 2B
- Alarm In 1, 2, 3 & 4
- ACC

Junction Box DIP Switch

1. Switch (On: Low, Off:High)



2. Delayed Shutdown Time Setting

DIP Switch No.			Time
1	2	3	
OFF	OFF	OFF	1 Min
ON	OFF	OFF	30 Min
OFF	**ON**	OFF	1 Hour
ON	**ON**	OFF	2 Hour
OFF	OFF	**ON**	4 Hour
ON	OFF	**ON**	15 Min
OFF	**ON**	**ON**	~
ON	**ON**	**ON**	0

3. Power On Delay Time Setting

DIP Switch No.		Time
4	5	
OFF	OFF	0 Sec
ON	OFF	5 Sec
OFF	**ON**	10 Sec
ON	**ON**	30 Sec

4. Not Used

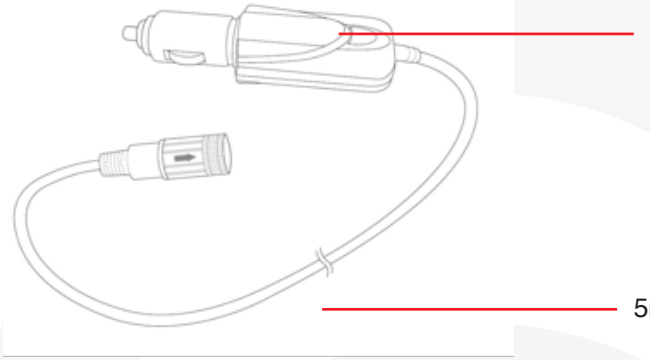
DIP Switch No.		Description
6	7	
Not Used	Not Used	Not Used

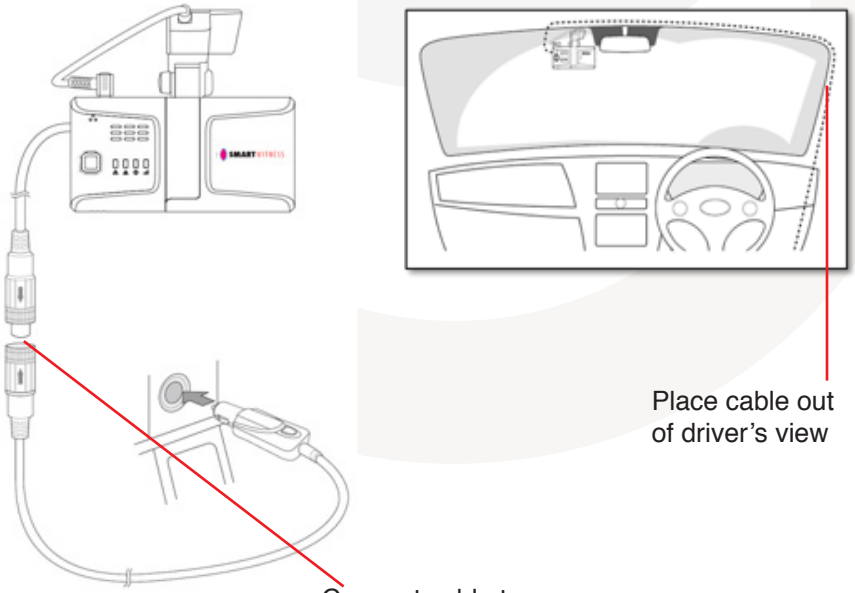
5. 12v / 24v Setting

DIP Switch No.	Voltage
8	
OFF	12V
ON	24V

Input Voltage	DC 12V / 24V 2000mA		
Output Voltage	DC 5V 3000mA		
Operation Temp.	-20°C ~ +60°C		
When Used at 12V		**When Used at 24V**	
Initial Voltage	12.39V	Initial Voltage	23.3V
Power Cut Voltage	11.9V	Power Cut Voltage	22.7V

Optional Accessories Cigarette Power: KP1-CIGAR





Technical Support

For Technical Support, please contact your local distributor.

Limited Warranty

This product is supplied with a 2 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.

NOTES

Manufactured Exclusively for:

SMARTWITNESS

VEHICLE CCTV AND SAFETY SYSTEMS

www.smartwitness.com

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