

Automated Drive Recorder **RH-2**

"Compact and Extremely Affordable, Digital Video and Audio Recorder"

USER'S MANUAL



roadhawk
Digital Driver Protection System

Main Features

Unlike other in-car recording systems, the Drive Recorder is used to record both video and audio data in a continuous loop fashion. If the vehicle is involved in an accident such as a collision, impact, and sudden acceleration-related incident, this data is marked and stored. One may thereafter analyze the data to find its root cause by playing back the scenes of interest and where acceleration, vehicle speed, direction, and location are available for review. Added to the recording are vehicle speed and direction and GPS location.

Continuous recording

The video and audio data from the front and interior views is continuously recorded while power on. When the capacity of the SD card has been reached, the oldest files are overwritten by the latest ones in a "round-robin", first in, first out fashion.

Pre and post event recording

When impact or unusual acceleration or deceleration is detected by the built-in G-Sensor and has exceeded the preset limit or one activates the manual emergency record button, the recorded video data is locked-in and is erased only by an authorized party and by using a PC or laptop, accessing the SD card. Event data records 1 minute before and 1 minute after (Note: The User may set the pre-event time to either 1 minute, 2 minutes or 3 minutes of pre-event recording). The next time the SD card is read by the unit, the unit's set up parameters will be uploaded into the recorder. As previously mentioned, stored event recording data in the SD card will not be erased by the unit, and where this must be done manually by the user.

Night view recording with Infra-Red Light

The included IR (Infra-Red) Light module with adjustment used this invisible light source to assist in recording nighttime views from the interior facing camera.

Playback of video/audio data

The recorded data can be played back using the provided playback software which resides on the SD card. By removing the SD card and accessing the Player folder and double clicking on the "Player.exe" line starts the playback software.

Data analysis













The recorded data can be easily analyzed for speed, vehicle location and direction of travel including impact by using the Player that is found on conveniently on the supplied SD card.

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Safety Instructions

To ensure proper operation please read the manual before installation and use. Failure to follow this safety notice may cause a malfunction and may void the warranty.

 <p>Do not clean the product with water or volatile solvents. This may damage the product, cause a fire or electric shock.</p>	 <p>Do not apply excessive shock or never insert foreign materials into the product. This may cause product damage, a fire or a short circuit.</p>
 <p>Video quality is affected by lighting conditions. GPS is affected by signal receipt. Nighttime or use in tunnels affects system operation.</p>	 <p>Do not arbitrarily change the product location. This may cause a GPS communication error.</p>
 <p>Do not disassemble, repair or modify the product. This voids the warranty and where we take no responsibility for product damage or problems caused by the user.</p>	 <p>Any excessive window tinting may cause an unclear or distorted image on playback. First record and then play back the video to see if the recorded video is acceptable.</p>
 <p>Do not cover the camera lens with any materials or objects. This may affect recording quality.</p>	 <p>Once installed, do not manipulate the product while you're driving a car. This may cause a traffic accident.</p>
 <p>Ensure that the capacity of the SD card is not exceeded. A full SD card will not allow one to record manual alarms or G-sensor based triggers.</p>	 <p>Use only the provided cables and specified power input. A cable not supplied by the manufacturer may cause product damage, a fire or a short circuit.</p>
 <p>Do not obstruct the view of the product through the front windshield. The GPS receiver may not work properly.</p>	 <p>Only use factory approved parts. Use the approved power cable. Contact your authorized Reseller for assistance.</p>

Components



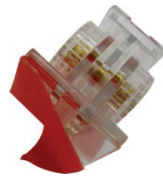
Body



**Cigarette Lighter Plug
for Power Supply**



IR Light Module



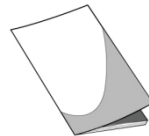
Holder



External Alarm Button



SD Card



Users Guide

Part Numbers

Front face of Body



No.	Name	Description
1	Forward Facing Camera	Used to record scenes through the windshield.
2	SD card Slot	Used to insert the SD card into unit.
3	Emergency Record Protection Cancel Button	Used to cancel protection of all the emergency recording data.
4	Emergency Record Button	Used to perform an emergency recording.
5	Volume Control	Used to adjust the audio volume for information.
6	Mounting Connection	Used to mate with the mount.

Rear face of Body



No.	Name	Description
1	Status Display	Used to display the status of Drive Recorder or traffic information by using English text or symbols.
2	IR Light Connection	Used to mate with IR Light module.
3	Built-in Speaker	Provides audio output for chime and any information.
4	Interior Facing Camera	Records video from inside your vehicle.
5	Power Connection Port	Used to connect the power cord with the unit.
6	Serial Number	Serial number of the unit.

IR (Infra-red) light module



No.	Name	Description
1	CDS	Used to sense the brightness while nighttime recording.
2	Power Connection	Used to connect the power cord to the IR light module.

*The effective range of the IR light module covers the first row of back seats.

Technical Specifications

Item	Specification	
Camera Type	1.3 MEGA pixel CMOS sensor	
Video Resolution	VGA (640 x 480) up to 20 frames per second, 2 channels	
Audio	Built-in microphone	
GPS	Built-in GPS module	
Automatic Event Sensor, Alarm Input	G-sensor (3-axis), Manual alarm trigger	
Memory	SD card (512M to 16GB) *	
Power Input	Body	DC 5V to recording unit
	Cigarette Lighter Plug	DC 12V to 24V input

* Depending on the model ordered, typically a 2GB SD card is provided with the unit.

SD Memory Card specifications

*Denotes an average time. (Motion affects recording duration. Times reflected see recordings made during the daytime in typical city downtown areas.)

Size of SD Memory	Maximum Storage Time	Event Recording Time	Number of Event Generated Recordings according to the Preset Recording Time		
			1 mins	2mins	3mins
512MB	23 minutes	16 minutes	6	5	4
1GB	45	32	12	10	8
2GB	90	64	25	80	70
4GB	180	120	50	40	30
8GB	370	280	90	80	70
16GB	750	320	120	100	80

* Time varies depending on the amount of motion seen by the camera & lighting conditions.

Installation:



Caution

- Be sure to stop the engine before installing the product.
- Remove all power to any areas where wires will be connected.
- Install the product in a location where the satellite signals are received.
- Before permanently mounting the unit, ensure that the camera views meet your requirements. (ex: where the interior view is not hidden by the mirror inside your car)
- The Unit must be installed on the mounted straight both horizontally and vertically

Installing the Unit

1. Insert the holder into the mounting connection.



2. Insert the IR light module's knob, on the rare face of the body.



3. Clean the mounting surface and remove the red film from tape the mount, and press in place the mount to the windshield tightly.



*Use isopropyl alcohol to clean the mounting surface of windshield, and leave it to dry.



Caution

- ◆ Connect power to the unit once the IR light module has been connected.
- ◆ Aim the IR light module towards the driver and passenger area.

Connecting the power cord

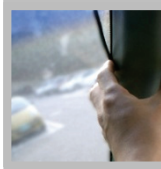
1. Connect the "Y" power cable to the power connection port on the right side of the unit.



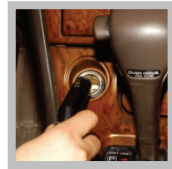
2. Connect the other side of "Y" power cable to the power connection port of the attached IR light module of the unit.



3. Arrange the power cord neatly after inserting it in the chink of the door near the driver or passenger seat.



4. Insert the power cord into the Cigarette Lighter Plug.



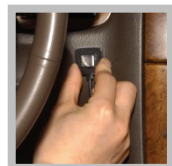
Note The recorder will only record when there is power to the cigarette lighter.

Installing the Remote External Alarm Button

1. Insert the Jack of the manual alarm input cable into the connection port on the upper part of the Cigarette Lighter Plug. Run the Cable, hiding and securing it in place.



2. Locate the best position for the remote alarm button. Secure the button by removing the adhesive film attached to the tape on the external button, press and hold.



Tips before Using the Product

Unit Preparation for video recording

1. Take the SD card out of the Drive recorder. Access the Player.exe menu and enter the set up mode, setting time zone, daylight savings time and other settings (as noted in the programming section of the manual). Re-insert the SD card in the recorder. Following the installation instructions. When you connect the unit to power, or turn the engine on, "dR Init" appears on the LED display on the unit, indicating that the video recorder is initializing. The LED display window will show a series of numbers, this indicates that GPS satellites are beginning acquired.
2. In about 25 seconds after power on, longer if one has not set the local time zone on the SD card, the unit completes initializing and a "ding dong" chime is heard along with the words "Hello". The unit may still show a series of numbers followed by and "GPS FINE" will appear. This adjusts the unit further for increased accuracy.
3. After the chime, the Drive Recorder starts continuous recording without GPS data. The unit is recording video and audio as well as vehicle speed, direction and location, when: a) when the vehicle is stopped, the unit shows local time; b) when the vehicle is in motion, it displays the vehicle's speed.

Continuous recording while driving

1. Drive Recorder informs you of your vehicle's speed, when stopped, the unit it displays the time.
2. When the capacity of the SD card has been reached, the oldest files are overwritten for continuous recording. The data recorded by either the unit's internal G-Sensor or external manual record button are not overwritten. (This alarm data must be erased by the User with the SD card inserted in the computer, erasing event data in the DATA folder.)
3. When you stop the engine or remove the power cable from the cigarette lighter plug, Drive Recorder stops recording.

SD card related information



Warning

**Do Not use this SD card for any other purpose.
To use this SD card for any other purpose or copy
unrelated files can cause a fatal error.**

Use only the provided SD card with the unit to ensure proper operation. Consult your Reseller or the Company website for SD card compatibility. In case where the computer used to mplayback the video does not support the SD card and the SD SDHC2.0 memory card standard, use a separate SDHC2.0 USB reader. (SD to USB adapter). Periodically format the SD card so as to prevent SD card errors over a long period of time.

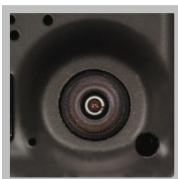


Caution

- ◆ After formatting the SD card set the time zone in Drive configuration.
- ◆ If you do not configure the settings, system initialization may take up to 10 minutes and where the time and time zone may not match.
- ◆ In case of formatting the SD card, the existing recorded video files are all deleted, so be sure to perform a backup for any important video files.

To playback video, use the Drive Recorder exclusive viewer that is located on the SD card. With the SD card inserted in your computer, explore the SD card, locate the "player .exe" file which is located on the SD card. Then explore the "DATA" folder and select the file that you wish to playback.

Functions of each part



Forward facing and rear facing/interior view camera

The camera must be horizontal and vertical. When the lens of the camera is obstructed or is dirty, clear images may not be captured. Periodic cleaning is required. To clean the lens, use a soft camera lens cloth to prevent damage.



Emergency record button (Video image removal protection)

In order to record diver detected scenes of interest, press the emergency record (E) button to record. This data records 1 minute before and 1 minute after. (User may set pre-event time 1 minute, 2 minutes or 3 minutes). Stored event recording data in SD card will not be erased unless user cancels (A remote button is also provided for this function for covert recording) The recording time is determined in prerecording time.



SD card slot

Before inserting / removing the SD card, Power must be OFF. The LED Display must be off. (BLANK!)



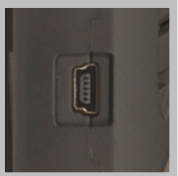
Manual Cancellation of the Emergency Manual Record if enabled in software

Press the "M" button for about 3 seconds until you hear a chime from the speaker. This is used in the rare case if the SD card is full and was not replaced. This function is typically not enabled so to secure all recordings. If enabled in system setup, all the previous events and the overwritten record protection is disabled when this button was activated, allowing the system to overwrite alarm data. (rarely used)



Volume control

Adjust the audio volume level for driver's convenience. When you turn it left (<<), it increases the volume while a right (>>) turn decreases the volume.



Power connection port

Connect one end of the cigarette lighter plug cable into the matching connector of the power port of the unit. Plug the other end of this cable to the cigarette lighter plug of the vehicle. {Power may be hard wired (permanently wired) into the ACC (accessory) switched power of the vehicle for a more secure installation. REFER THIS TO TRAINED PERSONEL ONLY.} Do not lose the supplied power cord or use other cables. If damaged or lost, contact your Reseller for a replacement.



LED Display window

System status is displayed on this multi-segment display. Used for system status and system diagnostics.

Using the Player: Playback, SD card and Initial System Set-Up

PC Minimum Systems Requirements:

Component	Requirement
CPU	Pentium 4 / 1GHz processor or higher
Memory	512 MB of RAM or higher
Operating system	Microsoft Windows XP Home Edition or higher
Graphics	DirectX 8.1b or higher
Hard disk drive space	200 MB or higher

*Note: When using MS Windows Vista and Drive Recorder Player software for the first time, you may have to run the Player in Administrator Mode.













To Review Video:

Remove Power from the unit. Remove the SD card from the unit and Insert the SD card into a PC or SD card reader and connect it to a computer. Explore the SD card. Locate the 'Player.exe' file that is found in the 'PLAYER' folder. Double click on 'Player.exe'. The following window will appear:



No.	Name	Description
1	Forward Camera View	Displays the video images recorded by the forward facing camera.
2	Rear Facing Camera	Displays the video images recorded by the interior facing camera.
3	Vehicle Speed	Displays the speed of your vehicle.
4	Vehicle Location	Displays the coordinates (latitude and longitude) of the vehicle. (Requires GPS signal lock)
5	Direction of Travel	Displays the vehicle's direction of travel.
6	G Force Analyzer	Displays vehicle motion and any impact detected by the G-Sensor with a graphically in 3-axis.

Playback Interface Controls

Button	Function	Button	Function
	Move to the previous frame		Open a file
	Reverse Playback		Convert the file into an AVI format
	Pause the Playback		Link the recorded data with map
	Stop Playback		Access System Set Up Menu
	Playback		Exit, close the program
	Move to the next frame		Hide/close the window

Volume and Playback Speed Control



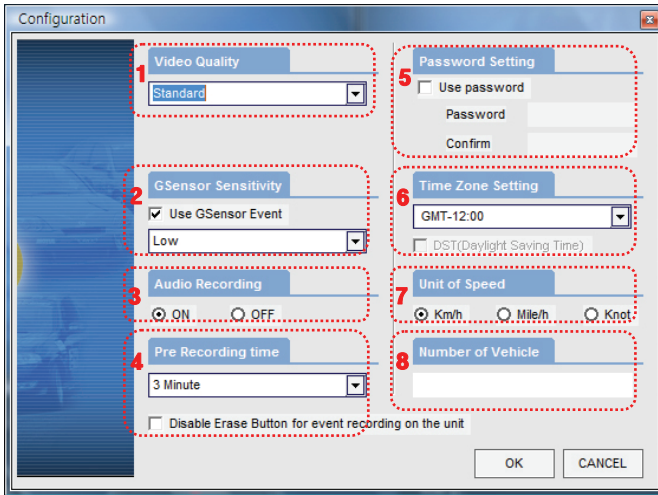
Volume Control: Adjusts the volume level while playing back the recorded data.

Playback speed control: Adjusts the video playback speed.

To playback video, select the "Open a File" button, explore the SD card or other location where the recorded (or saved) data is located, (file called DATA is on the SD card), then double click the selected file from the list in order to play.

System configuration

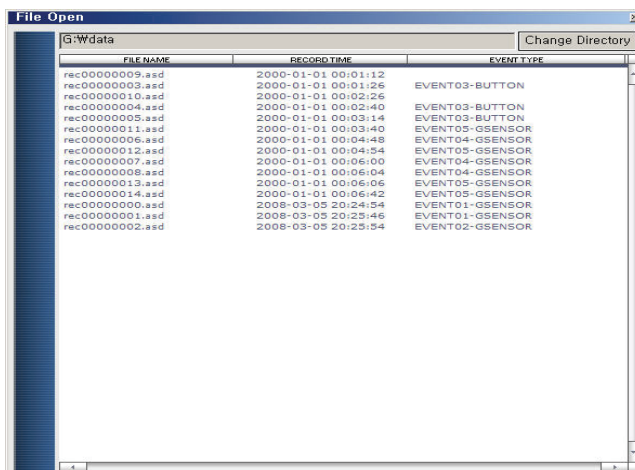
Before using the system, remove the SD card from the recorder and insert the SD card into the SD slot of a PC or in the SD card reader of a computer. MS Windows will automatically see the device. Locate the Folder called “Player”. Double Click on “Player.exe”. When the player’s main screen appears, click on the System Setup configuration icon (🔧) located at the lower right corner. The following window will then appear.



No.	Name	Description
1	Video Quality	Sets the video recording quality. (Default: Standard)
2	G-Sensor Sensitivity	Sets the sensitivity of G-Sensor. (Default: Low)
3	Audio Recording	Enables or Disables the audio record function.
4	Pre-Event Recording Time	Sets the time to record the previous scenes before the event. (Ex. in case of 3 minutes, RH-2 records scenes for previous 3 minutes and next 1 minute for a manual record event.)
5	Password Setting	Sets any Password to be used to access the recorded data. (Default: none)
6	Time Zone Setting	Sets the time zone for the user. (Ex. Wellington—GMT+12:00)
7	Unit for Speed	Set the unit of the car speed (MPH or KPH).
8	Vehicle ID Number	Sets the license plate number or fleet vehicle ID number associated with the vehicle where the SD card is to be installed in.

Playback

1. With the Playback interface Open: After clicking the folder icon (📁) on the lower right corner of the viewer, click Change Directory to select the location for the recorded data. Typically the first time you do this all the files are located on the SD card. If saved elsewhere, use this utility to explore your computer to locate the file for playback.
2. When the file list appears, double-click the desired file to play back.



FILE NAME	RECORD TIME	EVENT TYPE
rec0000009.asd	2000-01-01 00:01:12	
rec0000003.asd	2000-01-01 00:01:26	EVENT03-BUTTON
rec0000010.asd	2000-01-01 00:02:26	
rec0000004.asd	2000-01-01 00:02:40	EVENT03-BUTTON
rec0000005.asd	2000-01-01 00:03:14	EVENT05-GSENSOR
rec0000011.asd	2000-01-01 00:03:40	EVENT04-GSENSOR
rec0000006.asd	2000-01-01 00:04:48	EVENT05-GSENSOR
rec0000012.asd	2000-01-01 00:04:54	EVENT04-GSENSOR
rec0000007.asd	2000-01-01 00:06:00	EVENT05-GSENSOR
rec0000008.asd	2000-01-01 00:06:04	EVENT04-GSENSOR
rec0000013.asd	2000-01-01 00:06:06	EVENT05-GSENSOR
rec0000014.asd	2000-01-01 00:06:42	EVENT01-GSENSOR
rec0000000.asd	2008-03-05 20:24:54	EVENT01-GSENSOR
rec0000001.asd	2008-03-05 20:25:46	EVENT02-GSENSOR
rec0000002.asd	2008-03-05 20:25:54	

FILE NAME: File name of the recorded video images.

RECORD TIME: Date and time when the images have been recorded.

EVENT TYPE: Displays the recording type (Continuous recording/event button recording/remote event button recording)

Click the list name to sort by File Name, Record Time or Event Type.

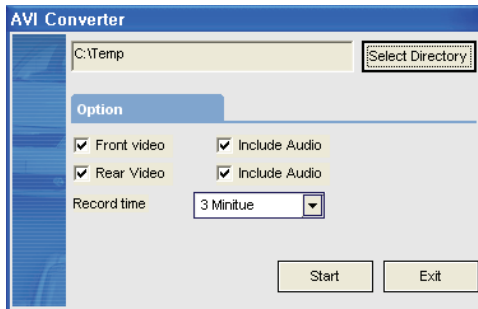
* Event Type:

- Continuous recording: No nomenclature applied. Clicking on this shows the recorded file when driving.
- Manual Event Recording: Annotated with the word **BUTTON**. This allows you to locate files that were marked by the driver using the push button on the recorder or the remote event pushbutton.
- G-Sensor (shock sensor) automatic recording: Annotated with **G-SENSOR**. This data is recorded when any impact, sudden acceleration, or accident is detected.

Converting the Authenticated files into AVI file format

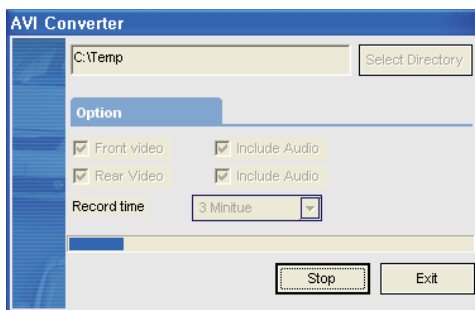
One may convert a portion of the recorded data into an AVI file format when one wants to share the recorded data with someone else or email a file.

1. Click the AVI conversion button  at the start of video clip position where you want to convert the images into the AVI file format. The video playback stops and the AVI conversion window appear.




2. Set the following options from the window and click Start.
 - A. AVI storage directory
 - B. Selection of previous/next videos and whether or not to include audio data
 - C. AVI recording time

3. The conversion progress appears as follows:



Note The AVI files cannot be created on a portable disk such as SD card or USB memory stick but only on a hard disk first due to speed required for the conversion.

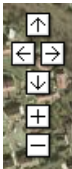
Interfacing with a GIS/City map

Drive Recorder simultaneously records the GPS data while driving so you can check the driver's route on the map. Click the GIS/MAP icon () on the lower right corner. The map window appears for the user to see the vehicle location and travel onto a city map.

* To use this function, the system must access the Internet.



Using Google Earth, there are additional controls for the map that has been brought up in this application:



Movement, scale up/down on the map

Map

View normal map

Satellite

View satellite map

Hybrid

View both normal and satellite maps

Additional Functions of Player: Pop-up Display window

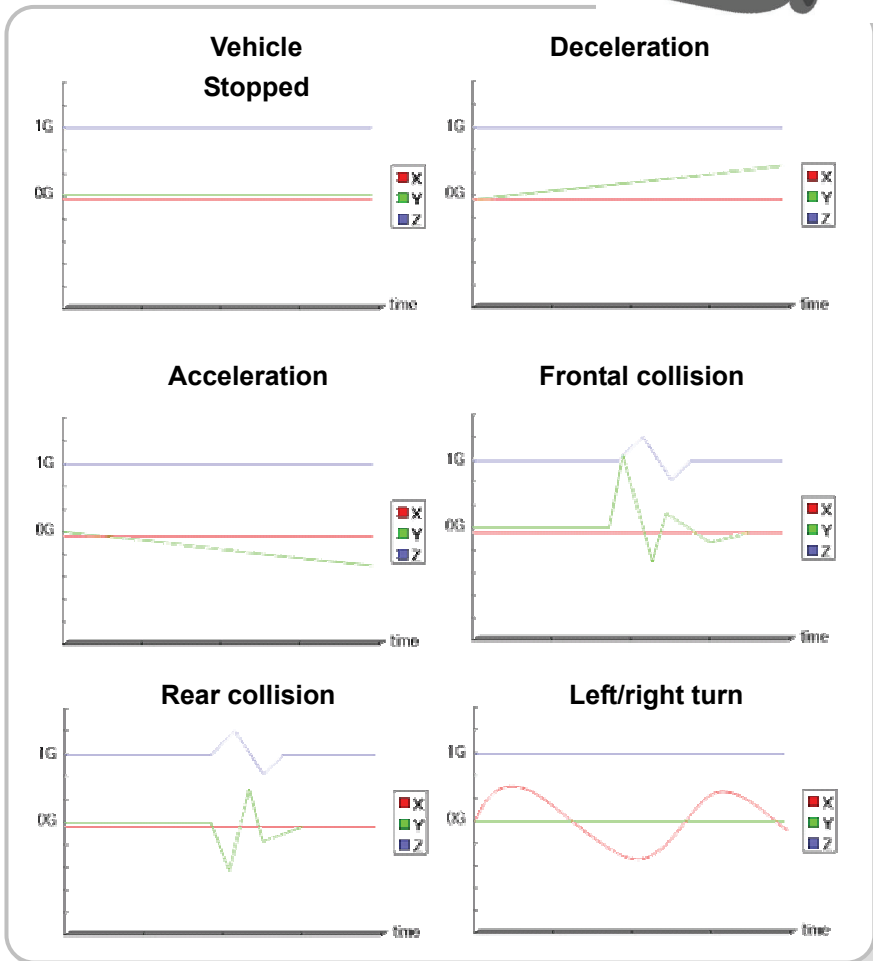
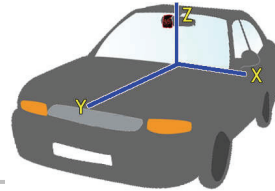
When you double-click the display window, the recorded images are played back at the original size. Double clicking the screen returns the view to normal, original size. You may use your PC's mouse to move the screens and adjust them within your desktop window.



Analyzing G-SENSOR data


The G-sensor (Gravity Sensor) furnishes data for X, Y and Z axis and stores it along with the other recorded data on the SD card. When using the playback software, this information is represented in a graphic format. The resulting graph may be used to analysis the driving condition and driver's habits. Depending on the type of the vehicle, the amplitude of the curve of shown may vary.

- * X axis: left and right of the vehicle
- * Y axis: front and rear of the vehicle
- * Z axis: top and bottom of the vehicle



System Diagnostics via the Drive Recorder LED Display

Driver status Display

Status	Event	Sound or Status	Display
System Initialization after application of power to the unit	Initialization after power applied	No sound.	[dr] [Init]
	When SD card is not inserted	Chime is heard ("Ding dong") from the speaker. (Turn off the power, re-insert the SD card, supply power again.)	[Err] [Sd]
	GPS update Error	Resolution: remove power, wait 10 seconds, re-apply power.	[Err0]
	While GPS is updating	GPS data is now being received and is being downloaded	[dbUP]
G-sensor automatic activation, or User driven Event Button, or Remote Event Button activation	Event recording	One chime	
	Number of events recorded (5) by the system and available	Two chimes	[FULL][---5] ~ [---1]
	Event recording is not available as not enough memory is available	Three chimes	[FULL][----]
	Event captured	Chime	

Information and Status Display

You can see information or the corresponding status is displayed.

Status	Event	Sound or Status	Display
DR initialization is completed.	Greeting	Chime	HELLO
	Satellite information (Satellite reception quality)	No sound	5-45
	GPS loading	No sound	GPS FINE

Firmware and Playback SW Update

Firmware Update

1. With the Unit unpowered (blank unlit multi segment LED display), remove the SD card from the unit; Insert the card into either the SD card slot on the computer.
2. If your computer doesn't have SD card slot, connect the memory reader to the USB port on your computer.
3. If you have received new firmware or have been directed to a web or ftp site to receive new firmware and after accessing the site, first download the related firmware or playback software.
4. After downloading the update file, copy it to the update directory on the SD card. (If the update directory folder does not already exist on the SD card, create a new folder on the SD card and rename the folder name to 'update'. Then copy the file again into this folder.) Then insert the SD card into the Recorder, power up the recorder, and the new operating file or firmware will be uploaded to the Recorder. You need to do this only once per recorder per update.

Software Update

1. After downloading the Playback SW file, copy it to the player directory on the SD card.
2. After installing the SD card on the body and connecting the power, update automatically starts.



Caution

Do not remove the cigarette lighter plug or interrupt power to the unit or stop the engine during update.

RH-2

Automated Drive Recorder

Compact and Extremely Affordable, Digital Video and Audio Recorder