



roadhawk
A Trakm8 Brand



HD-2 User Manual

1080p High-Performance Forward-Facing Dash Cam

CAUTION:

- Do not drop the product.
- It may cause damage or malfunction and is not covered by warranty.
- Do not place near magnets.
- It may cause the device to malfunction or operate erratically.
- Keep the unit away from other GPS devices.
- It may cause interference of the GPS signal rate.
- GPS function requires lock-on time when first powered on.
- It can take up to a few minutes for the device to lock on to a satellite signal.
- Metallic tinting and heated front windscreens can cause interruption in the GPS signal.
- If your vehicle experiences this then please experiment with mounting the camera in different positions. The RoadHawk has an optional external GPS antenna input which will help in cases of poor GPS reception.
- Sudden changes of brightness such as entering or exiting a tunnel may cause a temporary loss in video quality.
- The front glass camera lens should be kept clean.
- An unclean lens may affect image quality
- Attach the product in the recommended place.
- If it is installed in an obscure place, the image may be skewed.
- Do not disassemble, repair or attempt to modify the camera.
- It may cause malfunction or injury and any damage will not be covered under warranty.

WARNING:

- Do not place near the effective range of an airbag.
- It may cause malfunction of the air bag or an accident.
- Keep the power socket clean of dust.
- A poor connection will result in malfunction.
- Install with the power off (after installation, connect the DC jack).
- It may cause electric shock or malfunction.
- Do not operate the product whilst driving.
- It may cause an accident. Stop in a safe place to operate.
- Do not pull on the power cable, remove by holding the plug and gently pulling.
- Do not use a damaged cable.
- It may cause malfunction, electric shock and fire.
- Do not clean exterior with alcohol, volatile or oily solvents.
- It may cause deformation of the surface and malfunction.
- Attach the product on the front window firmly.
- Clean the front window and fix it firmly, otherwise it may be detached due to temperature / humidity / dust / shock.

- Please read the below notice for SD cards. We do not take responsibility for data loss or damage caused by SD cards malfunctioning.
- Please use only authentic SD cards.
 - *We recommend TEAM branded SD cards for use in this camera.*
- Do not put foreign substances into SD card slot.
 - *It may cause a malfunction or SD card inserting problem.*
- Do not touch the SD card with wet or oily hands.
 - *It may cause malfunction due to card damage.*
- Push the SD card in fully. Do not force the SD card into the slot. Ensure the card is the correct way up before inserting.
 - *If the SD card is not fully inserted then the camera cannot record data.*
- Before removing the SD card, please check the power off status.
 - *If you pull SD card out during power on status, it may cause malfunction or data loss. The RoadHawk will chime after the power is removed to let you know it is safe to remove the SD card.*
- SD cards are consumables.
 - *For optimal performance, we recommend formatting your SD card fully every 6 weeks*
- Use a secure case for storing SD cards.
 - *The data may be damaged by static while storing or moving.*
- Please make sure the lock on the SD card is off.
 - *If it is set to lock, recording is not possible.*
- In case of important data, please make sure you back up your SD card.
 - *The data may be lost after long-term usage.*
- Please check and backup the data stored on SD card and we recommend formatting the SD card regularly.
- Do not disassemble or modify an SD card.
 - *As it may cause serious damage.*
- Do not drop the SD card.
 - *As it may cause serious damage.*
- This product supports up to 128GB SD XC memory cards. We recommend using TEAM SD cards only.
- During normal operation of the camera it will get warm, this is normal.
- Do not leave the camera in a hot car during the daytime.
- It is advisable to remove the camera from the vehicle when not in use to deter thieves.
- Please ensure the SD card used in the camera is solely used for that purpose.
- Non-specific or renamed files or folders can interfere with the operation of the camera.
- RoadHawk recommends you do not name your SD Card.

Contents

Introduction	4
Contents of the Box	4
Features	4
How the System Works	5
How the Video is Stored	6
Understanding Events	7
Installing your RoadHawk	9
Video Playback	12
Installing the Software	12
Using the Software	12
Camera Settings	17
Camera LEDs	20
Connecting External GPS Antenna	21
Alarm Input / Output	22
File Sizes	23
Important Notice	24
Troubleshooting / FAQs:	25
Warranty Statement	28
Declaration of Conformity	31

Introduction

Thank you for purchasing the RoadHawk HD-2 vehicle camera system. The RoadHawk HD-2 is designed to be mounted to the windscreen of your vehicle and to record video, GPS and G-Force data on a constant loop. As soon as the RoadHawk HD-2 camera is powered up, it will start recording automatically.

This new RoadHawk HD-2 camera has been designed with the very latest technology available. It provides superior video and audio quality and excels in low-light conditions.

Contents of the Box

- 1 x RoadHawk HD-2 Camera
- 1 x Power Cable
- 1 x 16GB SD Card
- 1 x USB Card Reader
- 1 x Windscreen Adhesive Mount and Threaded R20064
- 1 x Vertical Windscreen Adhesive Mount and Tilting R20063
- 1 x User Manual
- 1 x Pack of Cable Clips

Features:

- Full HD 1080p Video Recording at 60fps
- HDR (High Dynamic Range) mode for superior night time recording
- NEW OV4689 sensor providing excellent video quality and tuned for low-light sensitivity
- Electronic image stabilisation (EIS)
- SD XC Compatible (8gb to 128GB)
- External GPS antenna connection
- External audio input connection
- 10hz GPS Receiver
- A7s processor for high quality H.264 encoding
- User-controlled video bit rate setting
- User-controlled G-Force, audio input and speaker volume settings
- Audio can be disabled
- New vertical mount designed to have the lens of the camera sitting closer to the screen of the vehicle minimising reflection
- 1/4" standard camera mount thread for use with numerous camera mounts and grips
- Low-level algorithm for detecting SD card errors and warning the user of any potential problems
- Alarm input for remote triggering events and output for communicating with tracking devices
- Auto format: Automatically formats the memory card every two, four or six weeks within the camera

How the System Works

When the camera receives power from your vehicle, it starts operating within a few seconds. Video and audio starts recording with data from the G-Force Sensors. After a short while the camera will lock on to a GPS signal which provides the camera with vehicle speed and positional data.

If the camera has not been used for some time, it can take up to 5 minutes for a GPS signal to be fully locked on. Vehicles with heated front screens or anti-glare coatings may impede the camera from receiving a suitably strong GPS signal. In this case, an external GPS antenna may be connected to the camera (sold separately).

The camera dynamically stores “EVENT” files and can use up to 50% of the SD card for these. When an “EVENT” happens the camera protects the current file and the 1 minute file before and after also, giving a total of 3 minutes. When the storage of these events goes beyond 50% then these will begin to be over written also.

The remaining capacity on the SD card is reserved for “NORMAL” video. Once this is full it will start to overwrite the earliest files.

An “EVENT” can be triggered either manually by pressing the “E” button or when the camera detects an impact with its built-in G-Force sensor. The sensitivity of the G-Force sensor can be adjusted using the settings menu in the supplied software.

The camera will chime and announce “detected event” to let you know an EVENT has been triggered. Alerts can be silenced in the settings under the speaker volume.

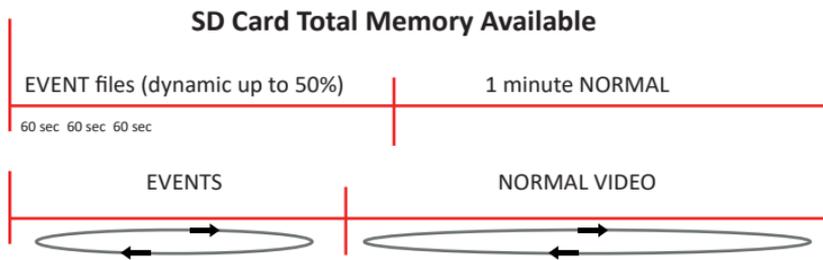
How the Video is Stored

If you choose to have the G-Force sensor enabled in the settings menu of the supplied software, the camera will protect EVENT files (up to 50%), the rest will be NORMAL.

An EVENT will be a 3 x 1 minute video clip and is triggered by either the G-Force sensor or if the user presses the 'E' button.

NORMAL video files can be set to last 1, 5, 10, 15 or 30 mins long (See "Camera Settings"). Changing from 1 minute files will disable the loop, event AND AUTO FORMAT features.

NORMAL video will start recording as soon as the camera is powered on.



After each segment of video is recorded the RoadHawk saves the file to the SD card and instantly starts recording a new file. These files can be linked together in any normal video editing software without any gaps between the files.

An important note about how the RoadHawk camera stores video

As you can see from the images above, the camera is designed to work on a constant loop so you should not need to erase data from the SD Card. It is recommended though that the SD is formatted on a regular basis to clear any bad data. The camera will automatically format the SD card at 2 (recommended), 4 or 6 week periods.

Understanding EVENTS:

If you are using the RoadHawk HD-2 camera as an accident black box recorder then you need to understand some important factors:

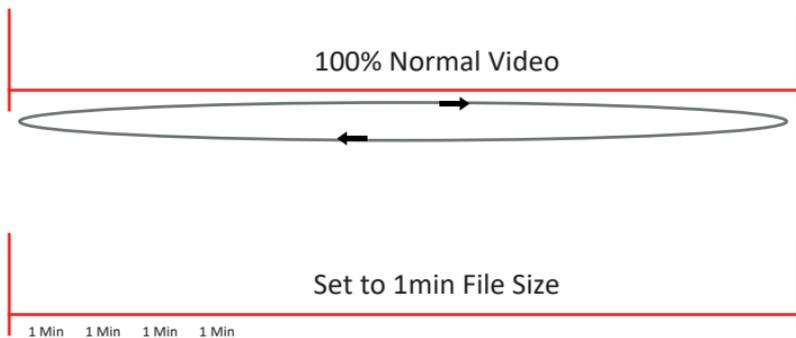
- If the camera detects an impact and you have the G-Force sensor enabled, the camera will create an EVENT file.
- The camera will use up to 50% of the available SD card memory for these EVENT files.
- The amount of EVENT files you can store on your SD card will depend on the size of your SD card and the video quality you have selected.
- Once this 50% reserved for EVENTS becomes FULL the camera will overwrite the earliest EVENTS.
- An EVENT file can easily be created by driving over rough road and will depend on your G-Force sensitivity settings.
- If you have the G-Force setting too high or if the impact of the accident is very light then the camera might NOT create an EVENT file. You can use the E button on the camera or the option remote extension

Therefore it is possible for you to overwrite an accident if you continue to drive with your camera on after the EVENT has taken place.

When any part of the SD card becomes full, the RoadHawk HD-2 will start to overwrite the earliest files. The amount of EVENT files and NORMAL video files you can store on the SD card before they start to overwrite will depend on the video quality settings and the size of the SD card you are using.

If you choose to disable the G-Force sensor using the settings in the supplied software then the camera will NOT create EVENT files. In this mode the camera will reserve 100% of the available space on the SD card for NORMAL recordings. When the camera receives power it will start recording video until the SD card is full. Once the SD card is full the RoadHawk HD-2 will start to overwrite the earliest files and continue to LOOP record until the power to the camera is stopped. Only in 1 minute setting.

SD Card Total Memory Available



In the event of an accident you should remove power from the camera and wait for the tone to let you know the file has been closed, wait 10 seconds and then and it is safe to remove the SD card.

Installing the RoadHawk:

The RoadHawk camera is fitted with a very wide angled lens. This is to capture as much of what is happening in front of you as possible.

10 Easy Install Steps

1. Choose an area towards the top of the windscreen behind the rear view mirror for the camera to sit.
2. Clean the screen with some glass cleaner and allow drying time.
3. Peel the adhesive backing away from the camera mount and place firmly on the screen.



Optional extra: Ideal for severely raked screens



Ideal for standard vertical screens



4. Leave the mount to bond for 10 minutes minimum, preferably over-night.
5. Use the supplied adhesive cable clips to route the power cable neatly around the windscreen. In some vehicles you might be able to push the cable in to the gap between the rubber and the screen to completely hide the cable.



6. Run the cable around the side of the dashboard and underneath towards the cigarette lighter socket. Use cable ties to hide any remaining cable behind the dash.



7. Attach the camera to the mount and face it forwards. Keep the camera as level as possible (in a truck or bus, aim the camera slightly down).



8. Plug the power cable in to the camera.
9. Plug into the cigarette lighter (12v) plug.



10. Now you have the RoadHawk camera installed, it will start to work when you next start driving. If you have installed the RoadHawk camera correctly then it should be behind the rear-view mirror and not obstructing your view of the road ahead in any way.



View from behind with the RoadHawk camera hidden behind the rear view mirror.

NOTE: It is possible for the RoadHawk HD-2 camera to be hardwired to your vehicle. RoadHawk supply an optional "Hard Wiring Kit" to allow for this. It is recommended to have an authorised vehicle electrician carry out this work.

We recommend connecting the camera to an ignition LIVE circuit so the camera only operates when the vehicle is running. Connecting to a permanent LIVE will make the camera run 24/7 and this will reduce the life expectancy of the SD Card.

Some vehicles have "always on" accessory sockets. We recommend unplugging the camera from these sockets when not in use.

Video Playback:

The RoadHawk HD-2 makes standard .MP4 video files that can be viewed on most modern computers without using the RoadHawk software. Simply insert the SD card in to your computer, locate the file you wish to play and double click to open it.

Windows Media Player, VLC or Quicktime will be able to play the video and audio files for you but to see the G-Force, Speed, GPS and mapping details, you need to install the RoadHawk software.

The G-Force and GPS data is embedded within the .MP4 video file. To view your position on a map and to see the speed and G-Force data you will need to install the RoadHawk HD-2.

Installing the Software:

The RoadHawk DC3 playback software is also available to download from the RoadHawk website. Please visit <http://www.roadhawk.co.uk/play> to download the software direct to your computer.

You may be required to install Adobe components for the software to operate correctly. Your computer will need to have an active internet connection for this to happen.

Using the Software:

IMPORTANT NOTE

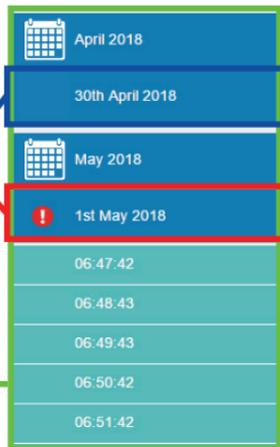
When you run the RoadHawk software it will look for the SD card from the RoadHawk HD-2 camera. If the SD card is blank, the software will **NOT** see the SD Card. You **MUST** use the SD card in the camera **BEFORE** using this software.

Once you insert the SD card from the camera in to your computer it will list all the video files on that card on the right hand side of the screen. A USB card reader is supplied with the RoadHawk camera.

EVENT: Are denoted by a red '!' Will list only the files that have been created by the camera because of an EVENT. This could be a collision, a pothole or a manual event created by pressing the 'E' button on the camera.

CALENDER: This shows the files available in date order, red '!' and gaps in days or time show event files, last day shows the normal driving with any events in.

ALL: This will display all files on the card in the order they were created. Please note that the earliest files will normally be EVENT files as these stay on the card longer than NORMAL video files.



At this point, you might be seeing a video recorded several days or weeks ago at the top of the list. Towards the bottom of the list you will start to see your normal everyday driving videos. It is normal to have gaps in these files because of the way the camera overwrites the earliest files recorded.



User Guide

User Guide: View the latest version of the RoadHawk user guide on line and watch video guides to get the most from your camera.



Format Disk

Format SD Card: Clicking this will wipe all of the data on your SD card. It is recommended to do this at least every 6 weeks to keep the file structure of your SD card healthy.

Once you click the button, choose the size of your SD card and wait for the software to complete the format process. **WARNING:** This process will delete ALL files on your SD card. Make sure you backup any files you wish to keep **BEFORE** formatting the SD card. Once files have been deleted, they are impossible to recover.

Saving a File: To transfer a video file from the SD card to your computer, click the disk icon next to the file you wish to save:

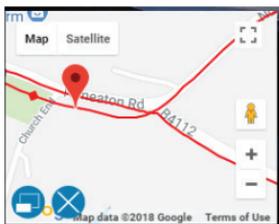


This will open a “save file” dialogue box and you can choose where you wish to save the video file. Once the file has been saved, you can play it in a standard video player by double clicking it or send it to a recipient by using a service such as www.wetransfer.com



This will display the forward-facing video recorded by the camera according to the file that has been selected. You can scrub through the video by clicking on the position bar at the bottom of this window.

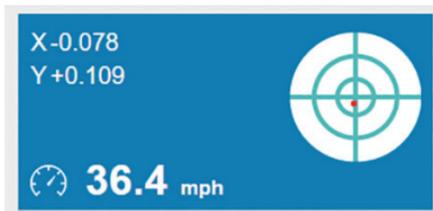
Map:



In the bottom left corner of the video player you will see the map. This will show the location of the vehicle at the time the video was recorded. If the camera was not receiving a GPS signal at the time of recording or if your computer does not have an internet connection then you might not see the map. Within the map screen you can use the buttons in the top left to navigate around the map and to zoom in or zoom out.

Please Note: Due to varying road positions and the possibility of GPS signals bouncing around in a built up area, the vehicle may not always be shown directly on top of the road the vehicle was driving on. This will improve as maps are updated over time.

G-Force Display:



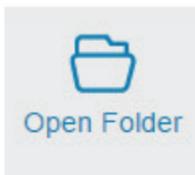
Below the main windows is a G-Force Meter display. The small spot in the centre of this meter represents the G-Force experienced by the camera at the time the video was recorded. As the vehicle accelerates you would expect to see the spot move towards the bottom of the meter. Braking will show up as the spot moving upwards on the meter. Cornering will send the spot left or right. The more heavy the manoeuvre, the further the spot will travel on the graph.

Speed:



Just below the main video window is the speed of the vehicle shown by default in MPH. Clicking here will change the display to KPH and vice versa.

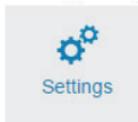
Load File Button:



The button that looks like a folder in the top right of the screen is used for loading individual files. For instance, you might have a file on your computer's hard disk stored locally or on other media storage. Pressing this button will bring up a standard open file dialogue box. Navigate to where the file is stored and double click it to play.

Camera Settings:

When the camera is first powered on it looks at the SD card for a file called “configuration.txt.” This file contains parameters that tell the camera how to perform. The software supplied with the RoadHawk camera can be used to create the “configuration.txt” file. If the “configuration.txt” file is not found on the SD card when you first turn the camera on it will default to the last known settings.



Click the settings icon within the software to change the settings on your camera. When you make a change to the settings, the software will save a small config file to your SD card. The next time the camera is powered on with this card inserted it will read the config file and set itself accordingly.

In this menu you can change:

Resolution: 720p, 1080p Changing the resolution affects the size of the image. We recommend using 1080p mode for the best video quality and setting the frame rate to 60fps.

Type of Image Being Recorded: 720p or 1080p .

HDR: Enable or disable camera’s HDR mode.

Frame Rate: Set the amount of frames being recorded per second.

Time Zone: Set your local time zone.

File Length: Set the length of time before a new file is started.

LOOP: Choose if the camera should loop record or simply stop recording when the SD card is full.

Mic Sensitivity: Set the volume of the internal mic (Lower = quieter; 0 = off).

Speaker Volume: Set the volume of the internal speaker in the camera.

EVENT Sensitivity: Set how sensitive the G-Force sensor is (Lower = less sensitive).

2 Pre Sets: Car and Truck or 3 axis custom.

Contrast: Sets the contrast settings for the image produced by the camera.

Brightness: Sets the brightness of the image produced by the camera.

Saturation: Sets the saturation (colour) of the image produced by the camera.

Bit-Rate: Set the overall Bit rate/Video quality (Higher = better quality).

Record Mode: Choose if you want the camera to record EVENTS or just NORMAL video.

Spot Metering: Enables/Disables spot metering mode on the image produced by the camera.

Timestamp: Enables or disables the timestamp recorded on the image by the camera.

Timezone:

Set this to your current time zone. Make sure this is accurate as it will affect how quickly the camera can lock on to GPS satellites. It also affects the time that is embedded on to the video. Once the camera locks on to a GPS, signal the time is set using data from the satellites and adjusted to the set time zone. You will need to manually adjust for daylight-saving hours using the software.

HDR:

When HDR is enabled, the camera will take two exposures for each frame of video and intelligently use the best parts of both exposures to give the best image quality. We recommend enabling this mode if most of your driving is in low light or during evening hours. Please note: HDR enabled will limit the frame rate to 30fps and disable the Contrast, saturation and Brightness settings.

File Length:

Can be set to 1, 5, 10, 15 or 30 mins. Once the chosen file length has been reached by the camera, it will automatically start to record the next file. The default file length is 1 min and loop is disabled on 5 minutes and above.

Bitrate:

The bitrate controls how much compression is used when recording the video. This directly affects the video quality and the amount of storage required for the video. At the highest quality setting the camera will consume from 6 to 8GB of data per hour. The lower the quality setting used, the more video you can store on your SD card. For car black box mode you can lower the quality setting to fit more video on to the SD card. Find a level of video quality that is acceptable to you. Keep in mind if you use the highest quality settings, an 16GB card might hold less than 1 hour of video.

Mic Sensitivity:

You can change the sensitivity of the built-in microphone. Setting the slider to the least sensitive will make it quieter which is useful if the ambient audio in your vehicle is loud. You can set this to ZERO if you do not want to record any audio.

G-Sensor:

Pre set Car (X=5, Y=6, Z=4)

Truck (X=5, Y=7, Z=2)

Manual

X (9 high, 0 off)

Y (9 high, 0 off)

Z (9 high, 0 off)

Set the slider bar to set the sensitivity of the G-Force sensor. If you find the camera makes a lot of "EVENTS" during normal driving conditions then you can lower this setting. Keep in mind if you set this too low in a very large vehicle then the camera might not detect a small impact and an "EVENT" may not be created. You can also set this to "ZERO". Keep in mind if you set this to "OFF" then the camera will NEVER make an "EVENT". This means if you are in an accident and you do not power down the camera and remove the memory card then it will eventually record over the accident.

Setting the G-Sensor to "OFF" is only really recommended if you are using the camera system for recreational purposes rather than as a black box camera system.

Spot Metering:

When this is selected to ON, the camera will measure the exposure settings from the centre of the image instead of the whole image. Set this to ON and the camera is to be mounted on a roll bar. This will stop the camera from over exposing the image through the windscreen and underexposing the inside of the vehicle.

Timestamp:

The RoadHawk dash camera gets its time and date from GPS. When this setting is on, the time and date are embedded in to the right lower corner of the image. Disabling this will remove the time and date from the video. If you are using the RoadHawk HD-2 as a dash camera then it is recommended to leave this setting enabled for evidential purposes. NOTE: Even when the timestamp is disabled, the file names of the videos produced by the dash camera will still be created using the time and date found whilst the camera is recording.

Auto Format:

Formatting your SD card at regular intervals helps to keep it in the best possible condition, but it wipes any footage stored on the card. Your RoadHawk HD-2 will alert you when formatting is required, repeating three times "Formatting required, replace SD card or continue to format". On receiving this alert you will have 24 hours to back up any footage stored on the SD card. After this period, the HD-2 camera will repeat the warning twice, before automatically formatting the SD card.

Choose from the following interval settings for these alerts:

2 Weeks	-	Format every 14 Days (recommended)
4 Weeks	-	Format every 28 Days
6 Weeks	-	Format every 42 Days

Settings Notes:

1. Setting the speaker volume to ZERO will disable the camera from making any sounds except if the camera experiences an error.
2. Setting the correct time zone will ensure the time stamp on the video is correct.
3. Setting a high bit-rate will fill up your SD card very quickly. Setting a lower bitrate will decrease the video quality but you will get much more recording time on the SD Card. Please try and find a setting suitable to your requirements.
4. Setting the G-Force Sensor to OFF will mean the camera will not make EVENTS. In this mode, you will only see normal recorded video files. If you are in an accident the camera will not create an EVENT and will eventually overwrite this video if the camera remains recording.

Camera LEDs:



Record LED: Will light red when the camera is recording normal video. It will flash red when the camera is recording an EVENT.

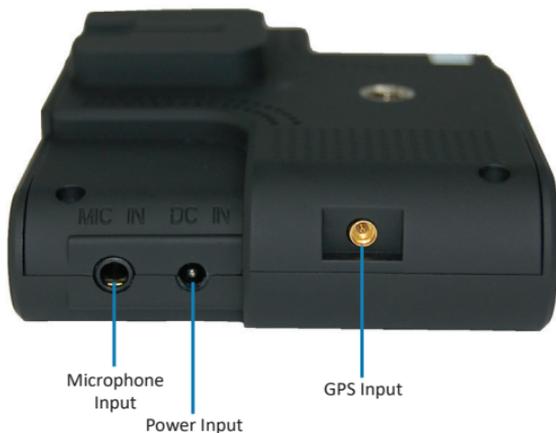
GPS LED: Will light green when the camera has a GPS lock. If this does not light up, the camera is not receiving a GPS signal. If both lights flashing then the camera is doing a firmware update.

“E” Button: When pressed will manually create an “EVENT”. When you press this button the camera will chime and store a 30 second clip in the EVENTS folder of the SD card.

SD Slot: Insert your SD card in to this slot. Push until it clicks in to position and then close the flap. Do not force the SD card in to this slot. Ensure the SD card is the right way around before inserting it.

Alarm I/ O: The RoadHawk HD-2 camera has an alarm input and output port. You can connect a remote control for manually triggering an EVENT (same as pressing the E button) or you can connect an output cable to a tracking device. When the camera detects an EVENT it will send a signal to the tracker to alert the user an EVENT has been created by the camera.

Connecting External GPS Antenna to the RoadHawk:



In some vehicles with heated front windscreens and some that may have a special anti-glare coating, the camera may not be able to lock on to a satellite GPS signal. This will be indicated by the GPS light not illuminating or the camera constantly repeating GPS signal detected.

An optional magnetic GPS antenna is available for the RoadHawk Camera. Use of this antenna is optional but will help the camera to get a faster, more accurate signal from the Global Positioning Satellites.

The cable on the Antenna is 5m long and so should allow you to position it in various places. The best location for the GPS antenna would be away from the camera and not near the cars antennas.

Connecting an audio input:

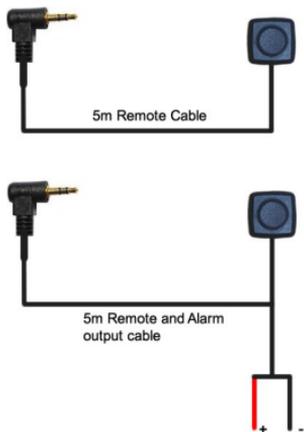
The RoadHawk is fitted with a 3.5mm external audio input jack. You can plug various microphones to this input to improve audio quality. As this is a LINE level input you can also connect other devices that output LINE level audio such as an intercom. If you find the audio levels are too high or too low, you can adjust these in the settings menu of the supplied software.

Alarm Input/ Output:

The RoadHawk HD-2 has an alarm input/output socket on the rear of the camera. Using alarm cables (sold separately) you can trigger an EVENT by pressing a remote button. This is useful when the camera is out of reach and provides a safer method for the driver to manually trigger an EVENT.

Also available is an alarm output cable. When the camera detects an EVENT it will close a circuit for 2 seconds. When connected to an alarm input on a tracking device, this can be programmed to send an alert to the tracking software supplied by the tracking device's manufacturers.

Please contact us for more information on which tracking devices support this feature.



When using the output cable, the positive and negative circuit is closed for 2 seconds when the camera detects an event. Only use of RoadHawk supplied cables should be used with this port or warranty will be voided.

File Sizes:

The RoadHawk camera creates files of different sizes depending on the settings used with the camera. You can use the software supplied to change the settings.

The lower the resolution and the lower the bit-rate, the more video you can store on a single SD card before it either becomes full or starts to overwrite the earliest files. The higher the video quality setting, the less video you can store on the SD card.

	1080 @ 60 FPS		1080 @ 30 FPS		720 @ 60 FPS		720 @ 30 FPS	
	HDR off	HDR on	HDR off	HDR on	HDR off	HDR on	HDR off	HDR on
0 - V.High								
16 GB	1	1	1	1	2	2	2	3
32 GB	2	3	3	3	3	5	5	6
64 GB	4	6	5	6	7	10	10	12
128 GB	8	12	11	12	14	20	20	25
1 - High								
16 GB	1	2	2	2	2	3	3	3
32 GB	2	4	3	4	3	6	12	12
64 GB	5	8	7	8	7	12	12	12
128 GB	10	17	14	17	14	25	25	25
2 - Standard								
16 GB	1	2	2	2	2	3	3	3
32 GB	3	4	4	4	4	6	6	6
64 GB	6	8	8	8	8	12	12	12
128 GB	12	17	17	17	17	25	25	25
3 - Low								
16 GB	2	2	2	2	2	4	4	4
32 GB	4	5	5	5	5	8	8	8
64 GB	8	10	10	10	10	16	16	16
128 GB	17	20	20	20	20	33	33	33
4 - Very Low								
16 GB	3	3	3	3	3	4	4	4
32 GB	6	6	6	6	6	8	8	8
64 GB	12	12	12	12	12	16	16	16
128 GB	25	25	25	25	25	33	33	33
5 - Ultra Low								
16 GB	3	4	4	3	4	4	4	4
32 GB	6	8	8	6	8	8	8	8
64 GB	12	16	16	12	16	16	16	16
128 GB	25	33	33	25	33	33	33	33

	1080 @ 60 FPS		1080 @ 30 FPS		720 @ 60 FPS		720 @ 30 FPS	
	HDR off	HDR on	HDR off	HDR on	HDR off	HDR on	HDR off	HDR on
0 - V.High	120	80	90	80	70	50	50	40
1 - High	100	60	70	60	70	40	40	40
2 - Standard	80	60	60	60	60	40	40	40
3 - Low	60	50	50	50	50	30	30	30
4 – Very Low	40	40	40	40	40	30	30	30
5 – Ultra Low	40	30	30	40	30	30	30	30
SD card size	Maximum possible record times							
16 GB	1.9	2.9	2.6	2.9	3.3	4.7	4.7	5.8
32 GB	4.8	8.1	6.9	8.1	6.9	12.1	12.1	12.1
64 GB	12.3	16.4	16.4	16.4	16.4	24.6	24.6	24.6
128 GB	33.1	39.7	39.7	39.7	39.7	66.1	66.1	66.1

***File size above shown per 1 minute of video.**

PLEASE NOTE: The numbers shown above are approximate calculations and file sizes may differ depending on filming conditions.

Important Notice:

The RoadHawk can use up to 50% of the available memory on the SD card for EVENTS. The remaining 50% is kept for normal loop recording.

If for any reason you are involved in an accident that does NOT trigger the camera to make an EVENT and you keep driving with the camera running then you can potentially record OVER the video file you need to use.

If the camera does create an EVENT file at the time of the accident and you continue to drive and the camera makes too many EVENTS then the camera could overwrite the EVENT you need to use.

If you are involved in an accident it is best to unplug the camera, wait for it to shut down and remove the SD card. Insert a new SD card in to the camera until you have transferred the files you need to keep to a computer.

RoadHawk and Trakm8 Ltd. cannot be held responsible for video files being overwritten or for data loss from the SD card.

Troubleshooting/FAQs:

If you encounter ANY problems with your camera, please first format your SD card as this resolves 90% of all issues. See page 13.

Hardware

Camera will not turn on and start recording.

Ensure the power cable is connected correctly. Test to make sure you have power coming from your car's accessory socket. The power cables have a built-in fuse. Check the fuse has not blown.

Camera makes a constant beeping sound.

This is the camera's fail safe alarm which is there to warn you that there is a problem with either the camera or most probably the SD card. Formatting your SD card could solve this issue.

Camera makes lots of EVENT files.

If the camera sensitivity is set high then the camera will make an EVENT when driving on an uneven road surface. The camera will overwrite these EVENT files once the SD card is full. You can lower the sensitivity setting of the camera but by setting it too low you run the risk of the camera not creating an EVENT if an impact occurs. For camera settings (G-Sensor), see page 15.

No GPS Signal is being received.

Check the position of the camera, make sure it is not located too close to other electronics. Cars with heated front screens or Anti-Glare coatings will reduce the ability of the camera to lock on to GPS. If this is the case, you can use an external GPS antenna (sold separately). If the camera has not been used for a while, it may take a little longer to receive a GPS signal.

Software

I inserted the SD card and nothing is happening.

The software looks for files made by the camera. If the card has not been used in a RoadHawk camera, if the files have been deleted by the user or if the SD card has recently been formatted, the software will not do anything. Insert the SD card in to the RoadHawk camera, power the camera on and leave for at least 20 seconds before unplugging the camera. Now you can use the SD card and the software will be able to work.

The map is not displaying.

Make sure you have an internet connection. This is required for the map to display correctly. Ensure the camera has a GPS signal. The GPS LED on the camera will light up green when it has a GPS lock.

The audio is distorted (noisy).

Decrease the MIC SENSITIVITY setting in the software's settings menu. This will not affect recordings made prior to making the change.

The time on the video is not correct.

Firstly, ensure the time zone setting is correct using the settings menu in the software. Secondly, make sure the camera has been able to get a GPS lock. The internal clock in the camera is set using GPS.

There are gaps in the video or portions of your journey are missing.

This is very unlikely to happen. The misconception of portions of your journey missing from the SD card can be summarised in two ways.

1. If the camera detects an EVENT it will save three 1 minute files and write protect these. They are displayed as 'RED !' in the software. Clicking on NORMAL in the software will only display your normal driving minus these EVENTS. All files are stored in the DCIM folder>10xMEDIA.
2. The SD card can only hold a limited amount of video before it starts to overwrite itself. EVENTS stay on the SD card longer than NORMAL driving video files. If you click ALL in the software you will see a list of EVENTS that may have taken place several days or weeks ago. There will be gaps between these EVENTS. Clicking on NORMAL will display the most recent normal driving videos. Depending on the size of your SD card and the quality settings used by the camera you might only see the last 30 mins of normal driving.

The camera did not create an EVENT even though I was involved in an accident.

There can only be two reasons for this to happen:

1. The accident did not create enough G-Force to trigger the camera (the G-Force sensitivity is too low or off/the accident did not transmit enough force for the camera to trigger).
2. The camera triggered an EVENT but later recorded over the EVENT. This can happen if the driver continues to drive after an accident and many more EVENTS are created on the journey. A small SD card can only hold a limited number of EVENTS before they are overwritten. Potholes and rough terrain can easily cause the camera to create many events, especially if the G-Force sensitivity is set too high.

It is advisable to take precautions after an EVENT takes place in order for the camera to not ERASE this important data. The best way to do this is to UNPLUG the camera, wait for the camera to chime and remove the SD card. A spare/backup SD card can be used if you need to continue to drive.

The map display has changed/does not look the same.

RoadHawk and Trakm8 Ltd. reserve the right to change the way the mapping data is displayed.

The speed of the vehicle is not being displayed correctly.

Ensure you have the MPH/KPH setting correctly selected. Clicking on the speed display will change the unit from MPH to KPH.

The speed display is dependent on having a strong GPS signal. With no GPS signal, the speed cannot be displayed. The stronger the GPS signal, the more accurate the speed display will be. Driving in built-up areas, under tunnels or areas that have weaker GPS coverage can all affect the accuracy of the display.

The vehicle is not positioned directly on the road on the map.

Disturbed or reflected GPS signals in built-up areas may mean the exact location of the vehicle on the map is not accurately displayed. In some cases, the map database may not be 100% accurate although these are improving all the time.

The SD card is only holding a few EVENTS and not much of my journey.

Using the highest quality settings available the RoadHawk can use up to 10GB of data per hour of recording. Using an SD card with a small capacity coupled with a high quality setting will seriously limit how much video you can store on your SD card.

You can either lower the video quality settings using the software settings menu or it is advised to use an SD card with a greater capacity. The RoadHawk can use SDHC and SDXC high capacity SD cards.

My SD card has failed/no longer works in the camera.

SD cards may only have a limited number of READ/WRITE cycles. Eventually, even high quality SD cards can “wear out”. You should only use high quality SD cards in this camera. We only recommend TEAM branded SD cards rated Class 10 or better. If you wire the camera to operate 24/7 then the SD card’s life will be reduced.

The life of the SD card will depend on the quality of the card, the Class of the card and how much driving you do.

I can’t read number plates on other vehicles.

Although the RoadHawk uses some of the most advanced image processing available at the time of being designed, it also uses a WIDE angled camera lens. This is to capture as much of the road ahead as possible. A side effect of using such a wide angled lens is the appearance of vehicles seeming further away than they actually are. This makes reading of number plates harder for the camera to capture. The camera’s ability to read number plates will depend on the weather conditions, the amount of available light, the distance of the vehicle from the camera and the clean condition of your windscreen. Using the camera in 1080p mode will enhance the ability of the camera to capture number plates.

If you have the microphone enabled and if you need to, you can read the number plate of the vehicle in question; the camera will capture your voice.

LIMITED WARRANTY STATEMENT

This Limited Warranty shall apply to the RoadHawk product including all accessories as contained within the original RoadHawk box “the Product.” RoadHawk warrants the product from its authorized distributor will meet the applicable product specifications and be free from all defects in material and workmanship for an applicable period herein “Limited Warranty.” This Limited Warranty is subjected to the following terms and conditions:

1. This Limited Warranty is given only to the original purchaser of the Product “Customer” it shall neither exclude nor limit a) any statutory rights of the Customer or b) any of the Customer’s rights against the sellers of the Product.
2. The Limited Warranty shall be restricted to the country/region of Product purchase this is to avoid excessive import or exportation of the Product throughout the supported countries.
3. This Limited Warranty is only valid and enforceable in countries where the Product is sold. Outside of the country of purchase, any repairs performed by RoadHawk’s Authorized Service Centre are subject to charge to the purchaser at normal repair rates.
4. The Limited Warranty entitles the Customer to a Product replacement or a full refund of the purchase price for any defects relating to the performance and/or functioning of the Product which result from normal use of the Product, provided that such a defect arises within fourteen (14) days of the original date of purchase of the Product and cannot be otherwise repaired and is returned within fourteen days of the fault being reported. RoadHawk will provide a replacement or repair of the Product at RoadHawk’s own expense for any such defect arising after fourteen (14) days but within two (2) years for hardware, one (1) year for SD cards and accessories, of the original date of purchase. This Limited Warranty may not be sold on, assigned, transferred or given to any subsequent purchaser or acquirer of the Product.
5. This Limited Warranty shall last for two (2) years from the date of original purchase “Warranty Period.” A valid original invoice “Proof of Purchase” is required.
6. This Limited Warranty covers expenses for inspecting and repairing the product during the term of the Limited Warranty. Customer shall deliver the defective Product to the RoadHawk designated premises together with the proof of purchase, and proof of identity of the Customer. Products shipped by the Customer missing any one of these documents may render this Limited Warranty invalid. If the defect was the result of the Customer’s own mishandling of the Product, force majeure, or the result of a repair by an unauthorized service provider, the Customer shall bear all expenses relating to shipping such a defective product.
7. RoadHawk will return the repaired Product or another Product to the Customer in good working condition. All replaced faulty Products or components thereof will become the property of RoadHawk.

8. This Limited Warranty applies only to the original hardware components of the Product and does not apply to any software or other accessories.
9. If Roadhawk repairs or replaces the Product, the repaired or replaced Product shall continue to be warranted for the remaining term of the Limited Warranty period or for three (3) months from the date of repair or replacement, whichever is longer.
10. Before returning any units for service, the Customer is solely responsible for backing up data and removing any confidential, proprietary, or personal information from the Product. RoadHawk is not responsible for damage to or loss of any programs, data, or removal storage media.
11. This Warranty does NOT cover recovery from any software updates, installation and removal of the application software, or any loss of data storage.
12. RoadHawk reserves the right to add, delete or amend the terms and conditions of this Limited Liability and any such change will be made available to the purchasers of the Product either RoadHawk's Web site (<http://www.roadhawk.co.uk>) or by other means.
13. THIS LIMITED WARRANTY SHALL NOT APPLY IF THE DEFECT WAS CAUSED THROUGH ANY OF THE FOLLOWING:
 - (a) The Product serial number, the accessory date code has been removed, erased, defaced, altered or is illegible; or
 - (b) The defect is resulting from the use of the product in a manner other than the normal and customary manner, e.g. in excess of the minimum specification of operating instructions, or malfunction or failure resulting from use of uncalibrated voltages; or
 - (c) Deterioration of the Product due to normal wear and tear. All plastic surfaces and other natural wear of externally exposed parts of the product are scratched or damaged under normal usage; or
 - (d) The defect is arising from improper installation, unauthorized repair, alteration or modification to the Product by third parties; or
 - (e) The defect is arising from operating with components or accessories (ancillary or peripheral equipment) not officially authorized or provided by RoadHawk or used in other than its intended use; or
 - (f) The defect or damage are arising from unauthorized modification; or
 - (g) The defect or damage is arising from misuse, mishandling, accidental loss, abuse, accident, negligence and damage caused directly or indirectly by Customer, including but not limited to improper testing, installation, alteration or modification or any kind, or spillage of food or liquid, or build up of dirt or dust, or mains supply problem, thunderstorm activities, or infestation by insects or vermin, or exposure to abnormally corrosive conditions, or operation with extreme heat or humidity.

15. This Limited Warranty does not affect the Customer's statutory rights in law specific to the country of purchase, and such rights remain protected. Some countries do not allow the exclusion or limitation of incidental or consequential loss or damage, or limitation of the implied warranties, in which case the preceding limitation of exclusions may not apply to such Customers. Please note warranty service availability and response times may vary from country to country and may also be subject to registration requirement in the country of purchase. If you require assistance regarding warranty conditions, or have any other inquiries, please contact the RoadHawk Customer Care Centre or via the official website.
16. RoadHawk reserves the right to make changes to the software including but not limited to the way mapping data is displayed and the service used to provide this data.
17. RoadHawk cannot access your personal data from the camera although the GPS data from the camera will be transmitted over the internet to the mapping data servers in order to provide the map display within the software. Video, audio and G-Force data is NOT transmitted over the internet during video playback.
18. NO data from the camera is transmitted whilst the camera is functioning as a recorder in your vehicle.
19. Video, audio, G-Force data and GPS data stored on the camera's SD card can be used in evidence against you in some countries. In some countries, police authorities reserve the right to seize such data from the SD card in the camera and use it as evidence against you.
20. RoadHawk, Trakm8 Ltd. and any other associated companies will not be responsible for expenses incurred for the fit or removal of any equipment for any purpose.

Product

RoadHawk HD-2

Warranty Period

2 years from purchase date for hardware

1 year from purchase date for SD cards and accessories

Approval Information

All of our products have met the requirements for approval by the FCC or CE, and have been given the FCC or CE certification. They are hereby authorized to bear FCC or CE mark.

FCC Information

Noted on complying with the FCC's "Statement of Conformity Information." This product meets requirements specified in Part 15 of the Regulations. This product's performance satisfies the following two conditions:

- (1) The equipment must not cause any detrimental interference;
- (2) The equipment must receive and process any interference, including any possible interference caused by operation mistakes. After testing the product, we confirm it complies with the provision of Class C digital equipment in Part 15 of the FCC Regulations; and the receiver complies with the limitations for Class B digital equipment in Part 15 of the FCC Regulations. The product generates, utilizes and emits radio waves. It may cause detrimental interference to wireless communication if not installed and used according to the instructions in the manual. The product may cause interference in residential areas, and consumers should take necessary steps to eliminate the interference on their own. If the product causes any detrimental interference to wireless equipment or disturbs TV signals reception (which can be verified by turning on and off the product), you can try to troubleshoot by doing the following:
 - (a) Readjust the product or set it up in another place;
 - (b) Extend the distance between the equipment interfered and the product, and
 - (c) Consult a dealer or an experienced radio technician for help.

EU Authentication Statement

This product complies with all appropriate EU standards including Low Voltage Device Directive 73/23/EEC; EMC Directive 89/336/EEF and R& TTE Directive 1999/5/EC. It passed the required product tests administered by the appropriate authorities and is authorized to bear CE Mark.



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