GoPro

SETUP GUIDE

Geo logging with your smartphone

INSPECH
DIGITAL ROAD INSPECTION

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GOPRO SETUP

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INSPECH
DIGITAL ROAD INSPECTION

The hardware you need to get started

Required equipment

1. **A GOPRO HERO 11 BLACK**
   GoPro Labs firmware must be installed.

2. **A WEATHER-RESISTANT GOPRO USB PASS-THROUGH DOOR**
   To power your camera through extra-long shooting sessions.

3. **A 256 GB OR HIGHER MICROSDXC SD CARD (USH-I or better)**
   An SD card is not included with the GoPro.

4. **A SCREENSHOT OF THE INSPECH CONFIGURATION QR CODE ON YOUR PHONE**
   This is needed to configure the GoPro with the optimal settings.

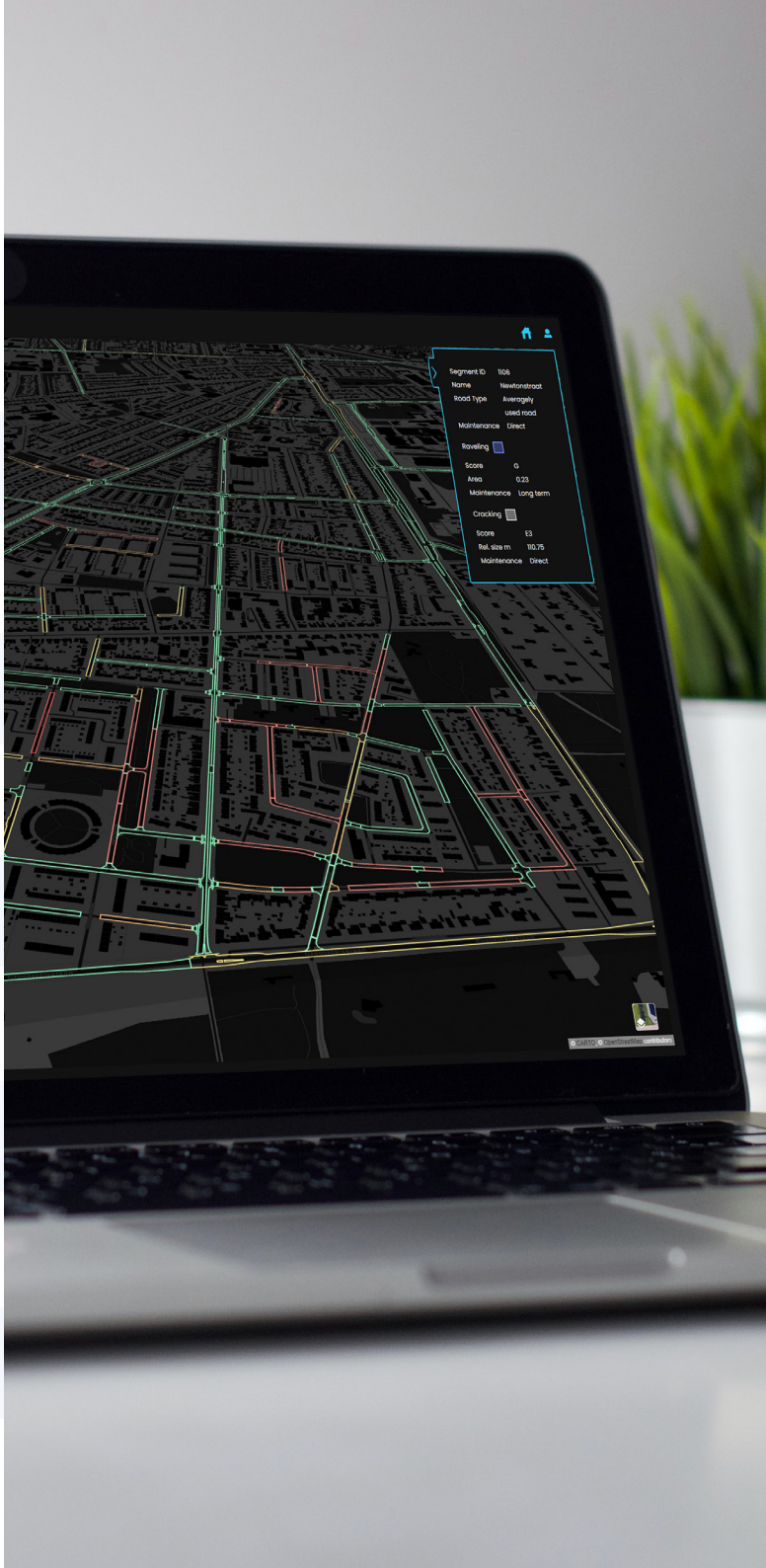
5. **AN ANDROID OR IPHONE MOBILE PHONE WITH THE QUIK APP INSTALLED**
   The phone connects to your GoPro. A GoPro Remote can replace the app.

6. **A COMPUTER WITH AN SD CARD READER**
   To upload the GoPro recordings to Inspech.

7. **A USB CABLE TO CHARGE THE GOPRO DURING RECORDING**
   A long USB cable (5m), to connect the GoPro to the car's USB power supply.

8. **A STABLE MOUNTING RIG WITH AT LEAST THREE CONTACT POINTS**
   To mount the GoPro with sufficient height and distance to capture a full road lane.

9. **MEASURING TAPE OR LASER MEASURE**
   To measure the distance between the camera lens and the road.



GoPro Labs Firmware & the Quick App

Installing the software

FIRMWARE

The latest **GoPro Labs firmware** must be installed.

- Go to https://community.gopro.com/s/article/GoPro-Labs and follow the instruction.
- Download the firmware update to your desktop or laptop.
- Copy the update to the MicroSD card according to instructions.

QUIK APP

Download and install the **Quik Video Editor App** to remote control your GoPro.

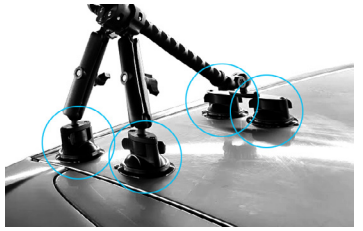
- **Android** Play Store: GoPro Quik: Video Editor
- **Apple** App Store: GoPro Quik: Video Editor

How to capture a full road lane

Mounting your rig

A mounting rig is needed to mount the GoPro with sufficient height and distance to capture a full road lane at a 0 degree angle (Nadir). Use a rig that is connected at two lengthwise positions (a base and a support) with at least 3 total contact points (suction cups).

Sufficient length is needed to capture the full lane, without the car being visible in the frame.

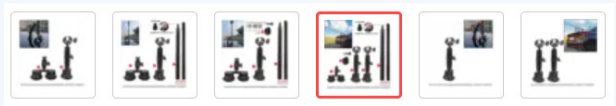


Four total contact points (suction cups) for stability.

Recommended

Tuyu GoPro Mount (via AliExpress) is affordable and has good suction and stability.

! Be sure to select the **Dual Suction 5in1** version **!**



Easy setup

Configuring the GoPro

The camera is configured using the Configuration QR Code.

- Point the camera at the QR Code. A small confirmation icon shows and the settings are instantly saved.

Capturing the road surface

Recording

- Start and stop the recordings with the remote control Quik App.
- Check the image in the app to make sure the camera has the correct angle and position.
- Ensure that GPS lock is on. (The GPS icon is solid and not blinking in the screen).
- Always switch on the camera and wait a few minutes before starting to record.
- Only start the recording when the correct position and angle are visible.

KEEP NOTES

- Note the start time of each recording and a short description. This is needed to properly catalogue and upload the recordings later.
- Note the start time of any failed recordings so they can be deleted later.
- Note the camera height.

Let's go for a ride

Driving speed and light conditions

DRIVING SPEED

- The driving speed is as constant as possible. Avoid accelerating and decelerating.
- The driving speed is as low as possible while observing every possible safety concern and adhering to any and all local regulations.
- The preferred driving speed does not exceed 70 km/h.
- On highways, provided there are good light conditions, the driving speed may be up to 90 km/h.

WEATHER CONDITIONS

- It is preferred to drive on a sunny day. Speeds over 70 km/h are only captured well with enough natural light.

TUNNELS AND OVERPASSES

- The GoPro does not capture enough light in tunnels and overpasses. These road sections cannot be scanned with the setup described here.

The perfect picture

Camera position

CAMERA HEIGHT:

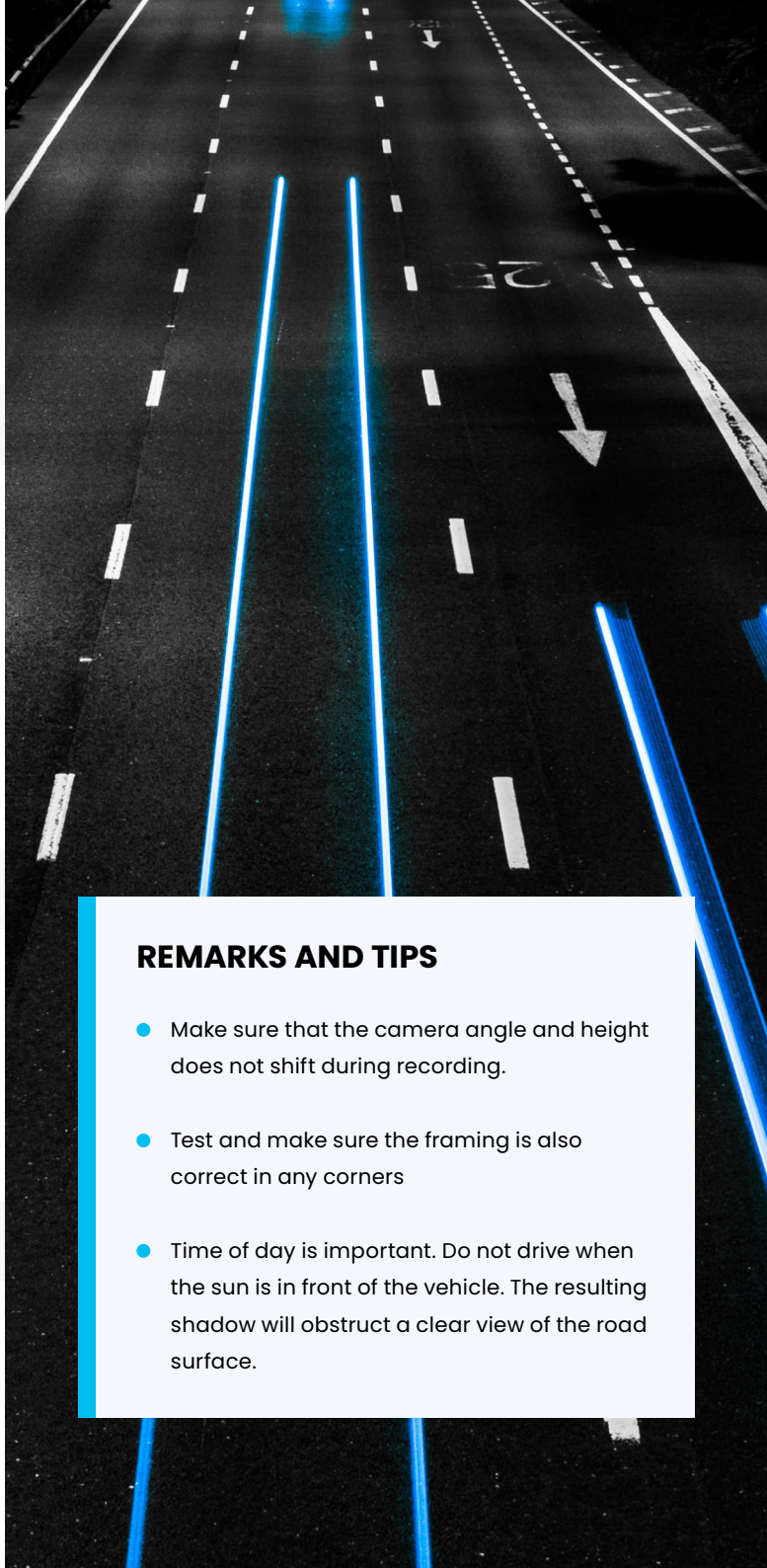
- The frame captures one full road lane.
- The whole lane is visible on each frame.
- As little as possible of the road edge is visible
- Corners, exits and roundabouts can be wider than normal road lanes. Adjust the camera height accordingly.

VEHICLE POSITION

- The vehicle is not visible in the frame.
- The shadow of the rig and/or vehicle is not visible in the frame.
- The car is in the middle of the road lane.

CAMERA ANGLE

- The road is captured at an angle of exactly 0 degrees (nadir).
- The road markings and/or road edge should be exactly paralel to the sides of the frame.



REMARKS AND TIPS

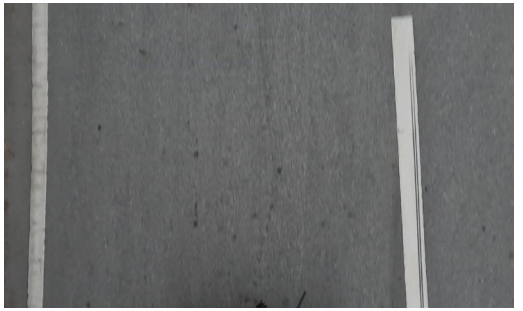
- Make sure that the camera angle and height does not shift during recording.
- Test and make sure the framing is also correct in any corners
- Time of day is important. Do not drive when the sun is in front of the vehicle. The resulting shadow will obstruct a clear view of the road surface.

It's all in the frame

Examples

CORRECT

- The road is exactly parallel to the frame.

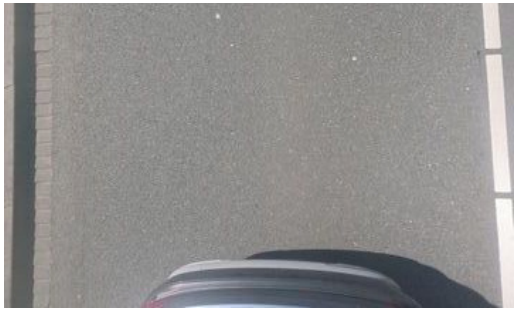


- The road is parallel to the frame.

INCORRECT

- The angle is not 0 degrees. The road is not parallel to the frame.

- The shadow obstructs a clear view.



- The vehicle is in view.

Uploading your files

Transferring files to INSPECH

STEP BY STEP

1. Download the files from the SD card to your PC or Mac.
2. Ensure the correct folder structure with clear naming.
3. Upload the folders to the AWS S3 bucket.
4. Have the height of the camera for each recording ready.
5. Log in to **INSPECH** with your user credentials.
6. Create a new inspection.
7. Follow the instructions on screen.

FOLDER STRUCTURE

- All recordings for a single road lane inspection are in one folder.
- One subfolder does not contain multiple road lanes.
- Naming is clear and unambiguous.

FOLDER STRUCTURE EXAMPLE

- CityName_inspection_2022
  - N10 main road East
    - Lane1_East-sections000-050
    - Lane1_East-sections050-100
    - Lane2_East-sections000-050
    - Lane2_East-sections050-100
  - N10 main road West
    - Lane1_West-sections100-050
    - Lane1_West-sections050-000
    - Lane2_West-sections100-050
    - Lane2_West-sections050-000
  - A10 onramps and exits
    - Direction west
    - Direction east

Cloud object storage

AWS S3 Bucket

BEFORE YOU START

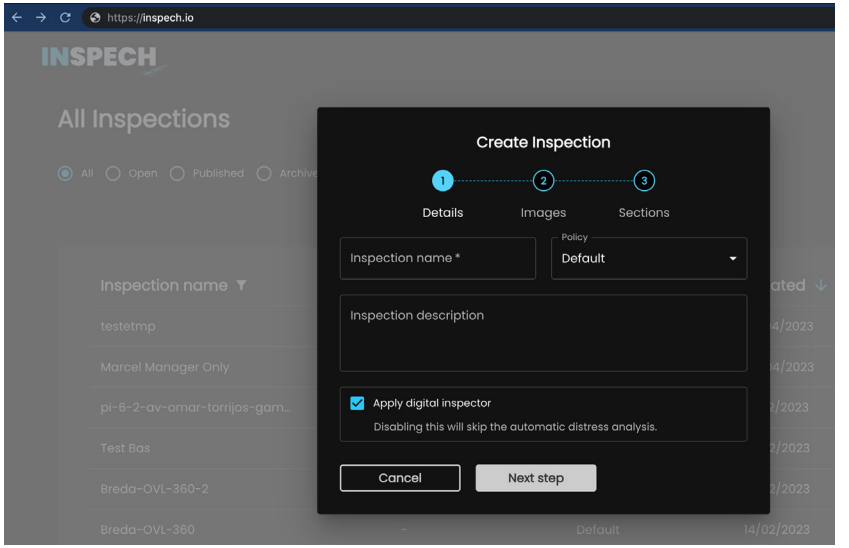
- Recordings are loaded into **INSPECH** from an AWS S3 bucket.
- Preferred: User has their own AWS S3 bucket to upload from.
- Supported: **INSPECH** provides an AWS S3 bucket for the user.
- We recommend the free CyberDuck software to upload to AWS S3 buckets.

CAMERA HEIGHT INPUT

- Have the exact height of the camera (i.e. the distance between the lens and the road surface) for each recording ready to input for the video processing.
- Make sure that all the videos in one folder have the same camera height.

UPLOADING

Log in to **INSPECH** with your user credentials and follow the instructions on screen.



If you have any questions please don't hesitate to reach out and send us an email: support@inspech.com

For a more accurate result

Geo logging with your smartphone

It is advisable to seperately log the geo location of your road scans using a smartphone. **INSPECH** processes this information together with the geo information from the GoPro recording for a more accurate result compared to using just the GoPro.

IN SHORT

- Use the app SW Maps (Android or iOS).
- Share the geo logging in CSV format.
- Share the file in the same main directory as your GoPro videos.
- Use a single file and a single track for the full day of recording and start the geo logging before starting the first video. End the geo logging after finishing the last video.

Download the application

SW Maps

DOWNLOAD

- **Android** Play Store: SW Maps App
- **Apple** App Store: SW Maps App

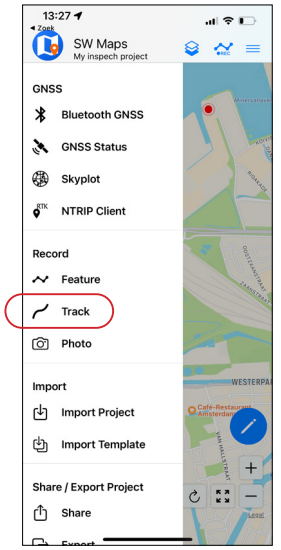
DOCUMENTATION

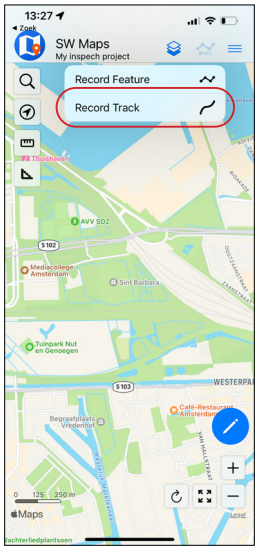
- **Softwel** website: Manual.pdf

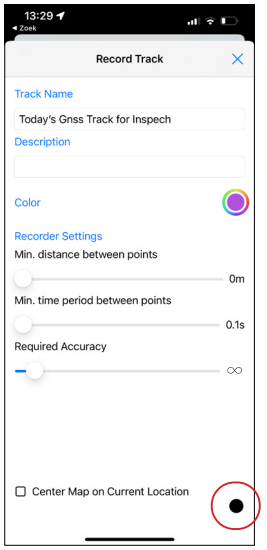
CONFIGURING & RECORDING

Start location logging *before* the camera starts, and end logging *after* the camera stops.

- Verify that the satellite signal is good.
- Go to SW Maps to start the logging.







- In the menu, click **Record Track**
- Track name: give the project a descriptive name
- Min. distance between points: **0m**
- Min time period between points: **0.1s**
- Required accuracy: **∞**
- Click the **black circle** at the bottom to start logging.

  This will start a new GPS track (layer). Don't click STOP, but use **PAUSE** if you want to pause logging. When you stop, a new gps track will be generated, but **INSPECH** can only handle 1 GPS track.

- Next, go to the **Quik app** to start the GoPro recording.

STOP RECORDING AT THE END OF DRIVING

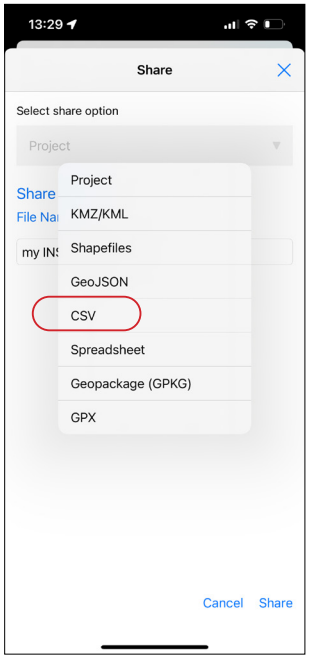
- First, stop the recording on the GoPro, go to **Quik** > **Stop recording**.
- Next, to stop the location logging, go to **SW Maps**, click **menu > record track** to see the recording details again. Now click the **PAUSE** button if you will continue recording, or click **STOP** (black square) if you are done for the day.

SAVING YOUR DATA

To retrieve the location data from SW Maps:

- Go to SW Maps > menu, select Export or Share
- Export option: **CSV**
- Options: Select **Tracks**
- Click ***Export*** or ***Share***.

Export: Store in a standard folder on the phone.
Share: Send it over via whatsapp / mail / etc.



FOLDER STRUCTURE EXAMPLE

- CityName_inspection_2022
  - N10 main road East
    - Lane1_East-sections000-050
    - Lane1_East-sections050-100
    - Lane2_East-sections000-050
    - Lane2_East-sections050-100
  - N10 main road West
    - Lane1_West-sections100-050
    - Lane1_West-sections050-000
    - Lane2_West-sections100-050
    - Lane2_West-sections050-000
  - Geo
    - CityName_inspection_2022.csv

- Save the csv file in a folder called **Geo** in the same main folder as your GoPro recordings.
- To retrieve the GoPro footage, you need to download it from the SD Card (see page 10 of this guide).

UPLOADING DATA TO INSPECH

- Upload both the cvs file and the video files to the S3 bucket according to instructions.

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