CV100LG User Manual

Telematics Dual-Lens LTE CAT4 DASH CAM

QSZCAMCV100LGUM0305

Version: 3.05

Driving Smarter IoT

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Document Title	CV100LG User Manual
Version	3.05
Date	2022-11-22
Status	Released
Document Control ID	QSZCAMCV100LGUM0305

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Contents

0. Revision history

Revision	Date	Author	Description of change
2.1	2021-09-09	Gavin Jiang	Initial version
2.2	2021-09-15	Gavin Jiang	1) Add chapter 11
3.01	2021-11-10	Gavin Jiang	1) Comply to document standard 2) Add section 4.17/4.18 3) Modify section 8.4 4) Modify chapter 11
3.02	2021-11-22	Gavin Jiang	1) Modify chapter 3
3.03	2022-01-06	Gavin Jiang	1) Modify section 5.2 2) Modify section 4.18&4.19 3) Add section 4.20&4.21
3.04	2022-05-05	Gavin Jiang	1) Add section 4.12 & 4.14 2) Modify section 4.22 & 8.1
3.05	2022-11-22	Gavin Jiang	1) Modify section 7.1 & 7.2

1. Introduction

CV100LG is a compact video telematics dash camera designed for a wide variety of vehicle tracking and video monitoring applications.

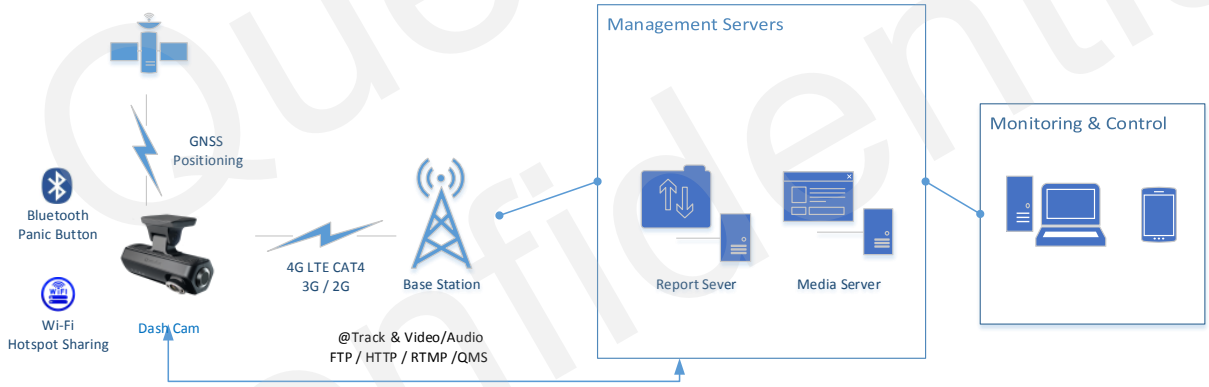
It's set with dual-lens imaging system to capture real-time high-definition video clips and record the traffic status, driver's behavior to track exactly what happened before, during and after an incident by recording driving data like view of road, audio, speed, GNSS location, acceleration, braking, crashing, etc.

Its built-in GNSS receiver has excellent sensitivity, making the positioning fast and accurate and events such as such as an impact and bump while parking can be detected and recorded with the help of high-performance inertial sensor.

The camera supports WCDMA and LTE CAT4 on multiple bands ensuring it can offer a reliable data channel so the vehicle can be tracked in real time accurately and the videos can be successfully uploaded to the back-end server for analysis.

There are more features on it such as extended working time of battery due to the sophisticated power management algorithm, SOS with audible driver feedback via speaker, excellent cooling performance by cooling fin with thermal conductive adhesive etc.

It is for sure a great video telematics solution for tracking safety and efficiency.



1.1. Reference

Table 1. Reference

SN	Document name	Remark
[1]	CV100LG @Track Air Interface Firmware Update Protocol	The air protocol interface between CV100LG and backend server.
[2]	CV100LG @Track Air Interface Protocol	

1.2. Terms and abbreviations

Table 2. Terms and Abbreviations

Abbreviation	Description
GNSS	Global Navigation Satellite System
GPS	Global Position System
Glonass	Russian High Orbit Satellite Navigation System
G-SENSOR	Gravity Sensor
AP	Access Point
STA	Station
CAT4	LTE Category 4
BLE	Bluetooth Low Energy
SIM	Subscriber Identity Module
TF	Trans Flash
APN	Access Point Name
UHS	Ultra-High Speed
COM	Communication Port
NTP	Network Time Protocol
FTP	File Transfer Protocol
RTMP	Real-Time Messaging Protocol
HTTP	Hypertext Transport Protocol
OTA	Over-the-air
FOTA	Firmware Over-the-air
FOV	Field of View
MCU	Microprogrammed Control Unit

2. Product overview

2.1. Package list

DASH CAM (*1)

Bracket Base (*1)

Function Cable (*1)

Tamper-resistant Panel (*1)

Torx Screw (*6)

Adhesive Tape (*2)

Warranty Card (*1)

2.2. Optional accessories

TF Card

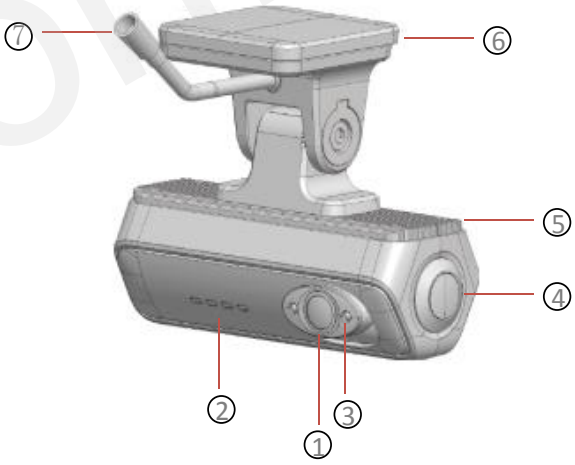
Card Reader

Debug Cable

BLE Panic Button

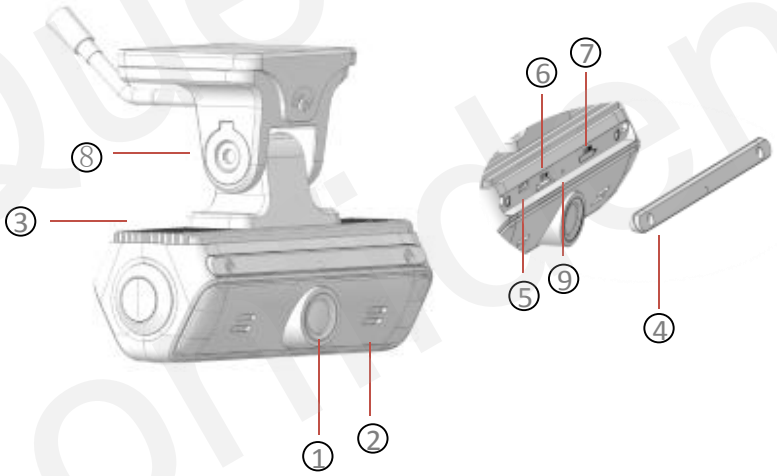
Screw Drivers

2.3. Rear view



Number	Definition	Feature
1	Interior Camera	720P HD camera for driver view
2	LED Indicator	Local working status for reminders
3	Infrared LED	For night vision
4	Multi-function Button	SOS Alarm, Wi-Fi switch, Panic alarm
5	Cooling-fin	Good heat-conduction performance for reliable 24*7 running
6	Bracket Base	Removable design makes the installation more convenient
7	Cable Connector	Connect to function cable

2.4. Front view

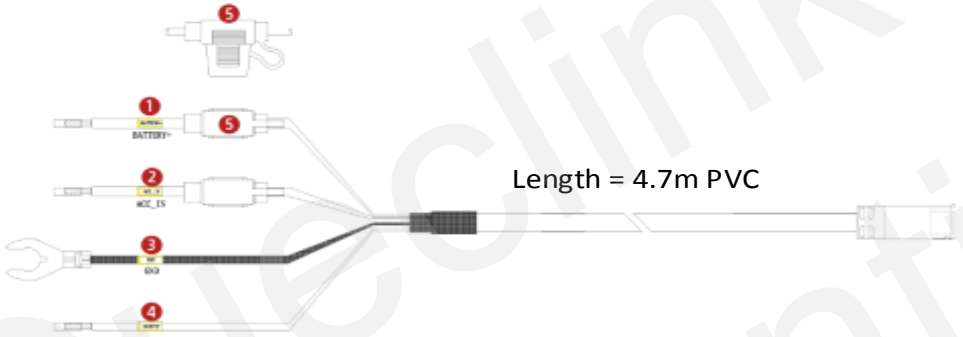


Number	Definition	Feature
1	Front Camera	1080P HD camera for driveway view
2	Speaker	Local beep sound for reminders
3	Mic	Pick up the vehicle sound
4	Tamper-resistant Panel	Prevent the SIM & TF cards from loss
5	USB Type-C Slot	Output the running and debug logs to the

		computer
6	TF Card Slot	For TF card
7	SIM Card Slot	For nano SIM
8	Built-in Bracket	Rotate to adjust the field of view
9	Reboot Button	Short click to reboot the product instantly

2.5. Function cable

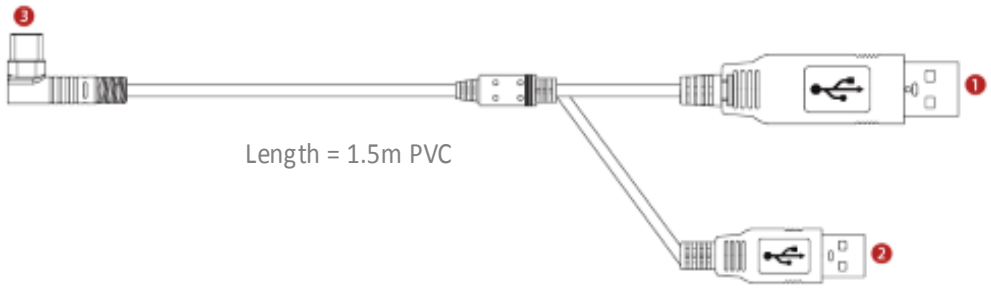
The products supply the hardwired connection with your vehicle, please plug the proper cables as the descriptions.



Number	Definition	Feature
1	Battery +	Connect it to the power source slot of your fuse box, the available voltage range is 8-32V DC
2	ACC_IN	Connect it to the ignition signal output slot of your fuse box
3	GND	Connect it to the ground wire of your vehicle
4	OUTPUT	Open drain, software-defined feature
5	Fuse	2 Amp fuse for protecting the vehicle battery while camera circuit anomaly occurs

2.6. Debug cable

This 2-in-1 cable is requisite accessory provided with the product, it's used to initialize the configuration and debug the application by specific tools for the installers.



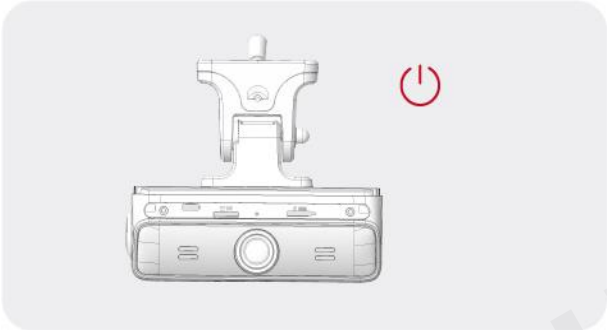
Number	Definition	Feature
1	USB_COM	Communicate the product over the COM port
2	USB_ADB	Communicate the product over the ADB command
3	Type-C (L type)	Interact with debugging PC over Type-C to USB 2-in-1 cable

3. In-vehicle installation

3.1. Installing the SIM & TF cards

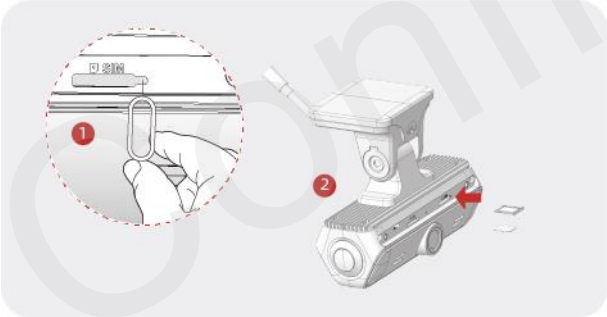
Follow the steps to insert the SIM & TF cards into the product.

1. Ensure the product is turned off.

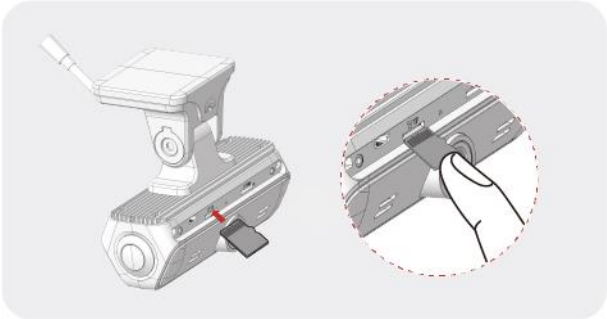


2. Remove the temper-resistant panel by driver

3. Eject the SIM tray by ejection pin, place the SIM card correctly and push it gently back.



4. Insert the memory card into the slot and push it into the slot until you hear a click.



*Before inserting the TF card, ensure that the metal contacts on the TF card are facing towards the mount connector of the product.

*The product only accepts the MicroSD (TF) type cards.

*UHS type TF cards provide high speed write and read performance.

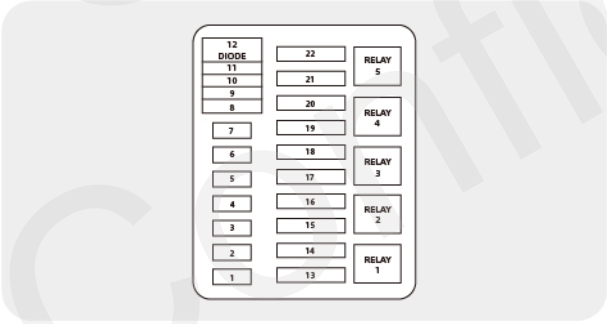
*We strongly recommend to use a storage capacity of 64GB or above for longer recording time

* Metal tray is provided to mount SIM card correctly.

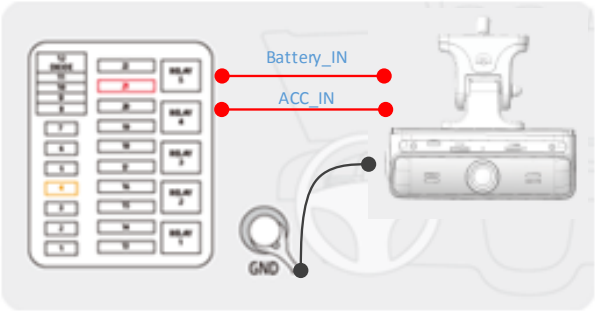
3.2. Powering on by hardwire

Follow the steps to power the product from your vehicle battery by hardwire.

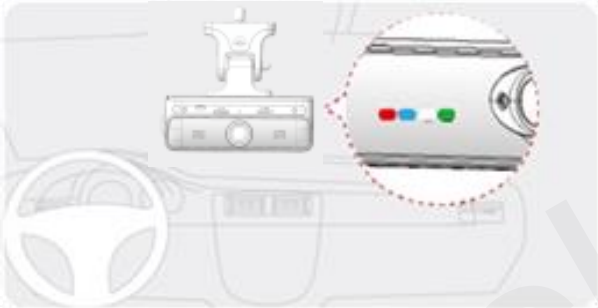
1. Open the vehicle fuse box and check the fuse description chart.



2. Identify the Battery + and ACC-IN slot, insert the wires of function cable. Place the GND wire into the vehicle ground source and fix the screw.



3. Close the vehicle fuse box and turn on ACC to check that the product is powered on.



*Using a fuse removal tool can make the hardwiring process easier.

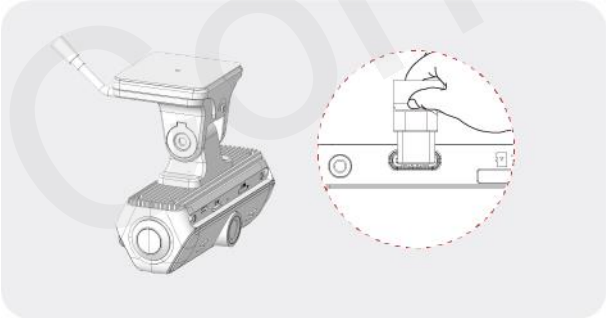
*Location of Battery + and ACC_IN power source may differ by car manufacturers and models. It may result in fire risk if wired incorrectly.

*The product is running correctly while all 4 pieces LED indicator stay solid.

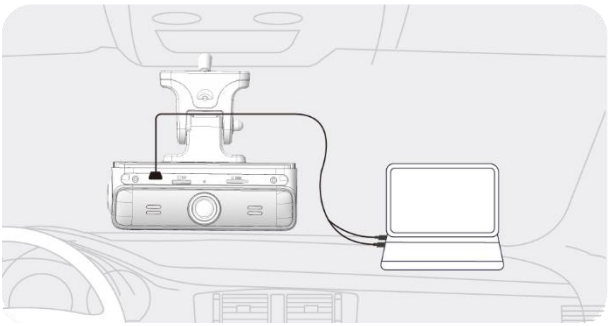
3.3. Configuring for initialization

Follow the steps to connect the product to the computer for your product configuration.

1. Connect the “L-type” of Type-c plug to the product.



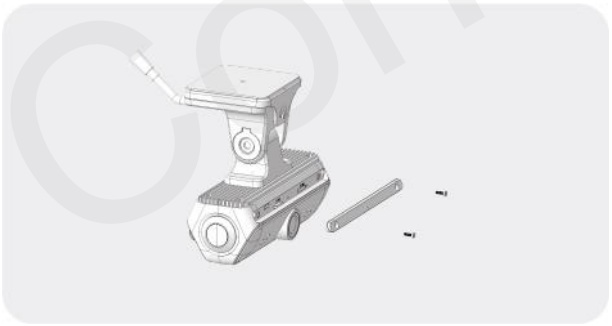
2. Connect the USB and USB-TTL plugs to your computer.



3. Decompress the “Manage tool” package and run the executive application.

4. Select the proper COM (serial) port that communicates with the product, connect it and it will print the “login success” message.

5. Mount the tamper-resistant panel back after completing configuration.

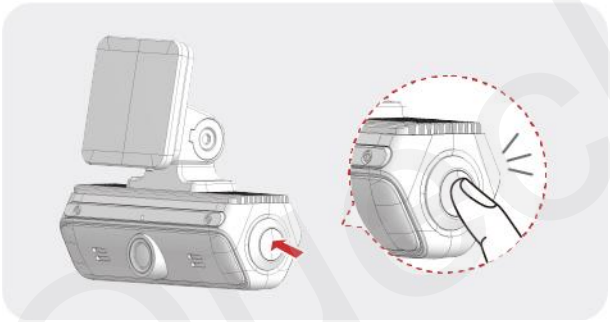


*Debug Cable isn't included into standard package, please contact the supplier if necessary
*After the product is powered on, wait for 30-60 seconds until it's starting
*Mount the tamper-resistant panel back after completing all operations
*PC system requirement:
- Processor: Intel Core i7 or higher
- Memory: 8 GB or more
- Operating system: Windows 7 or later (64-bit is recommended)
- Other: DirectX 12 or higher / 2*USB 2.0(3.0) or more
- GPU: Intel® HD Graphics 630 / NVIDIA GeForce GTX 1050 or higher

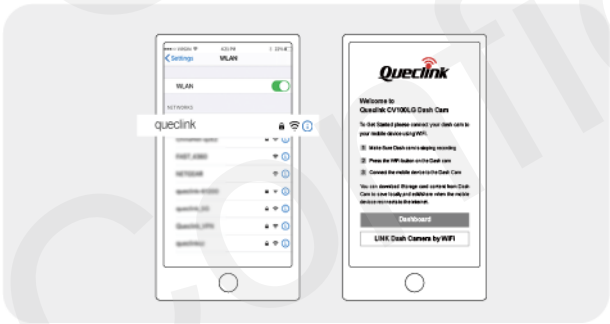
3.4. Installing to the windshield

Follow the steps to mount the product into your vehicle properly.

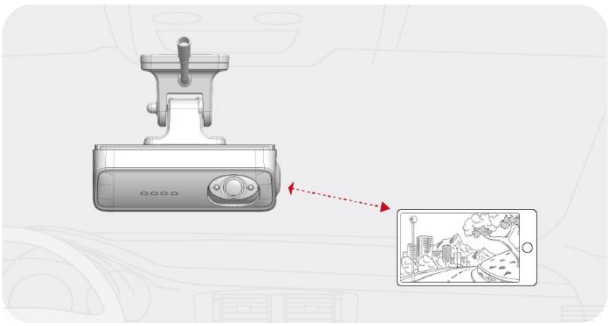
1. After powering on, click the multi-function button twice to activate Wi-Fi hotspot until you hear the voice prompt.



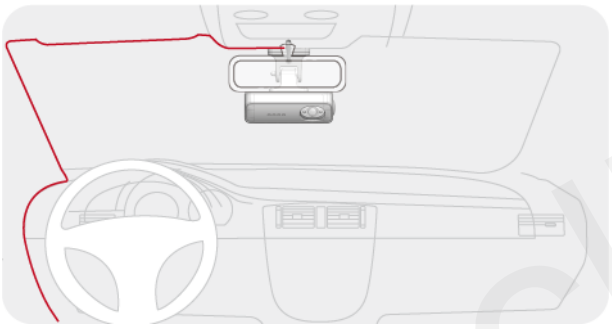
2. Download the mobile application on your smart phone, search the Wi-Fi hotspot of product and connect to it.



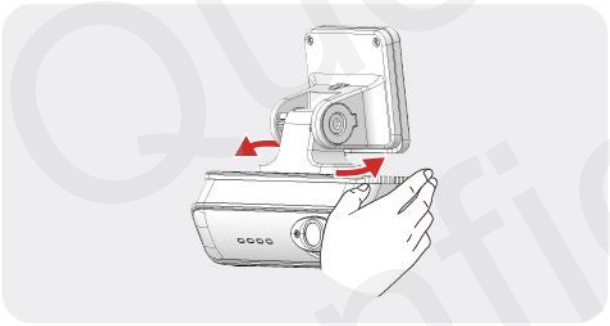
3. Login the "Live" page of mobile application to get the front and interior camera views in real-time.



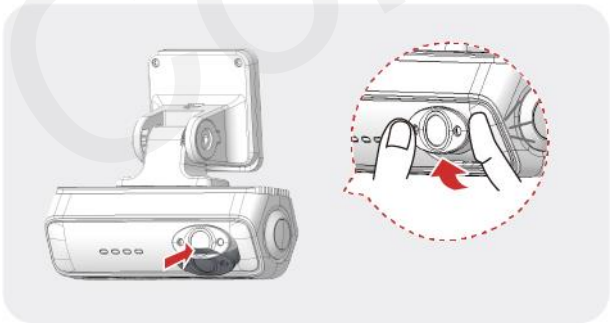
4. Attach the product on the surface of windshield, keep watching live view in order to confirm the exact position.



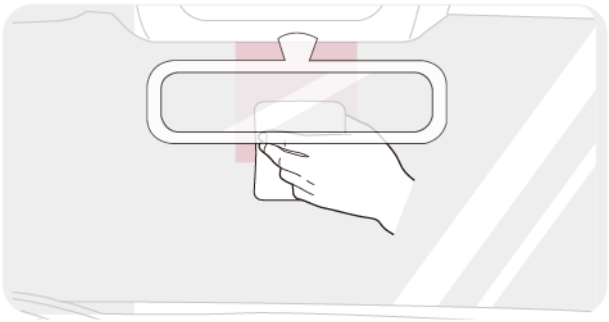
5. Unscrew the bracket shaft by hex drive. Adjust the angle of front camera until approx. 30% view of your vehicle bonnet is showing at the bottom of view and screw the bracket in the end.



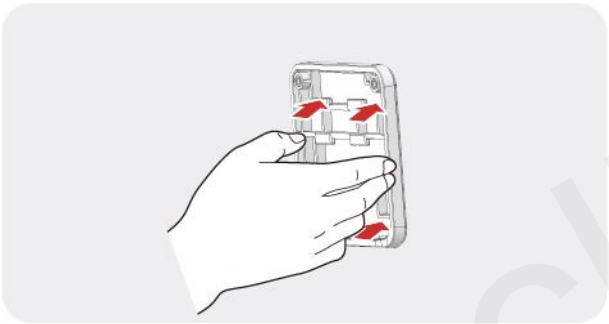
6. Rotate the interior camera up and down to capture the driver and passenger seats properly.



7. Wipe it clean after determining the installation position.

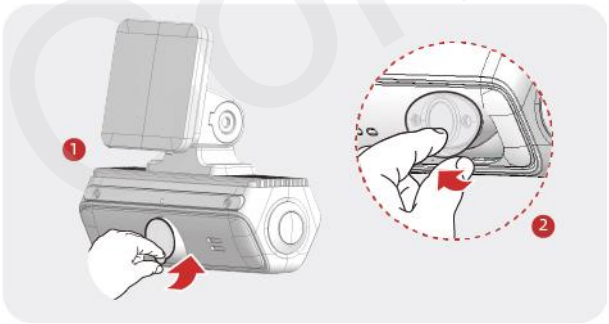


8. Peel off the protective sheet of 3M adhesive tape and attach the bracket base at the position of windshield vertically.



9. Align the bracket into the base and slide it into, and secure it by 3 pieces of torx screws.

10. Remove the protection film of lens to finish the installation.



*The placement of product can record the entire view in front of the vehicle without obstructing the drivers view

*De-attaching and re-attaching the 3M tape will cause the stickiness lost

*Clean the windshield by wiper and make sure there is no stain at front the product

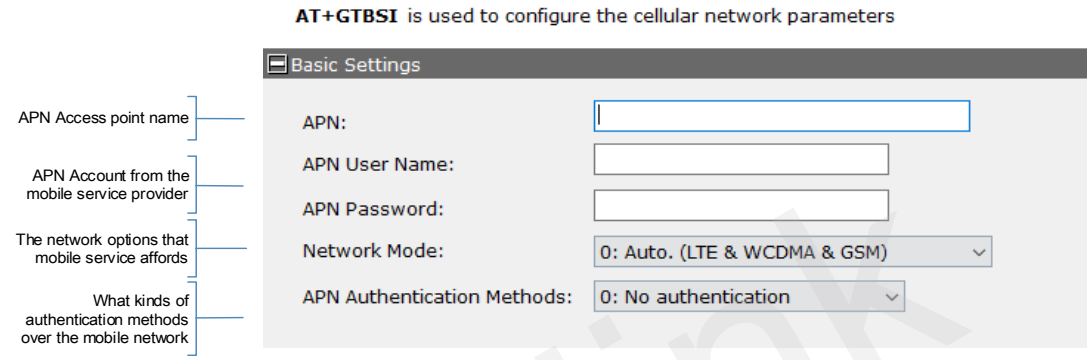
*Press down the bracket base for a while until it bonds under windshield firmly (3-5 mins recommended)

*The product automatically enables the “WiFi AP mode” and only keeps 5 mins waiting for connection.

4. Feature settings

4.1. Configuring the APN network

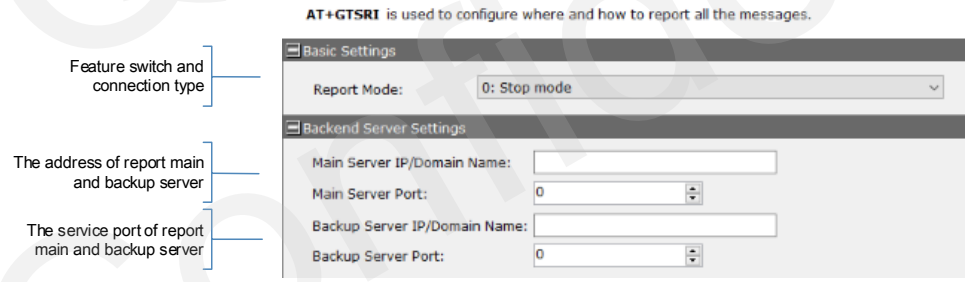
Input the public or private APN information that is indicated by your mobile service provider to tell the product what kind of 4G/3G/2G cellular network will be registered and connected.



*At some regions of the world, you may decrease the "network mode" to 3G/2G in order to make the calling forcedly. It will result the internet quality turns bad at the situation.

4.2. Connecting the report servers

The report servers are deployed at internet side for receiving the various of message what are generated from the product all the time, such as positioning info, triggering events, monitoring power, vehicle driving status.

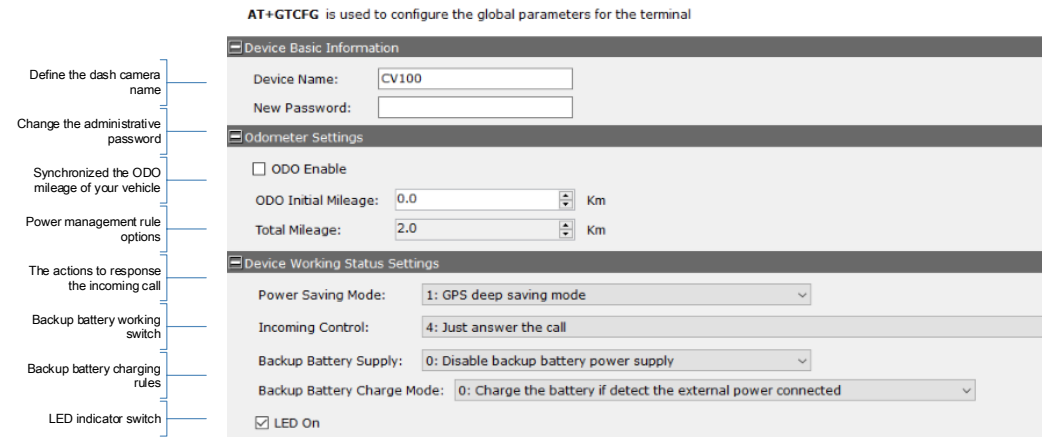


*You need establish the report servers to receiving all telematic message all the time.
*The servers should be opened to internet for assuring the connectivity with the product.

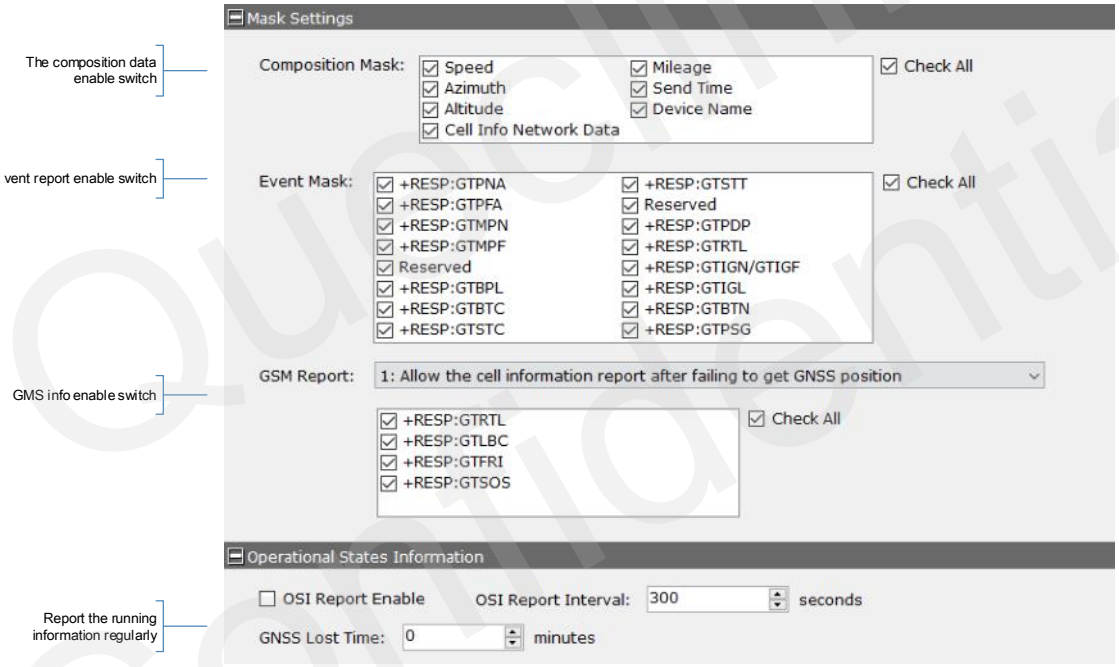
4.3. Initializing the global parameters

It contains 5 parts for the global settings.

1) Set the product name and change the administrative password
2) Set and synchronize the ODO meters information
3) Set the working logics, including sleeping, discharging & charging, incoming call responses.
4) Select the strings attached into reports
5) Enable the OSI real-time reports.



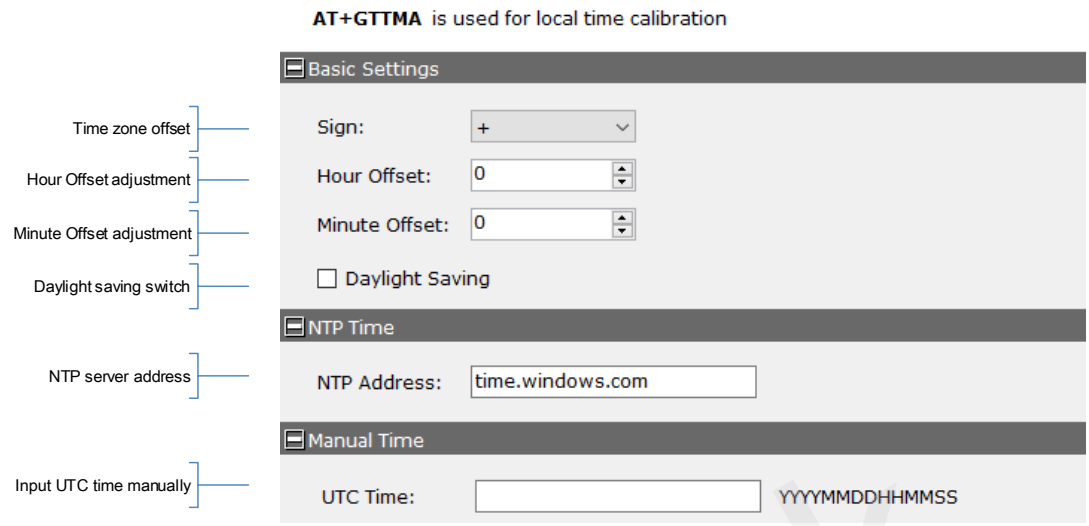
*You must enable the “Backup Battery supply”, otherwise parts of features may be invalid.
*We don’t suggest you disable the LED indicator normally because it’s the direct way to guide the product’s status.



*If you’d like to monitor the product’s operational states, please enable the OSI Report feature. The information will be transferred to the report server both of driving vehicle and ignition off status.

4.4. Calibrating the system time

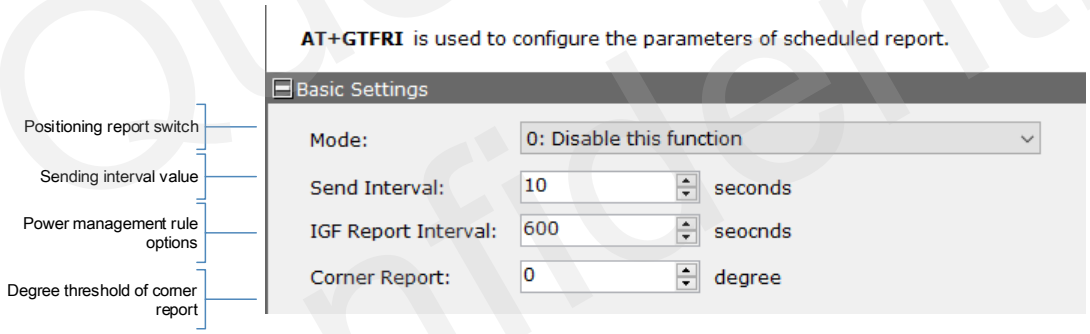
The product remains the real-time clock powered by built-in battery even if the power supply disconnects. The clock precision is synchronized from GPS and NTP server regularly.



*The priority of calibrating the system time: Manual Time < NTP Time < GPS Time.

4.5. Recording the coordinate periodically

In order to track and determine the location of the product, it should periodically store and transmit the GPS positioning report to the server. The server can pinpoint longitude, latitude, ground speed, and course direction of the vehicle remotely.

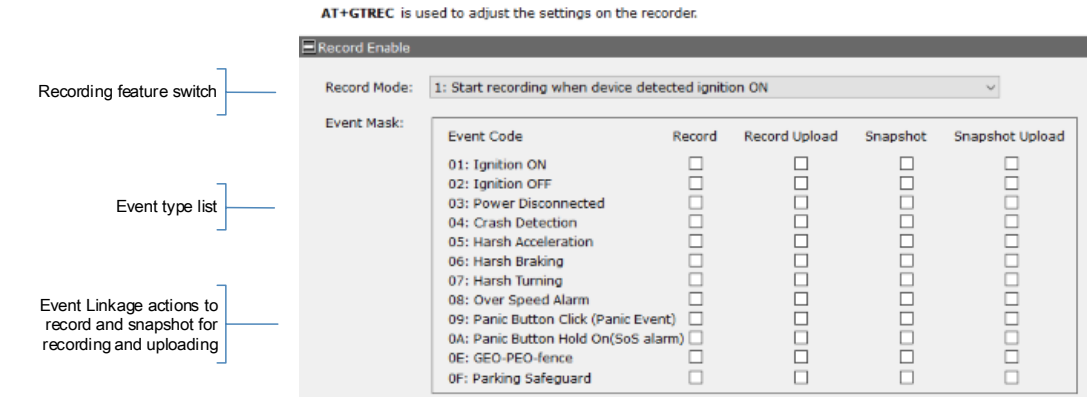


*Enable the FRI feature to receive the coordinate information and track the vehicle at any time.

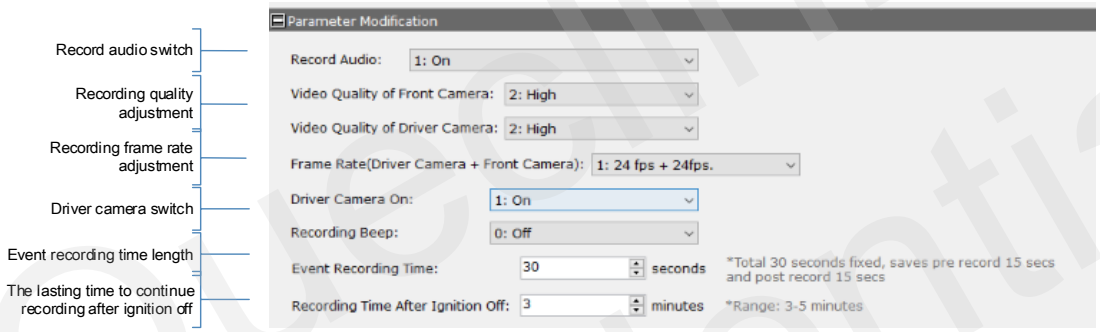
4.6. Configuring the recorder feature

The product is turned on automatically and continuous recording starts when you turn on the ACC or start the engine.

Notice: Wait until the product is completely booted up after turning it on, and then begin operating the vehicle. The video recording does not begin until the product is completely turned on (booted up)



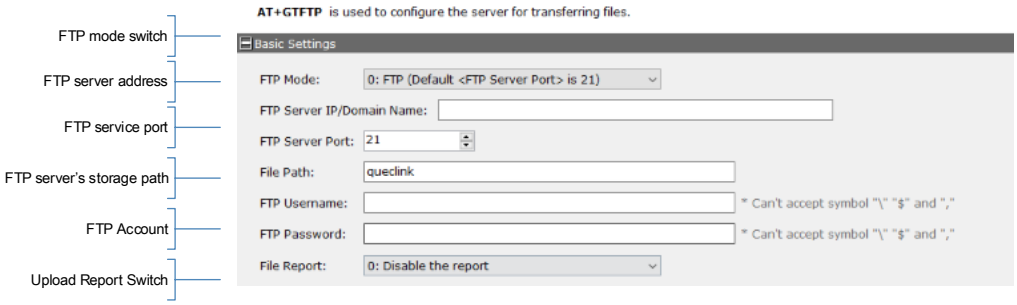
*Select the desired events and record the footage while it's triggered.
* The event recordings will be stored into local TF card until overwritten.
*Select the upload feature to transfer the event-related files into server instantly. The transferred time depends on the network quality and file size.



*To prevent the driver privacy, you can disable the "driver camera" and "audio pick-up" features.
*The recording time for each event is made of 15 seconds pre-record and 15 seconds' post-record. The value is static at present and forbidden to change it.
*After external power is cut off accidentally, the product won't power off immediately, the backup battery inside will supply it until the last recording is saved safely and the event-related report has been transferred.

4.7. Uploading the critical evidences

The camera has been built-in network transmission ability via 4G LTE, the event recordings and pictures are transferred into the FTP servers instantly as evidences.

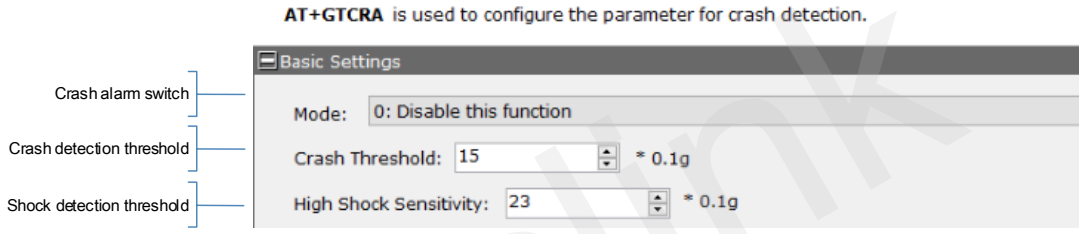


*You must activate the specified events detection by the configurations.
*You must enable the event recordings and snapshots features before transmit by FTP.
*The FTP server must be reachable from the product.
*The FTP path isn't blank and can't accept the single "/ "symbol.

*Make sure the FTP account has the write permission to the assigned directory and folder.

4.8. Detecting the crash alarm

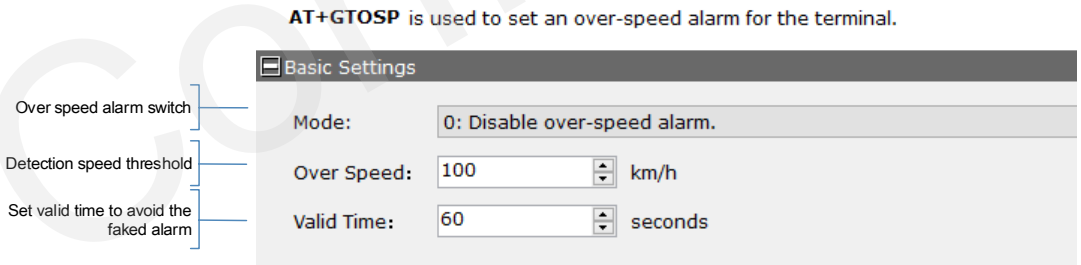
The product monitors the G-Sensor data by high sampling rate, it will record and report the event when crash accident happens during driving time or hit-and-run in parking mode.



* Less threshold and sensitivity values, more sensitive to trigger events.
* Please adjust the detection threshold as your desire. The default values are only for reference.
* When terrible traffic incident happens, the high shock event will be detected and the product triggers the emergency call automatically. (Enable the feature at the SOS alarm feature)

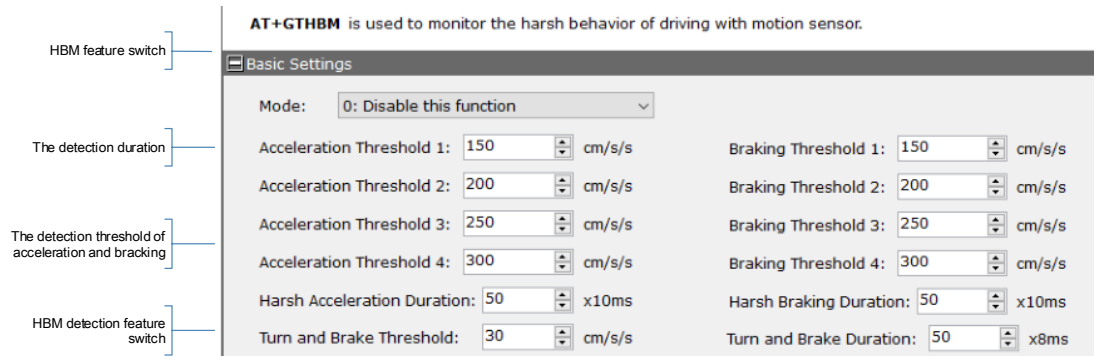
4.9. Triggering the over speed alarm

The product captures the GPS speed all the time, the server will receive the notification if the vehicle is driven in over-seed and stays over the valid time. The product records the instant video footage and sends the immediate report to the fleet manager.



4.10. Monitoring the driving behaviors

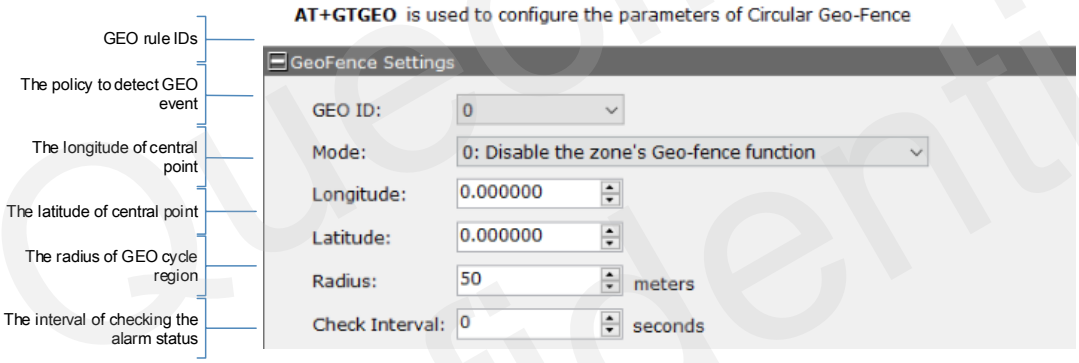
In order to decrease the accident ratio, reduce the maintenance cost and coach the drivers, the product monitor the harsh driving behaviors while driving, it contains harsh acceleration, harsh braking, harsh turning mainly. The product records the instant video footage and sends the immediate report to the fleet manager.



*Adjust the parameters as your desired. Read the CV100LG @Track Air interface protocol for more explanation information.

4.11. Configuring the GEO-fence feature

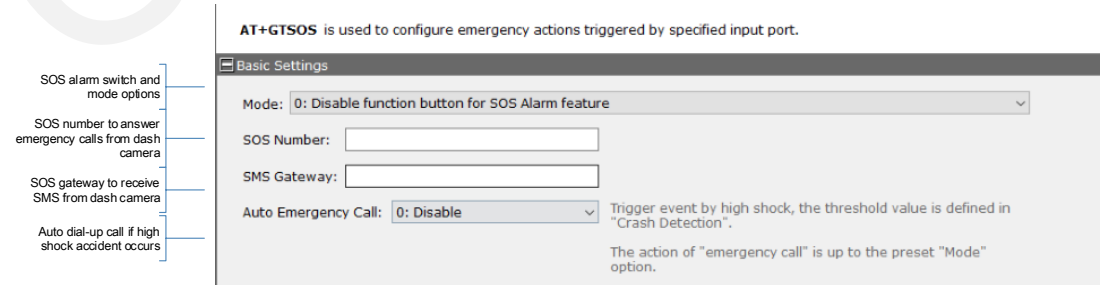
Configure GEO-fence rules to safeguard your vehicle at any time, the product will record and report the event as the detection policies instantly.



* Each GEO rule is working separately; the product totally provides 20 pieces rules.

4.12. Trigger the SOS alarm

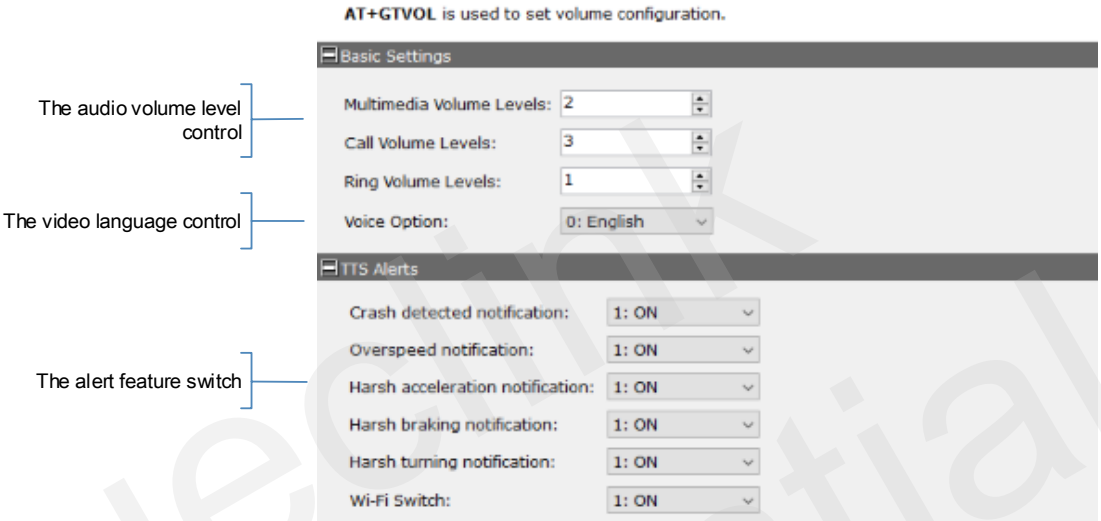
When SOS alarm is triggered, such as panic button holds on for 3 seconds, the product responds the events as the configurations. Upon the cellular network, the product calls the emergency number while tremendous accident (high shock) happens.



*The responds depend on the Mode setting, the product can make the SOS call to the preset number, send the SOS alarm notification to the report server, or send the SMS message to the preset SMS gateway attached the location by google map link.

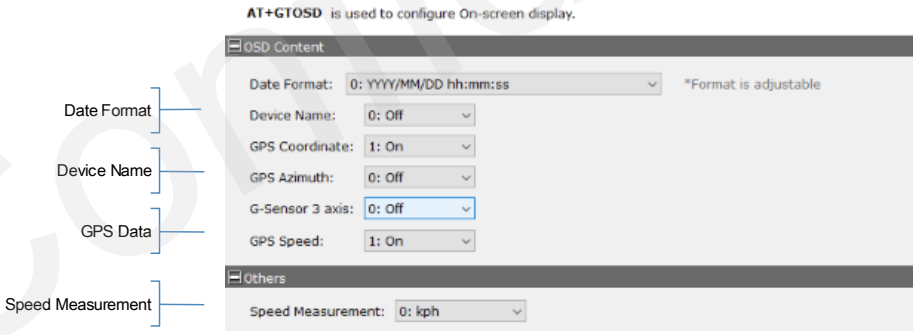
4.13. In-cab alert control

The product provides the “in-cab alert” feature to interact with drivers in order to know the instant driving status. It’s able to control the voice language, audio volume and alert switches.



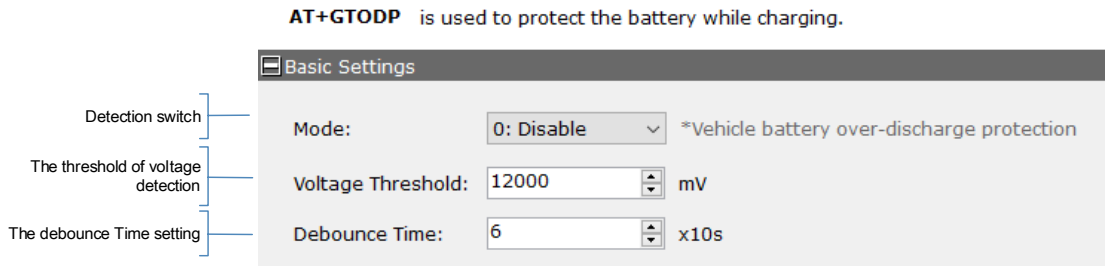
4.14. Switch ON/OFF the OSD data

OSD is overlapped into video and picture for data fusion and relevance. It can be turned on/off as needed conveniently.



4.15. Protecting the battery from over discharge

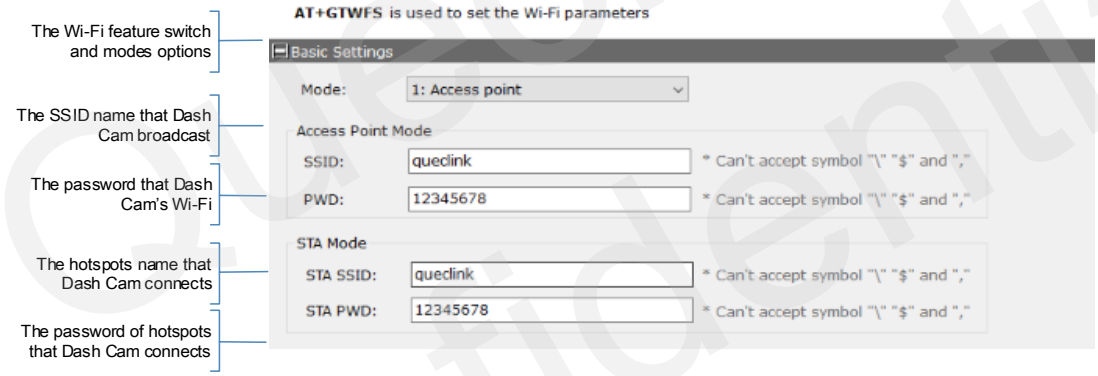
The lifespan of the vehicle battery is damaged in over-discharge status, the product continues monitoring the battery voltage output in driving status specially parking mode, it reports the notification to the report server once the over-discharge occurs.



*For the private car, taxi that using 12V vehicle battery, the threshold value should be less than 12000mV. 10000mV and 115000mV are recommended.
*For HGV, LGV that using 24V vehicles battery, the threshold value should be less than 24000mV. 23500mV and 23000mV are recommended.

4.16. Changing the Wi-Fi mode

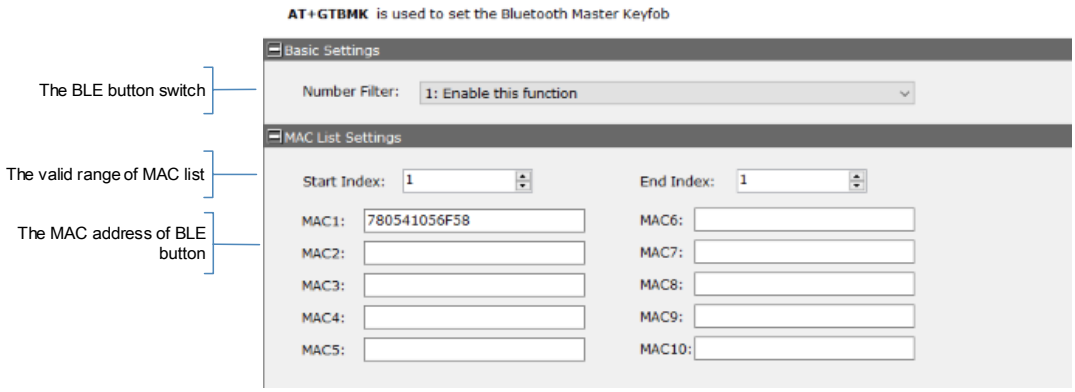
The product provides the alternative access point and station dual modes.it accepts the 5 clients max. connection for Wi-Fi sharing in access point mode. Meanwhile, it's able to join the Wi-Fi network for local data transmission working at station mode.



* The product supports 2.4Ghz WiFi radio, please configure it to connect the 2.4Ghz access point while it's working in STA mode.
* The product enable WiFi AP mode while it detects ignition on automatically, and wait 5 mins before switch off if no clients connect it.
*The product only works in ether AP mode or STA mode, please examine the settings after configuration.

4.17. Adding the BLE panic button

In order to trigger the manual event more convenient, the product is available to add 10 pieces panic button over BLE Bluetooth. The product detects the button event and trigger the recorder after you short-click the button.



*The compatible BLE button: WKF300, WPB300, please inquiry the detailed information with your supplier.

4.18. Starting the parking mode

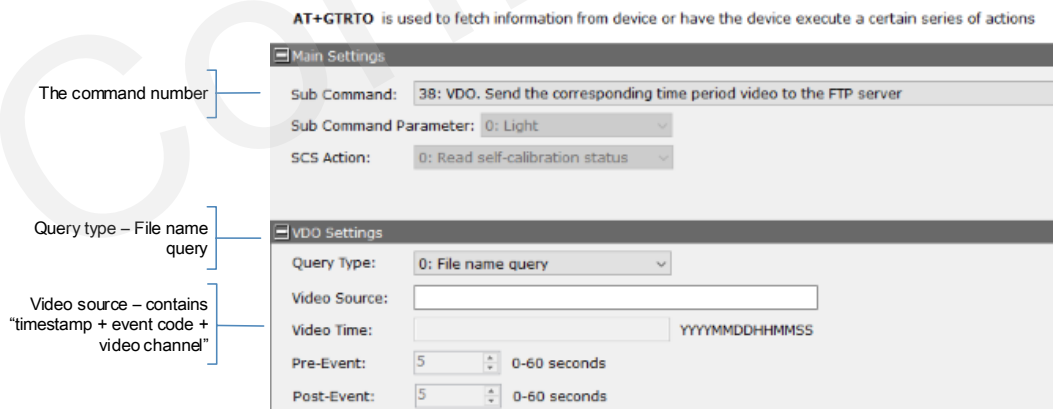
The product will enter the parking mode while ignition vehicle off. If it detects an impact/bump, it saves a separate event recording file and send the crash event report.

* Parking mode operates only when the hardwiring cable is connected. The hardwiring cable must be professionally installed to the vehicle by a trained mechanic.
* After the over-discharge event of vehicle battery is detected, the product will be cut power off, then the parking mode will be invalid.

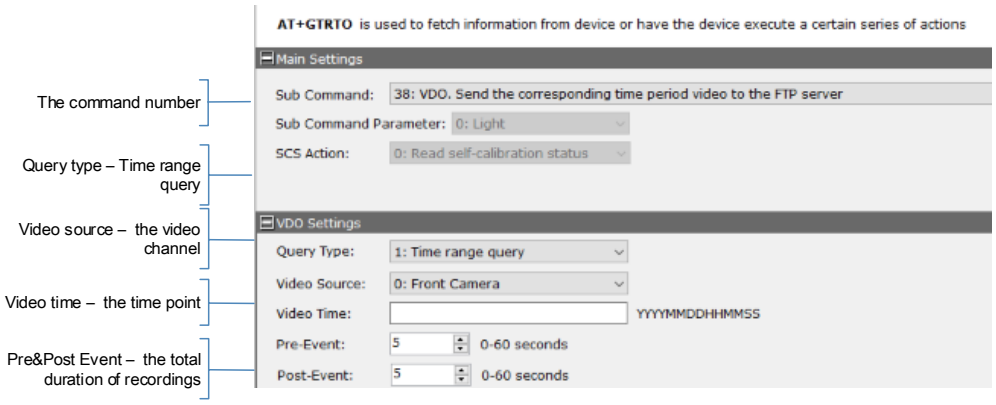
4.19. Downloading the recordings from product remotely

It offers the recordings retrieval feature to download the video footage from products remotely.

1. While you send the specified recording request, it will transfer it once the file exists.



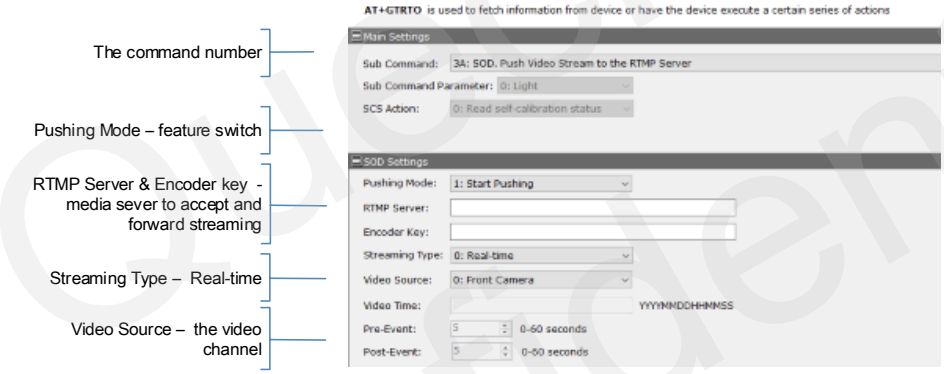
2. The product will generate the recordings instantly as the configured parameter, including the time-point and video duration.



*The product will report "failed" if there is no specified file found or generated.

4.20. Requesting live streaming

It can monitor live streaming from the front or interior views as long as the product is online. After sending request by network, you can see what is happening at the road and cabin while tracking it.



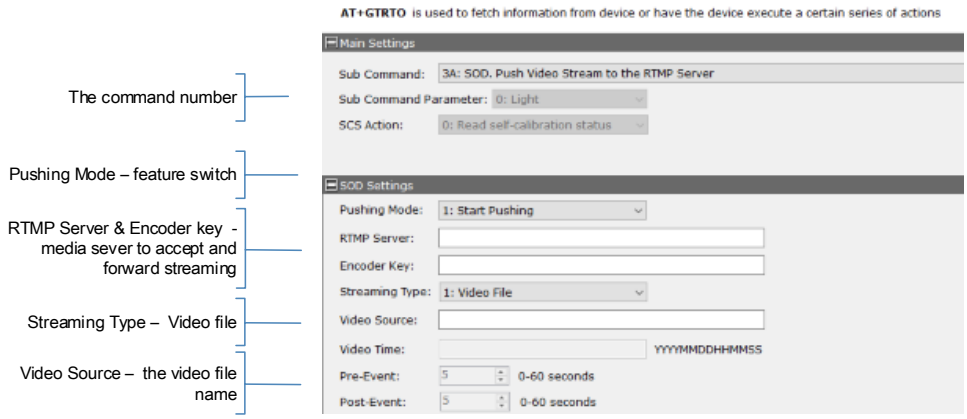
*The streaming is forwarded from the media server, please inquire the platform solution provider about the details

* Note to stop the streaming after live view, otherwise it will cost the cellular data traffic on an on.

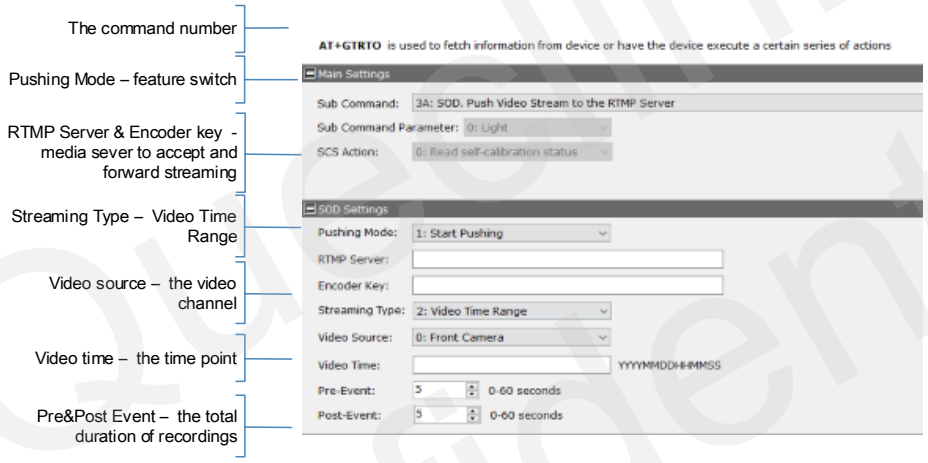
4.21. Requesting playback streaming

It can play the memory-stored videos before downloading.

1. Send the specified recording request, it will push it as streaming if the file exists.



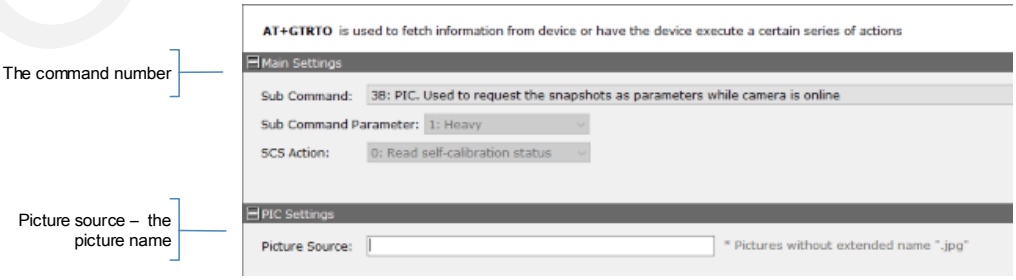
2. Request any video footage at any time point remotely as the configured parameters, including the time point and video duration.



4.22. Downloading pictures

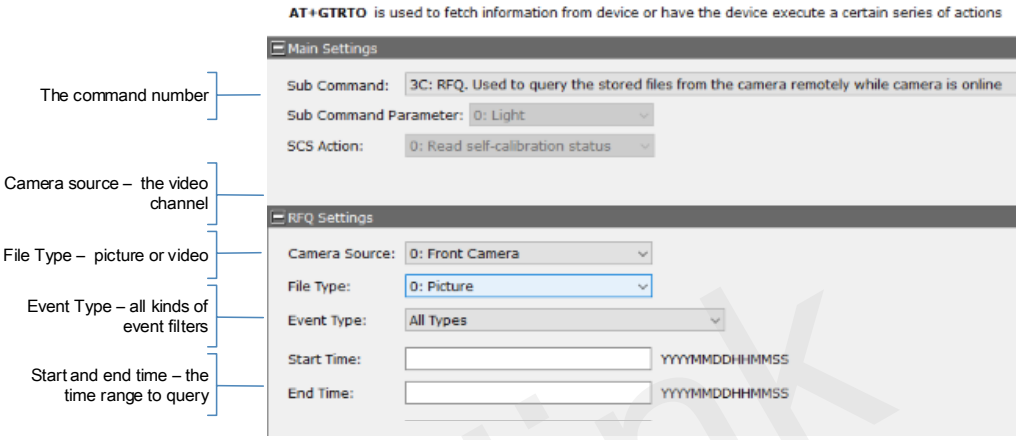
It can request the pictures from device and upload them to the file servers.

Send the specified picture request according the picture name.



4.23. Querying files

It can send back the name list of memory-stored media files to the telematic server after receiving the query command.



5. Manage the local storage

5.1. Read the TF card

The product only accepts the TF card what is running the FAT32 file system. All folders will be generated automatically after the TF card was mounted successfully. Follow the steps to operate the folders and files.

1) Power off the product and unplug the TF card.
2) Insert the TF card into card reader, and place it into the computer's USB port.
3) Open the TF card 's disk path, check the folder content.

* Insert the TF card into computer and format it. You may install the specified tools (e.g., Disk genius) to format it due to the latest windows 10 doesn't support that filesystem formatting.
*Format the TF card into MS-DOS(FAT) filesystem by "Disk Utility" tool if you are using Mac-OS'.
*We strongly recommend you format the TF card by QuCam mobile app for more reliable performance.
*It's better to format the TF card periodically (e.g., 1 month) to avoid the unknow storage exception.
*All data will be erased after formatting, please have a caution operation.

5.2. Folder definition

1) /queclink/bin

The folder stores the updating applications files, the files types show as below:

File type	Description
enc	MCU software
apk	Application firmware
zip	Platform firmware

*The files will be removed automatically from the TF card folder after updating successfully.

2) /queclink/config

The folder stores the configuration files what is generated after clicking "send all to device" button by Manage Tool. File format: CV100LG_MT_CONFIG_YYYYMMDD.txt.

Symbol	Description
YYYYMMDD	indicates year, month, and day

3) /queclink/event

The folder stores the related data of all events. File format: YYYYMMDD_hhmmss_tt.qdat, each file is generated and separated per event.

Symbol	Description
YYYYMMDD	indicates year, month, and day
hhmmss	indicates hour, minutes and second
tt	indicates event types

4) /queclink/track

The folder stores the GPS and G-sensor compositive data.

File format: YYYYMMDD_hhmmss.qsen, each file is generated per hour.

Symbol	Description
YYYYMMDD	indicates year, month, and day
hhmmss	indicates hour, minutes and second

5) /queclink/video

The folder stores all continuous and events recordings circularly.

File format: YYYYMMDD_hhmmss_tt_c.mp4, each file is generated per minute.

Symbol	Description
YYYYMMDD	indicates year, month, and day
hhmmss	indicates hour, minutes and second
tt	indicates event types
c	indicates video source

6) /queclink/protected

The folder stores all crucial events recordings circularly.

File format: YYYYMMDD_hhmmss_tt_c.mp4, each file is generated per minute. The storage space of “protected” is controlled by “Storage space assignment” feature. The more space preset, the longer saving time to avoid overwriting.

Symbol	Description
YYYYMMDD	indicates year, month, and day
hhmmss	indicates hour, minutes and second
tt	indicates event types
c	indicates video source

7) /queclink/pic

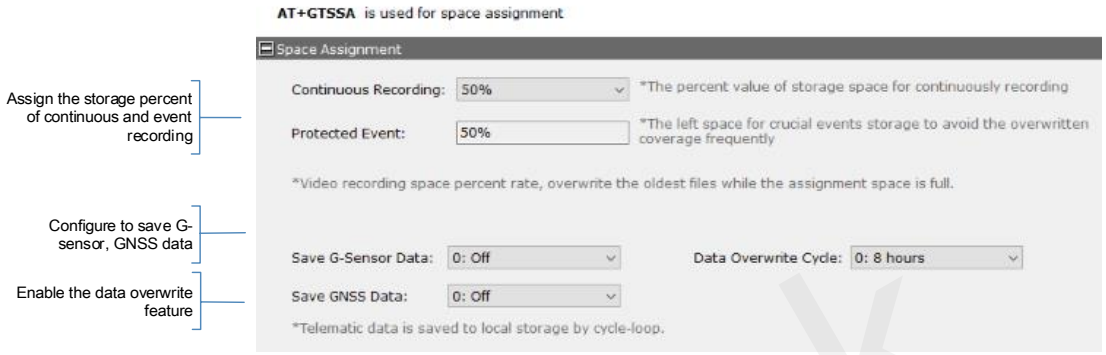
The folder stores all crucial events snapshots circularly.

File format: YYYYMMDD_hhmmss_tt_c.jpg, each file is generated per event.

Symbol	Description
YYYYMMDD	indicates year, month, and day
hhmmss	indicates hour, minutes and second
tt	indicates event types
c	indicates video source

5.3. Storage space assignment

The local storage is overwritten circularly, the oldest files will be removed automatically while the capacity is full. The product eliminates manual formatting on TF card, which greatly extends TF card life.



* It offers the storage space assignment feature to divide the whole local storage into "continuous" and "protected" sections as specified percent rate. The recordings of crucial events will be copied to "protected" section for avoiding the frequent overwritten operation.
* Enable the option to record the real-time GNSS and G-sensor data into local storage. Please inquiry the data format design document in order to analyze it.

6. Using QuCam mobile App

Queclink Mobile App is a management tool specifically designed for viewing and managing recorded videos and configure various product features on your smartphone.

Please download Mobile app by scanning the QR-CODE.

* Compatible with mobile phone that is running Android OS 5.0 or later.

Available @ Android OS

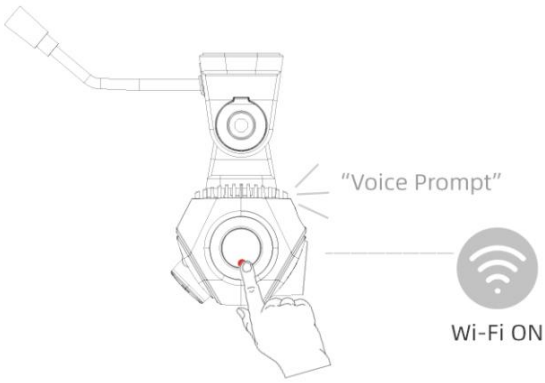
Scan the QR-Code to download

6.1. Connecting the product to your mobile phone

The instruction to show how to connect the product by WiFi AP mode.

1) Enable Wi-Fi AP hotspot

Turn on the Wi-Fi Feature of product by double click the function button at the side. It means the Wi-Fi is enable after the speaker sounds voice prompt. (After Double-click once again, Wi-Fi will be disable)



*The WiFi of product automatically enables the "AP mode" and keep waiting for connections.it will be closed if no connected client after 5 minutes.
*The WiFi of product may be staying "STA mode" if there is no dash camera hotspot found, please switch the working mode of your product to "AP mode" and enable the feature once again.

2) Join the Wi-Fi network

Connect the dash camera hotspot in the Wi-Fi setting. Enter correct Wi-Fi password to connect the dash camera.

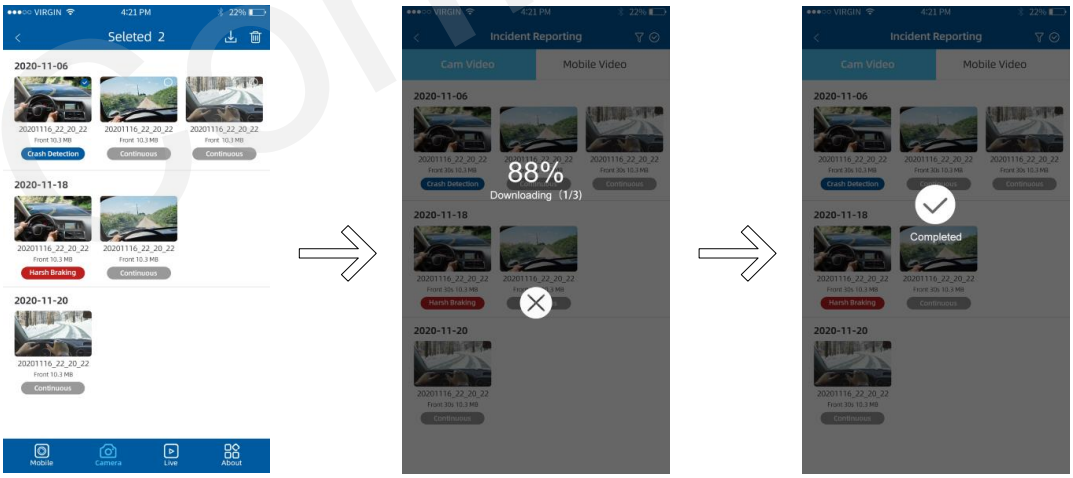
* The Wi-Fi name and password at AP mode is "queclink" and "12345678", please modify it by Manage Tool if necessary.

3) Connect the QuCam to the product

Launch Mobile App, follow the on-screen instructions to connect the product to your mobile phone.

6.2. Downloading the recorded videos

Follow the steps to download videos from the camera.

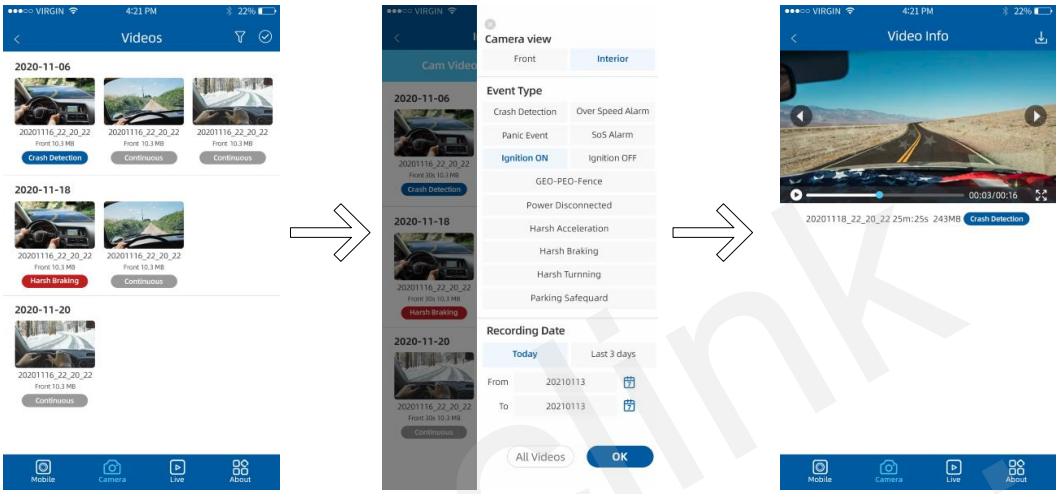


1) Tap the select button and check-boxes will appear next to each video, tap the videos that you wish to download and a tick will appear next to each selected video. You can tap the check-boxes

to deselect it.
2) QuCam will display the progress of your video downloads on screen after starting downloading.
3) Once videos have finished downloading, they will appear in the Mobile window.

6.3. Playing the recordings

The videos screen layout as follow:



Follow the steps to play recorded videos.

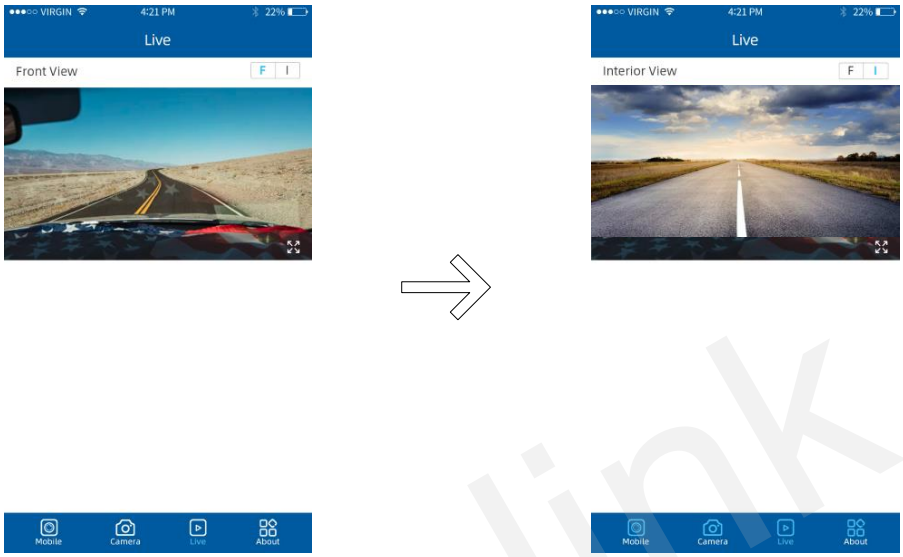
1) Open the Mobile window or Camera window, tap “filter” icon to open filter page.
2) Select the filter options according to “Front / Interior”, “Event Type”, “Recording Time” options
3) Select the desired videos to playback.

* Mobile: List the recorded videos download from the camera, QuCam plays the videos offline.

*Camera: List the recorded videos stored at the local TF card of camera. QuCam must connect the camera to play online.

6.4. Monitoring the live view

Follow the steps to preview the real-time videos.



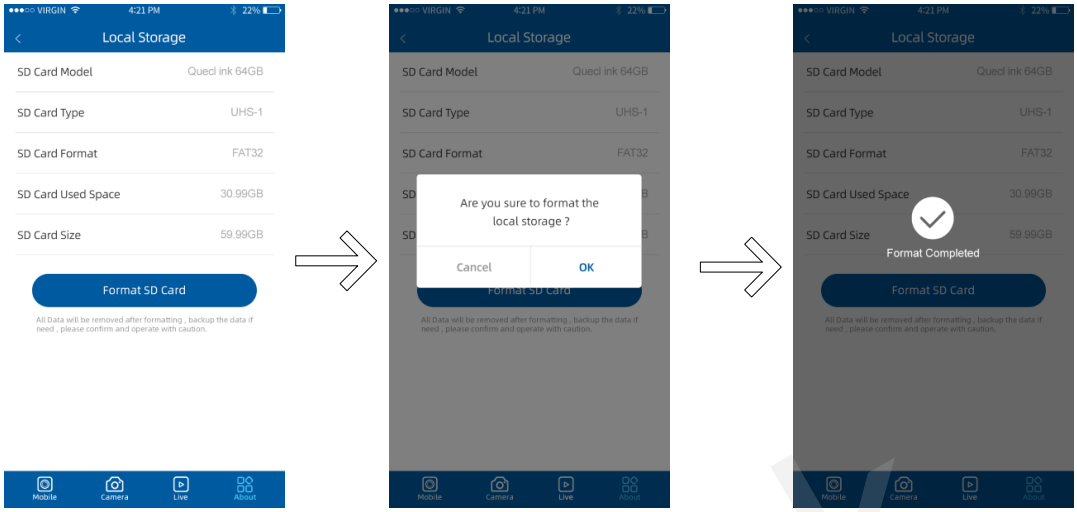
Open the Live window, tap “Front/Interior” button to switch the video source. Adjust the angle of front and interior for best view at first installation.

* While installing the front and interior facing camera, use the Live window to help you adjust your product in the most effective position.
* The recording will be paused while you open the live view.

6.5. Formatting the TF card

To clear your TF card or initialize the installation, please follow the steps to format the local storage.

1) Plug the TF card into the product
2) Power on the product
3) Connect the QuCam mobile app to the product
4) Open the Local Storage page, it shows the current status of TF card
5) Tap the “Format SD Card” button to start formatting
6) Confirm the REC indicator stays solid after formatting finished



* The product identifies the FAT32 filesystem of TF card restrictedly.
* The product sounds beep once formatting is started or completed.
* The REC indictor turns off during formatting and turns on after TF card is mounted again.

6.6. Connecting by IP/Port mode (for demonstration purpose)

The product affords the Point-to-Point connection while it is accessible to mobile phone directly.

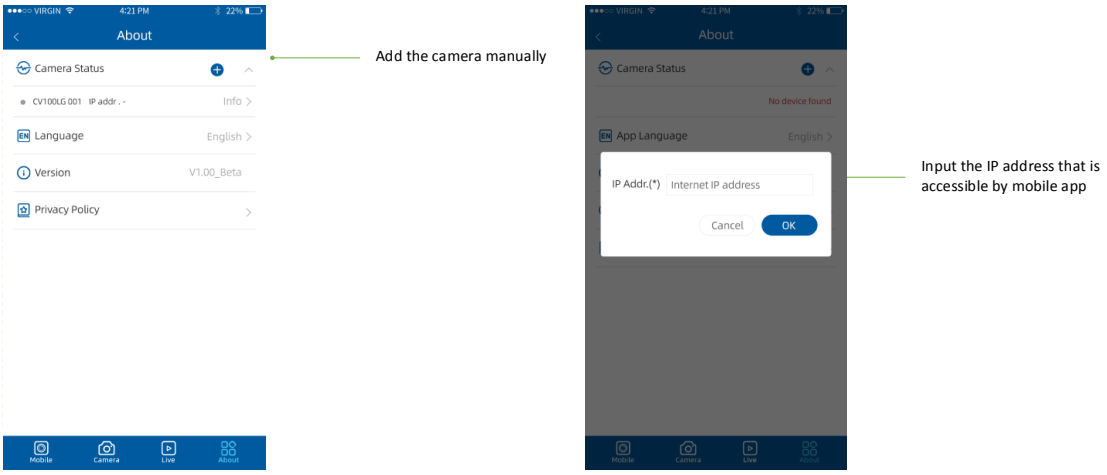
At the local network, the product and mobile phone connect into the same segment, input the IP and port into QuCam to connect.

While go through the internet, make sure the IP address of product is public type, input the public IP address and connect.

The steps show as below:

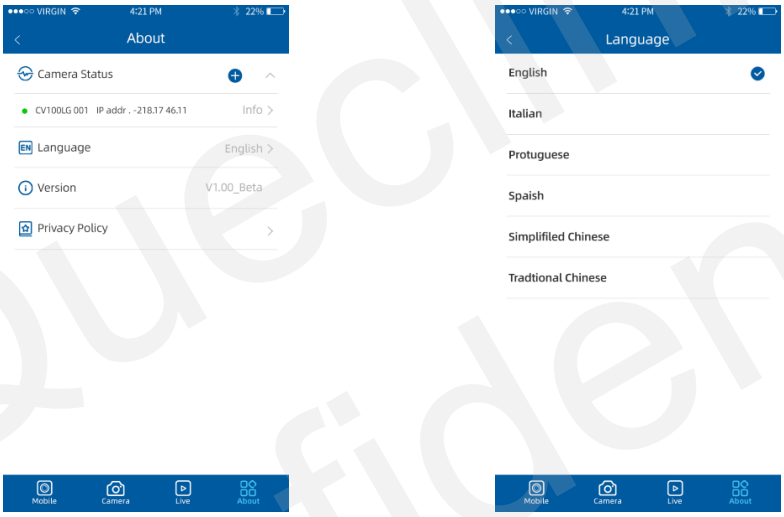
1) Open the App window and tap the Add button.
2) Input the reachable IP address and confirm.

* The default communication port is 2345, it cannot be modified.
* If there is no public IP address for the connection, the remote view is invalid at your scenes.



6.7. Querying information

Open the About window to show all camera and mobile app information.



1) Camera Status

List the connection status of product. Tap **info** button for further information.

a) Firmware version

Show the firmware version number

b) SSID

Show the hotspot name of product's Wi-Fi

c) Password

Show the password of product's Wi-Fi

d) IMEI

Show the IMEI number of 4G module

e) 4G Signal

Show the signal strength of cellular network

f) Local Storage

Show the capacity of local storage and provide the “formatting” feature

2) Language

The QuCam app provides multiple language options, English language default.

3) Version

Show the QuCam app version.

4) Privacy Policy

Display the related policies and disclaimer.

7. Updating the product

The continuous update enhances the product's features, operation or to increase stability. For optimal operation of the product, ensure that you keep your product up to date.

*Don't' recommend to downgrade all applications If not necessary, it may result the features exception.

7.1. Updating over OTA

You can update the product's application in batches. The product will download and updating after receiving the FOTA commands from server as schedules, follow the steps to upgrade the firmware.

7.1.1. Preparation before operations

1) MCU application "CV100_MCU_RxxAxxVxx.enc"

2) Firmware Application "CV100_MTK_RxxAxxVxx.apk"

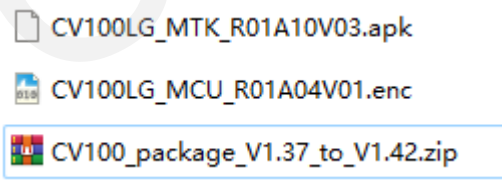
3) Platform package "CV100_package_Vx.xx_to_Vx.xx.zip" (Must be increment package)

4) Updating Tools

Item	Function
FOTA http server	It is named 'FotaTool V0.06' from Queclink.
FTP server (FileZilla recommended)	Open-source server downloaded from internet. E.g., FileZilla
Platform server	After the TCP socket established between server and CV100LG, it's used to trigger the updating process by typing the command remotely.

7.1.2. FOTA based on HTTP service

1) Copy the application file into software path '.\project\CV100LG\deltabin\'.

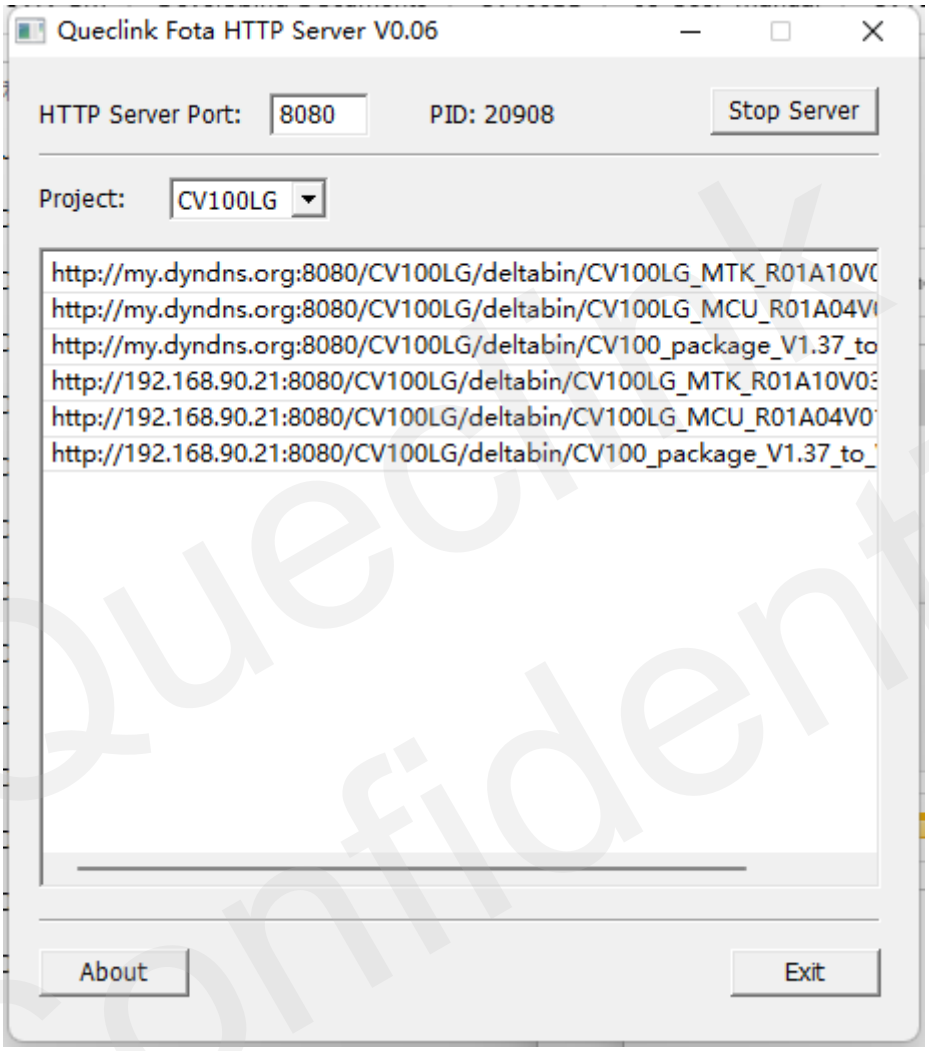


2) Open the configuration file path '.\ conf\svr.ini ', confirm the supported file type and FOTA service path.

Ext: .apk, .enc and .zip file type are added.
HeaderByDNS: The domain name to provide the FOTA service
HeaderByIP: The IP address to provide the FOTA service

3) Run the FOTA tool “wxFotaSvr.exe” as administrator.

4) Input the service port to start the HTTP server, switch to the folder of CV100LG project.



*All available links will be auto-generated and listed.

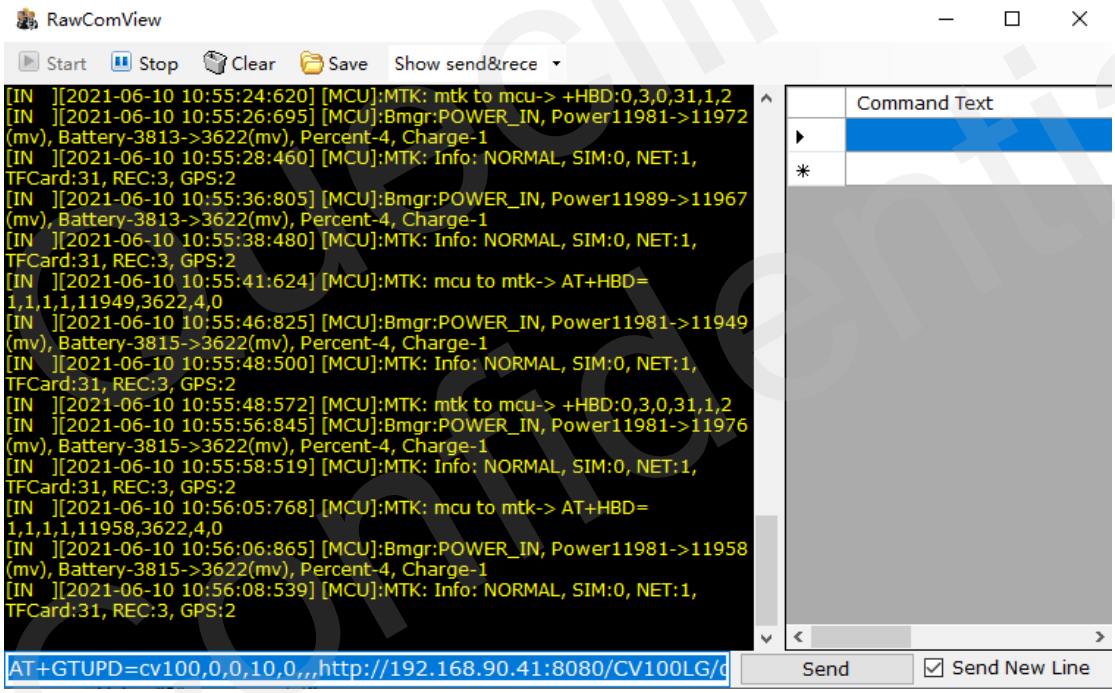
Copy the corresponding URL to add into ‘GTUPD’ command. For example:

AT+GTUPD=cv100,0,0,10,0,,,http://192.168.90.41:8080/CV100LG/deltabin/CV100LG_MCU_R01A02V01.enc,,1,,,,0001$
AT+GTUPD=cv100,0,0,10,0,,,http://192.168.90.41:8080/CV100LG/deltabin/CV100LG_MTK_R01A02V01.apk,,0,,,,0001$
AT+GTUPD=cv100,0,0,10,0,,,http://192.168.90.41:8080/CV100LG/deltabin/CV100_package_V1.37_to_V1.42.zip,,11,,,,0001$

Symbol #1 (red color): it indicates the transmission protocol.
Value "0" means HTTP

Symbol #2 (yellow color): it indicates the application type.
Value "0" means .apk file.
Value "1" means .enc file
Value"11" means .zip file
*Notice: the platform updating package is of "incremental" type, and the file name indicates the present version to target version. Please confirm it carefully before performing.

5) Send the GTUPD command by TCP socket to start the updating process



6) Monitor the report feedback on the server or debug window of Manage tool, the local Power indicator is fast flashing during updating. The updating is completed after hear the beep sound.

The "Status Code" of updating will be reported to display the process from starting to completing. The reference code changes as below:
Updating ". enc":110-210-211-310-311
Updating ". apk":100-200-201-300-301
Updating ".zip": 1110-2110-2111-3110-3111
*Query the document "CV100LG @Track Air Interface Firmware Update Protocol" to get more information

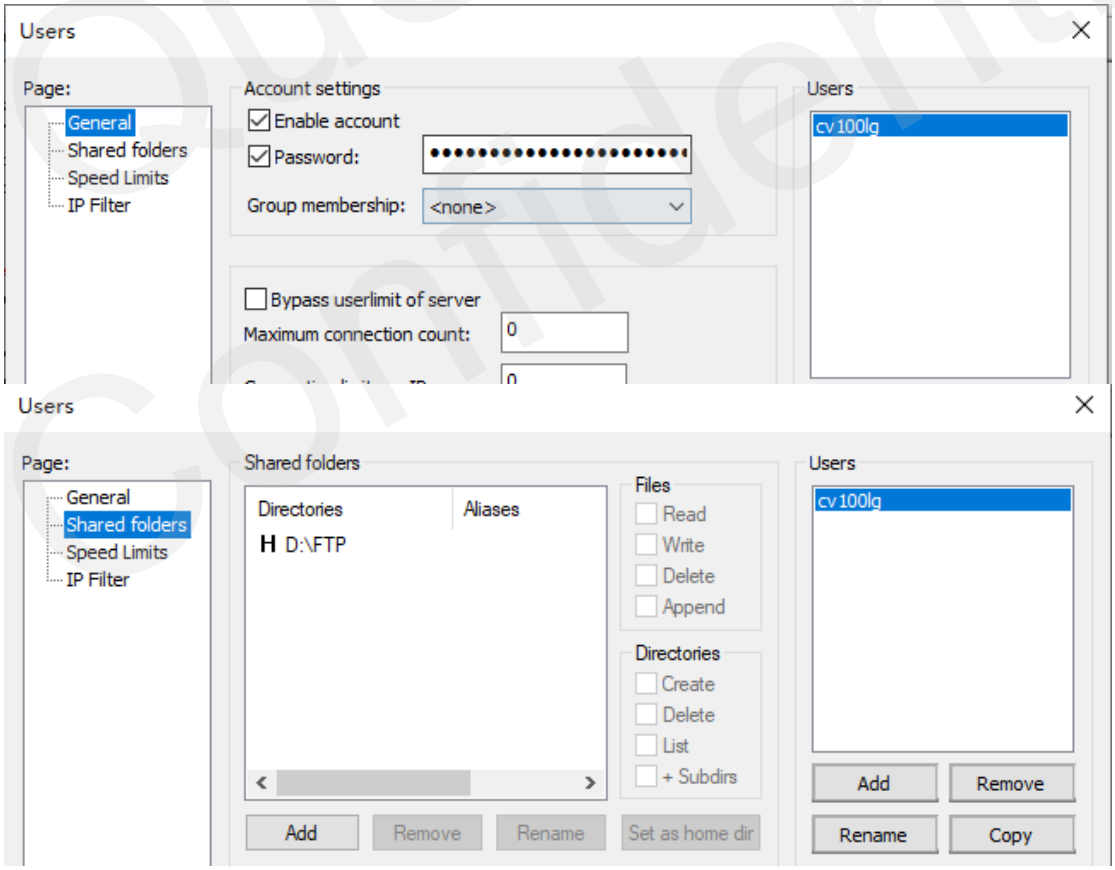
7) Double check the current version of applications.

Item	Result
Device Wake Up	Success
MCU Version	CV100LG_MCU_R01A04V01
Hardware Version	CV100_HWR103
Protocol Version	DF0208
Firmware Version	CV100_MTK_R01A10V03
Platform Version	V1.42
IMEI	868487004358867
Check Password	Success
Deivce Sleep	Success

7.1.3. FOTA based on FTP service

1) Run the FileZilla FTP server, create users and assign the root folder.

For example:
Account: cv100lg / cv100lg; Root folder: D:\FTP



2) Copy the application file into root folder ‘D:\FTP\DASHCAM\deltabin’.

CV100LG_MTK_R01A10V03.apk

CV100LG_MCU_R01A04V01.enc

CV100_package_V1.37_to_V1.42.zip

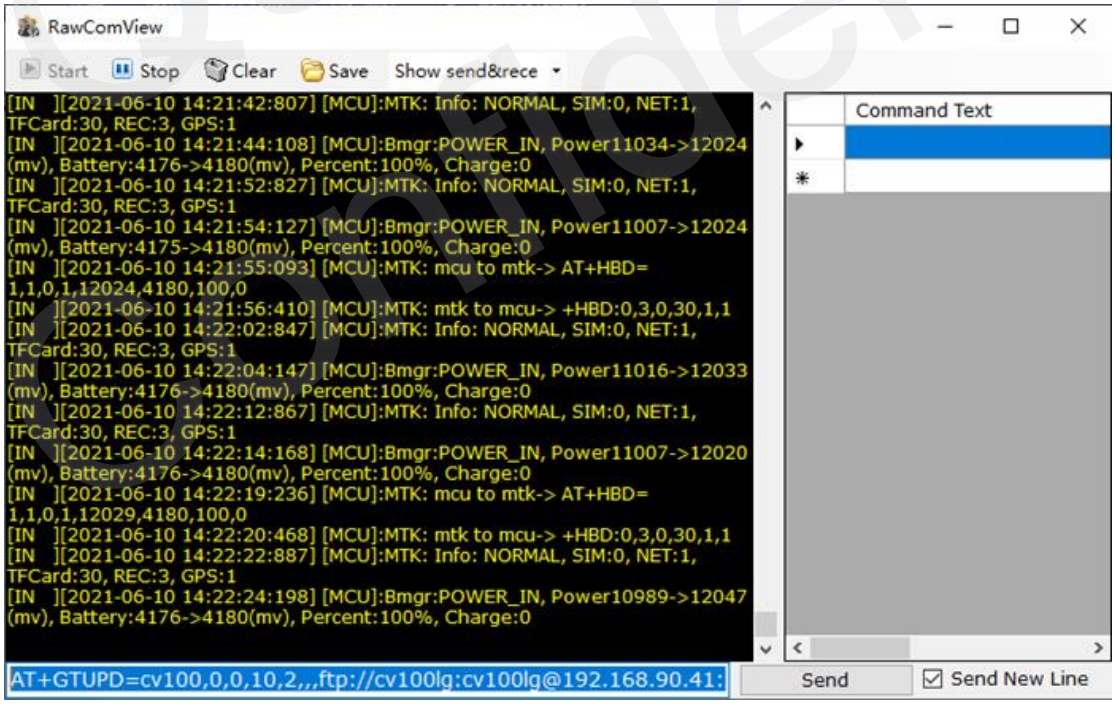
3) Copy the corresponding URL to add into 'GTUPD' command. For example:

AT+GTUPD=cv100,0,0,10,2,,,ftp://cv100lg:cv100lg@192.168.90.41:21/DASHCAM/deltabin/CV100LG_MCU_R01A02V01.enc,,1,,,,0001$
AT+GTUPD=cv100,0,0,10,2,,,ftp://cv100lg:cv100lg@192.168:90.41:21/DASHCAM/deltabin/CV100LG_MTK_R01A02V01.apk,,0,,,,0001
AT+GTUPD=cv100,0,0,10,2,,,ftp://cv100lg:cv100lg@192.168:90.41:21/DASHCAM/deltabin/CV100_package_V1.37_to_V1.42.zip,,11,,,,0001

Symbol #1 (red color): it indicates the transmission protocol.
Value "2" means FTP

Symbol #2 (yellow color): it indicates the application type.
Value "0" means .apk file.
Value "1" means .enc file
Value"11" means .zip file
*Notice: the platform updating package is of "incremental type", and the file name indicates the present version to target version. Please operate it carefully.

4) Send the GTUPD command by TCP socket to start the updating process. Confirm the report feedback on the server or local Power indicator (fast flashing).



5) Monitor the report feedback on the server or debug window of Manage tool, the local Power indicator is fast flashing during updating. The updating is completed after hear the beep sound.

The "Status Code" of updating will be reported to display the process from starting to completing. The reference code changes as below:
Updating ". enc":110-210-211-310-311
Updating ". apk":100-200-201-300-301
Updating ".zip": 1110-2110-2111-3110-3111
*Query the document "CV100LG @Track Air Interface Firmware Update Protocol" to get more information

6) Double check the current version of applications.

Item	Result
Device Wake Up	Success
MCU Version	CV100LG_MCU_R01A04V01
Hardware Version	CV100_HWR103
Protocol Version	DF0208
Firmware Version	CV100_MTK_R01A10V03
Platform Version	V1.42
IMEI	868487004358867
Check Password	Success
Deivce Sleep	Success

7.2. Updating over TF Card

The way is used to upgrade MCU software, application firmware and platform firmware by external TF card. The product only identifies the **FAT32** file system, please confirm and format the card at firstly.

7.2.1. Preparation before operations

1) TF Card, SDHC or SDXC, FAT32, w/ card reader
2) MCU application "CV100_MCU_RxxAxxVxx.enc"
3) Application firmware "CV100_MTK_RxxAxxVxx.apk"
4) Platform package "CV100_package_Vx.xx_to_Vx.xx.zip" (Supports full package and incremental package)

Optional:

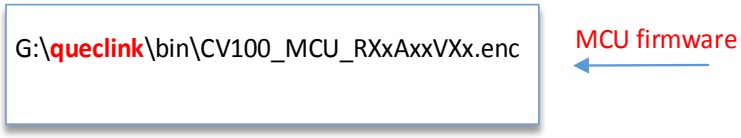
1) Queclink_CV100LG_Manage_Tool
2) Queclink Mobile APP "CV100LG_Mobile_RxxAxxVx"

*The default updating path is "queclink/bin", the path folder will auto be generated by the product if the card has been used to record. Please create the folder path if the card is brand-new.

7.2.2. MCU updating

1) Confirm the current firmware version by Manage tool if need.

2) Copy the CV100_MCU_RxxAxxVxx.enc file into card path “queclink/bin”.



3) Plug the card into product, confirm the power indicator status while updating. (The indicator is starting fast blinking)
4) The product will auto reboot and load the new firmware after updating finished.
5) Run Manage tool to login the product and check the version information from the bottom of software.

Item	Result
Device Wake Up	Success
MCU Version	CV100LG_MCU_R01A04V01
Hardware Version	CV100_HWR103
Protocol Version	DF0208
Firmware Version	CV100_MTK_R01A10V03
Platform Version	V1.42
IMEI	868487004358867
Check Password	Success
Deivce Sleep	Success

7.2.3. Firmware updating

1) Confirm the current application version by mobile app.
2) Copy the CV100_MTK_RxxAxxVxx.apk file into card path “queclink/bin”.

3) Plug the card into product, confirm the power indicator status while updating. (The indicator is starting fast blinking)
4) The product will auto reboot and load the new application after updating finished.
5) Run Manage tool to login the product and check the version information from the bottom of software.

Item	Result
Device Wake Up	Success
MCU Version	CV100LG_MCU_R01A04V01
Hardware Version	CV100_HWR103
Protocol Version	DF0208
Firmware Version	CV100_MTK_R01A10V03
Platform Version	V1.42
IMEI	868487004358867
Check Password	Success
Deivce Sleep	Success

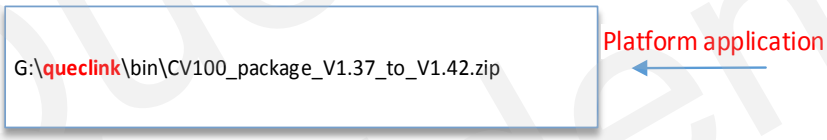
6) Run QuCam mobile app to query the version information from the “Camera info” page.

7.2.4. Platform updating

Platform isn’t updated frequently generally. Before updating, you must assure the present version and target version.

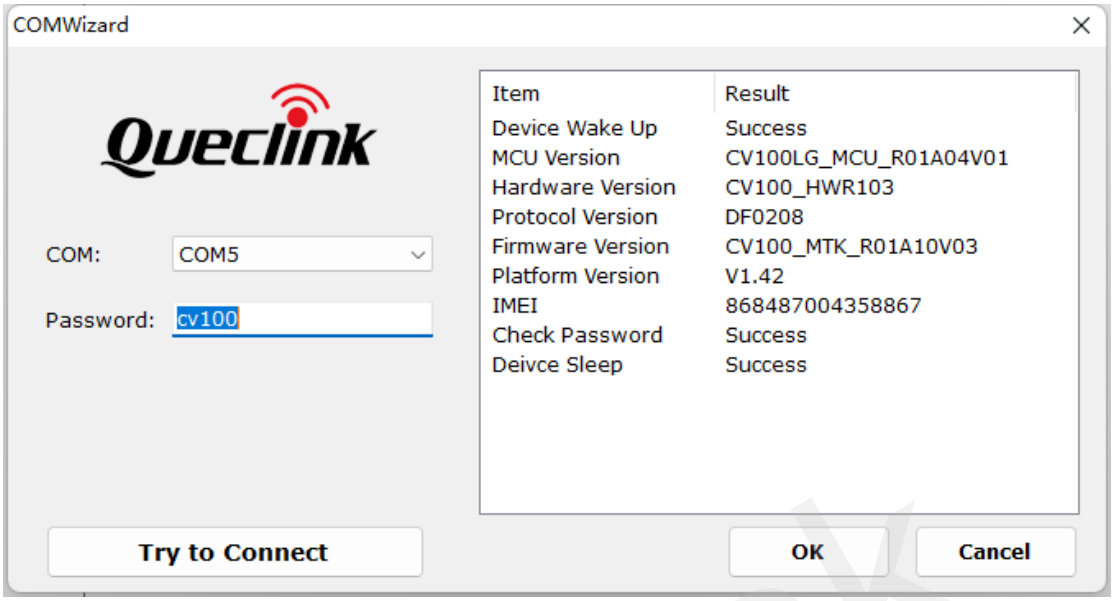
The file name of updating file indicates it.

1) Confirm the current firmware version by Manage tool if need.
2) Copy the CV100_MTK_RxxAxxVxx.apk file into card path “queclink/bin”.



For example, the platform would be updated from V1.37 (present version) to V1.42 (target version), the updating file must be named “CV100_package_V1.37 _to_V1.42.zip”.

3) Plug the card into product, confirm the PWR indicator status while updating. (The indicator is starting fast blinking)
4) The product will auto reboot and load the new application after updating finished.
5) Run Manage tool to login the product and check the version information from the bottom of software.



*Don't remove the power supply while updating, it probably causes a long time to update the platform application.

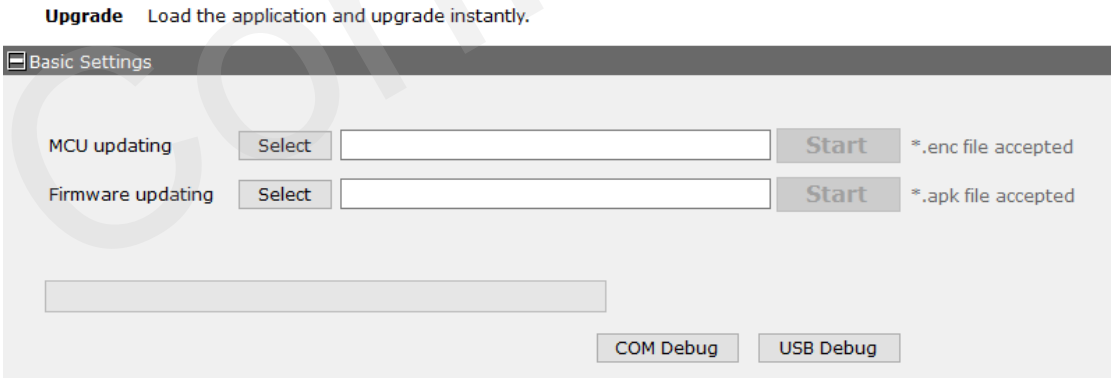
7.3. Updating over debug cable

7.3.1. Preparation before operations

1) MCU application "CV100_MCU_RxxAxxVxx.enc"
2) Firmware Application "CV100_MTK_RxxAxxVxx.apk"
3) Manage Tool V2.0 or above
4) Debug cable

7.3.2. Loading the application

1) Connect the product with debug PC (refer to section 3.1).
2) Open the "Update" window of manage tool.
3) Import the application and click Start button to load and upgrade instantly.



4) Check the version information from the bottom of software.

Item	Result
Device Wake Up	Success
MCU Version	CV100LG_MCU_R01A04V01
Hardware Version	CV100_HWR103
Protocol Version	DF0208
Firmware Version	CV100_MTK_R01A10V03
Platform Version	V1.42
IMEI	868487004358867
Check Password	Success
Deivce Sleep	Success

*Confirm the updating files are latest and newest.
*Confirm the file type for MCU and firmware, make sure the application path is proper to load.
*Update the MCU and firmware one by one, the product cannot load both simultaneously.
*DO NOT power off or reboot the product in updating process.

8. Maintenance

8.1. Reboot the product

8.1.1. Click the button

Follow the steps to reboot the product by hardware button.

1) Ensure that the product is turned on.
2) Short-click the reboot button by ejection pin until all LED indicator turns off and on.
3) You hear the beep sound after the rebooting is completed, all LED indicators light on generally.

8.1.2. Send the command

The product provides the remote operation command line to reboot it by serial communication or network transmission.

Query the Queclink CV100LG @Track Protocol for more information about “RTO sub command: 3”.

*The response to the rebooting request may be delayed due to the device needs finish processing unfinished tasks first.

8.2. Reset the parameters

You may reset the parameters of product for recover some unknow troubles.

Query the Queclink CV100LG @track protocol for more information about “RTO sub command: 4” section.

8.3. Power off the product

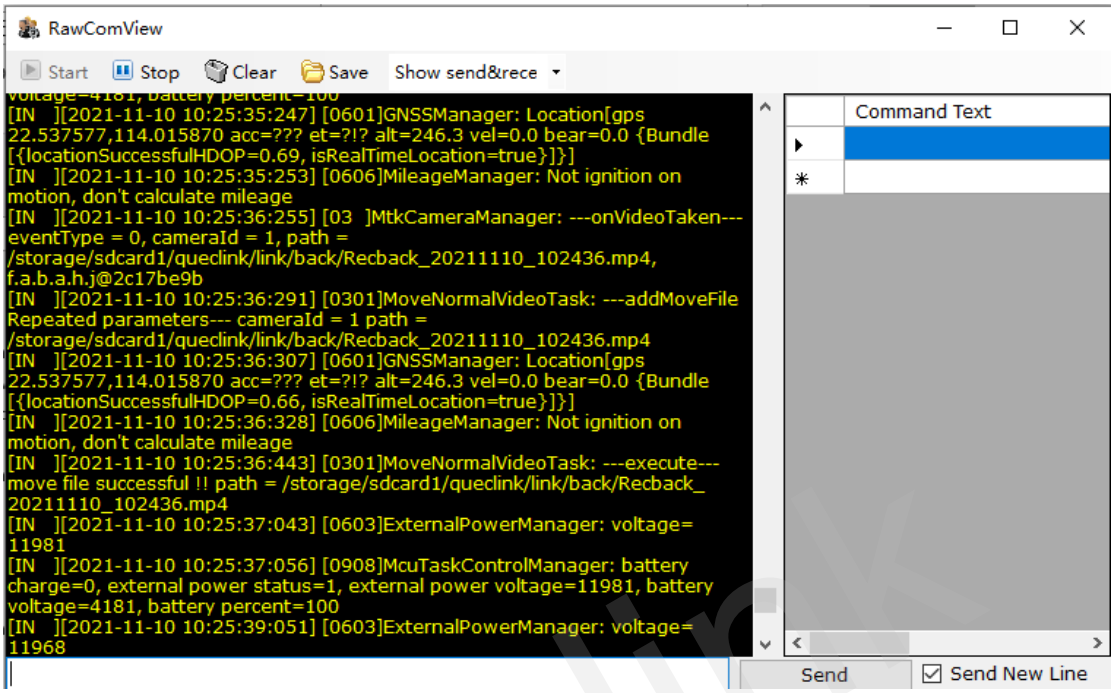
In order to saving the battery power, for example the purpose of long-time shipment or vehicle idle, we must power off the product. You can disable the built-in battery feature and unplug the external power supply to power off the product.

8.4. Print the logs

The log is used for monitoring the running status and analyzing the issues effectively. We can copy and send the printed log back to manufacturer to speed the improvement and optimization of product.

We can request the logs out from device by network:

1) Assure the device is configured to a file storage server (e.g., FTP server).
2) Send the command “RTO-PSL” to device.
3) The device will pack and transfer the log files to the file storage server.



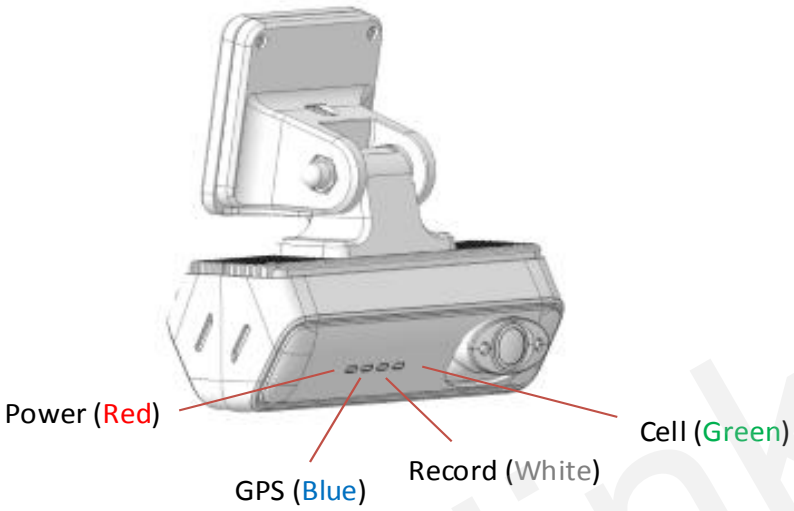
*Please inquiry the detailed information of logs filter with your suppliers.

9. Specification

Part	Item	Specification
Connectivity	Cellular	LTE CAT.4 / WCDMA / GSM
	WiFi	802.11 b/g/n 2.4GHz
	Bluetooth	BLE 4.1
	GNSS	GPS, Glonass
Camera	Image Sensor	Dual crystal-clear HD CMOS
	Lens	Front: 158° FOV 6-layer glass/Interior: 149° FOV 4-layers glass
	Video Resolution	1080P@front camera/720P@interior camera
	On-screen Display	Date & time, vehicle speed, coordinates, G-sensor raw data
	Microphone	Built-in
	Speaker	Built-in
Feature	Event trigger	Crash detection, Harsh Driving Behavior. Over Speed Alarm, Geo-fence/Peo-fence, Over-discharge Protection, Emergency Call, ignition ON/OFF, Main power ON/OFF, Parking Safeguard.
	On-demand Video	Playback and live view by IP network
	GPS tracking	Detect the coordinate position Detect the vehicle start or stop status Detect the vehicle idle status
	File Transmission	Upload videos and pictures to file server by IP network
	Time Synchronization	NTP/GPS/manual adjustment, daylight-saving
	Updating & Configuration	OTA or local maintenance

	Dedicated Mobile App	QuCam with features for free
Interface	Slot	USB Type-C, TF Slot, Nano SIM Slot
	Output	Open drain, software-defined feature
	Connector Type	4-pin connector
	Multi-functional Button	SOS Alarm, Wi-Fi switch, Panic alarm
	Indicators	4 single-color LED indicators named CELL, GPS, REC, PWR
	Reboot button	Press the reset button by ejection pin to reboot the product
General	Dimensions	127.77mm(L) x 53.93mm(W) x 106.69mm(H)
	Weight	270g
	Backup Battery	Rechargeable 470mAh Li-polymer
	Power Input	External power supply, voltage range 8V to 32V DC, 2Amp fuse protection for both ACC and battery lines
	Mount	3M adhesive tape, windshield glass installation
	IMU Sensor	3 axis accelerometer + 3 axis gyroscope

10. LED Description



Status	Power (Red)	GPS (Blue)	Record (White)	Cell (Green)
ON	Power on or sleep	GPS fix normal	Record normal	Internet connection normal
OFF	Power off	Not defined	Record is stopped	Not defined
Fast Blinking	.enc file is updating SOS alarm is triggering	GPS is fixing	Event trigger record SOS alarm is triggered	Connecting the internet
Slow Blinking	Low power of built-in battery	GPS fix abnormal	Record abnormal	Internet connection abnormal

11. TF card selection

	Continuous Recording	Event Recording
Folder	/queclink/video	/queclink/video & /queclink/protected
File Length	1 minute	30 seconds (default, configurable)
Definition	Record while ignition on and driving	Record while events are triggered

What's the bitrate difference of image quality? (For reference only)

Image Quality	30fps + 15fps (kbps)	24fps + 24fps (kbps)	15fps + 15fps (kbps)
High	12000 + 3600	10000 + 4600	8000 + 3600
Medium	10000 + 2700	8300 + 3700	6000 + 2800
Low	8200 + 1800	6200 + 2800	4100 + 1800

Please use a memory card with a higher storage capacity for longer recording time. The 64GB and 128GB capacity of cards are recommended for the driving trips one day. The relationship (estimated) of the framerate, file size and recording time shows as below:

High Quality

Frame Rate (Front + Interior)	File Size (Front + Interior)	One Hour	32GB TF Card	64GB TF Card	128GB TF Card
30fps + 15fps	89MB + 27MB	6.8 GB	4.7 Hrs.	9.4 Hrs.	18.8 Hrs.
24fps + 24fps	75MB + 34MB	6.4 GB	5.0 Hrs.	10.0 Hrs.	20.0 Hrs.
15fps + 15fps	60MB + 27MB	5.1 GB	6.3 Hrs.	12.6 Hrs.	25.1 Hrs.

Medium Quality

Frame Rate (Front + Interior)	File Size (Front + Interior)	One Hour	32GB TF Card	64GB TF Card	128GB TF Card

30fps + 15fps	74MB + 21MB	5.6 GB	5.8 Hrs.	11.5 Hrs.	23.0 Hrs.
24fps + 24fps	60MB + 27MB	5.0 GB	6.3 Hrs.	12.6 Hrs.	25.1 Hrs.
15fps + 15fps	46MB + 21MB	3.9 GB	8.2 Hrs.	16.3 Hrs.	32.6 Hrs.

Low Quality

Frame Rate (Front + Interior)	File Size (Front + Interior)	One Hour	32GB TF Card	64GB TF Card	128GB TF Card
30fps + 15fps	59MB + 14MB	4.3 GB	7.5 Hrs.	15.0 Hrs.	30.0 Hrs.
24fps + 24fps	46MB + 21MB	3.9 GB	8.2 Hrs.	16.3 Hrs.	32.6 Hrs.
15fps + 15fps	31MB + 14MB	2.6 GB	12.1 Hrs.	24.3 Hrs.	48.6 Hrs.

*The file size is relative with many factors, such as day/night, frame rate, image quality and so on.
*Not all capacity of TF card is used to record or snap, the product allocates a part of space to store the additional necessary files. (The maximum supported capacity is 128GB)
*The continuous recording must be enabled. Otherwise, event recordings won't be generated.

What kinds speed of TF card should be used?

We strongly suggest you use high-quality with high-speed class card, such as the **extreme and endurance series** of SanDisk, Samsung, Transcend or Toshiba. Purchase them from reliable manufacturer or reputable vendors. The list below showing the card types we recommend:

Min. Sequential Write Speed	Speed Class	UHS Speed Class	Video Speed Class	Choose or not
90MB/s			V90	YES
60MB/s			V60	YES
30MB/s		U3	V30	YES
10MB/s	C10	U1	V10	Min. requirement

6MB/s	C6		V6	Can't work correctly
4MB/s	C4			Can't work correctly
2MB/s	C2			Can't work correctly

*It's better to format the TF card at least once every 6 months.
*Replace the TF card periodically if it shows instability after long-term running.
*Turn off the product while the vehicle isn't in use to prevent it recording invalidly.

12. Troubleshooting

The mount will not stay in place upon my windshield	Ensure that the red protective cover (plastic film) has been removed from the mount pad. Make sure that the glass is smooth and clean. Press the mount firmly to the glass ensuring that there is 100% contact with the glass. This can easily be seen from outside the windscreen, as contact area of the pad turns a darker color. If the mount pad has lost its sticky qualities, change the pad for the spare item contained within the box
Cannot power on the product	Make sure the power cable (Battery +, ACC_IN, GND) is connected to the vehicle's fuse box properly. Check the vehicle's battery level. Check the over-discharge settings of the product. Check the fuse of Battery+ and ACC_IN cables, if it's blown, replace it with same type (2amp).
Cannot receive GPS signal and locate the position	The GPS signal may not be received in out-of-service areas, or if the product is located between tall buildings. Also, GPS signal reception may not be available during storms or heavy rain. Try again on a clear day at a location that is known to have a good GPS reception. It may take up to 3-5 minutes until GPS reception is established.
The Battery will not charge	Ensure the product is connected to a reliable power source and that the supplied Power Cable is being used. Confirm the built-in battery is plugged.
There is only a small amount of video footage stored on my TF card	The storage space is not enough to record continuously for a long time as desired because of the limited capacity, please replace it with larger capacity TF card, MAX.128GB
I cannot record videos	The SD card has been formatted in another device and the Cluster Size is not compatible. There may also be an error on the card. Use the Setup option within the APP to re-format the SD card from the product. Ensure that the SD card is a Class10 type SD card of 32-128GB or above
Video files cannot be played	The recorded videos are stored as mp4 video files. Ensure that the video player installed on your PC supports the playback of mp4 video files.
Video Image is blurred	Remove the protective lens cover and check that the product field of view does NOT include any painted section of the windscreen, clean the lens and the windscreen. Check the installation location of the front or interior camera, turn on the product, and then adjust the camera's viewing angle.
Video file playback is jumpy	Re-format the SD card to remove non-contiguous files. For best recording use a quality branded Class 10 SD card of 32 to 128GB recommended size. PC may not be sufficient for the playback task, try a different PC.
The sound is not synchronized with video during playback	Update your player to latest one for better Codec feature.
Video has no sound	Ensure that "Record Audio" setting is turned ON within the

	Setup menu of the product.
My Mobile Device will not connect to my product	Please ensure that you have configured the product's Wi-Fi AP Mode. Double-click the function button to turn hotspots on.
The QuCam mobile app will not run properly	Please uninstall the QuCam mobile app and re-download again.
When I run the QuCam mobile app I get a message saying 'No WiFi CAM Connection Found"	Ensure that the product is working in Wi-Fi AP Mode and that your mobile device has connected to the product's Wi-Fi network.
When I try to play back a file from my product by Wi-Fi mode, I cannot get the video view	Please restart your mobile device and reconnect to the product's Wi-Fi network, then re-open the QuCam mobile app. Please re-fresh the video thumbnails and select the desired video to playback again.
I have forgotten my password for the Wi-Fi connection	Open the Wi-Fi setting to re-configure the parameters.
Card full and card error message	Is a branded card that is compatible with loop recording being used? This issue can occur if a counterfeit, slow or unbranded SD card is being used.
The CELL indicator keeps flashing quickly	Check the signal strength by mobile app, move the product towards the better open place Confirm with ISP that the SIM card is in service. Confirm the APN settings with correct parameters.
Back-end server cannot receive any reports from product	Make sure the product is accessible to the internet. Make sure the report server is running well. Make sure the report server parameters are configured properly.
Unknown and unsolved issues	Reset the product to the Default Settings within the Setup Menu and try again

13. Warranty

This product is supplied with 1-year warranty. The warranty excludes product 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.

Before contacting your supplier, please back up all important data stored in the TF card. The data in the TF card may be deleted during repair. Every product requested for repair is regarded as a device that has had its data backed up. The after-sale service does not back up your data. Queclink is not responsible for any data loss.