



CV5000 Series User Manual

Multiple Channels AI-Powered Connected Dash Camera

Version: 1.00



Driving Smarter IoT

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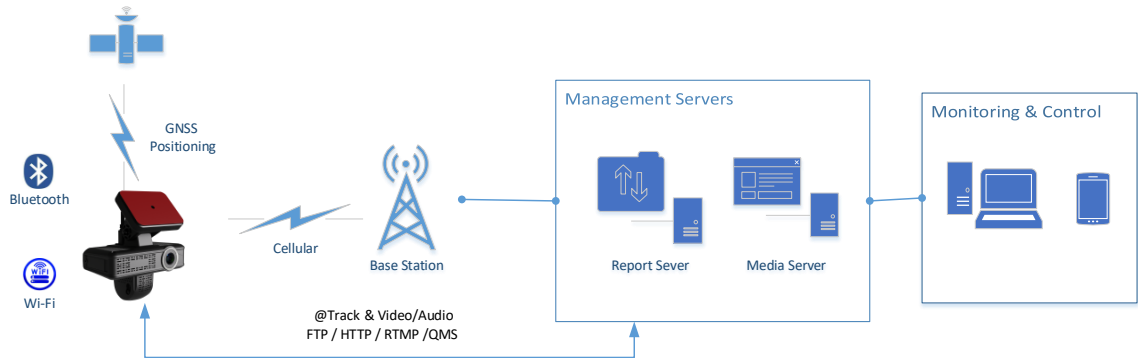
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0. Revision history

Revision	Date	Author	Description of change
1.00	2025-06-27	Gavin Jiang	Draft version

1. Introduction

CV5000 Series Dashcam, a perfect technology inside for commercial vehicles. With the art of state video processors, the high precious object recognition algorithm can run over driving safety and built-in Wi-Fi and Bluetooth modules, it allows easy connectivity with external BLE sensor and control via the dedicated app. it support dual-TF cards for mor flexible recording storage with a long time running. It is suitable for applications such as insurance claim negotiations, driver coaching, passenger compartment monitoring and accident reporting.



1.1. Reference

Table 1. Reference

SN	Document name	Remark
[1]	CV5000 @Track Air Interface Firmware Update Protocol	The air protocol interface between CV5000 and backend server.
[2]	CV5000 @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
Glomass	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
ADAS	Advanced Driver Assistance System
DMS	Driver Monitoring System
AHD	Analog High Definition
ADAS	Advanced Driver Assistance System
DMS	Driver Monitoring System
BSD	Blind Spot Detection
FR	Facial Recognition

2. Product overview

2.1. Sample Package List



CV5000 Unit



In-cab View
Camera



Bracket Base w/
3M Tape



Y-Type Video
Input Cable



Digital I/O Cable



Hardwired
Power Cable



Wrench

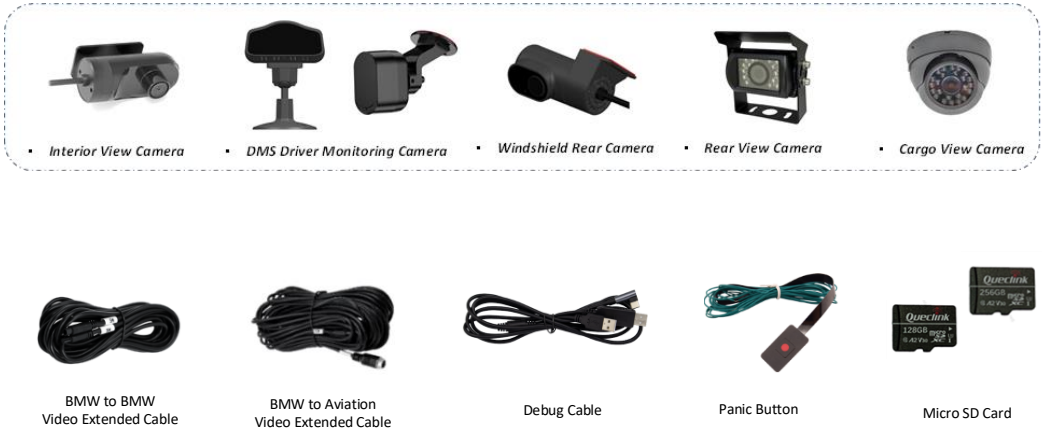


Convert
Cable

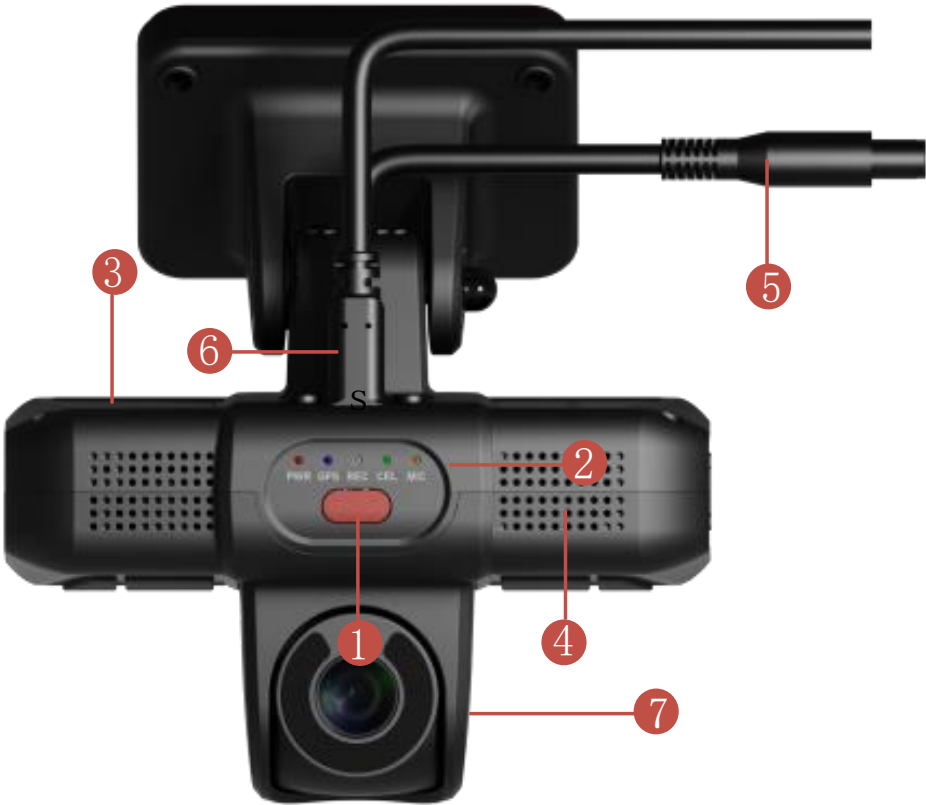


OBD Power
Cable

2.2. Accessories



2.3. Rear view



Number	Definition	Feature
1	Multi-function Button	SOS alarm, Wi-Fi switch, Panic alarm
2	LED Indicator	Indicate the working states

3	Microphone	Pick up audio around
4	Speaker	Virtual voice alerts
5	Main Cable Outlet	Connect the function cable
6	Y-Type Video Input Cable Outlet	Connect the extended 2 channel cameras
7	In-cab View Camera	Capture the cabin view (Removeable)

2.4. Front view



Number	Definition	Feature
1	Front facing Camera	Capture the Road view
2	In-cab View Camera	Capture the cabin view (Removeable)
3	Brand Logo	Customizable
4	Bracket Shaft	Adjust the camera facing view

5	Bracket Base	With adhesive pad to install the unit over windshield
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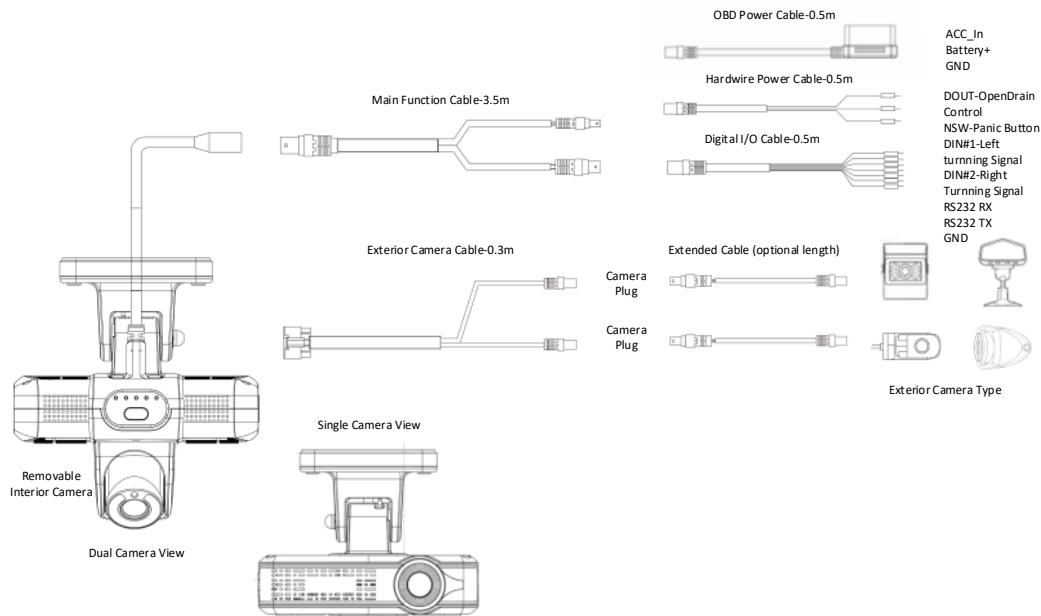
2.5. Interface view



Number	Definition	Feature
1	Tamper-Resistant Cover	Prevent the SIM & TF cards from theft
2	USB-C Slot	For debugging and data communication
3	TF Card Slot #1	For TF card #1
4	TF Card Slot #2	For TF card #2
5	SIM Card Slot	For nano SIM
6	Reboot Button	Click to reboot the device
7	Cover Detection Switch	Detect the cover opened and closed status

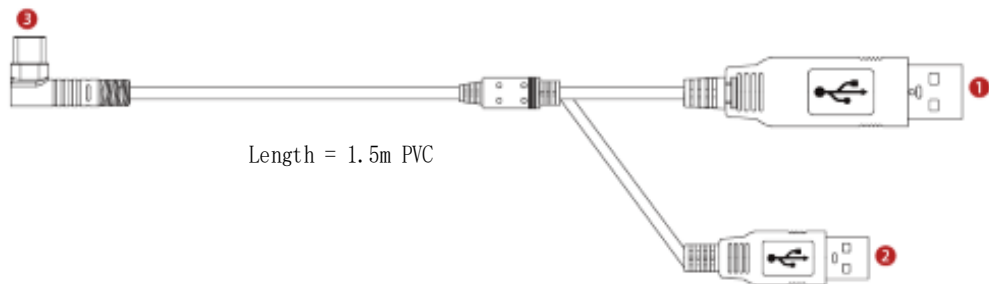
2.6. Connection Diagram

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



2.7. Debug cable (Accessory)

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.



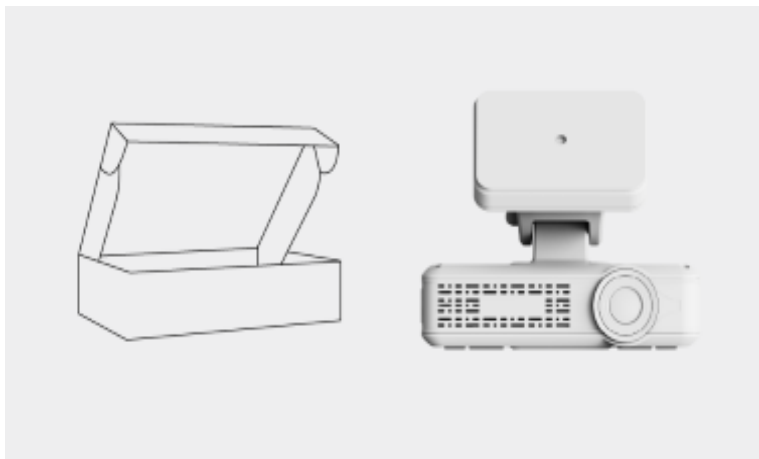
Number	Definition	Feature
1	USB_COM	For parameters configuration and MCU updating
2	USB_ADB	For main firmware updating
3	Type-C (L type)	Connect to the debug port of dashcam

3. In-vehicle installation

3.1. Configuring the parameters

Follow the steps to setup the dashcam.

1. Take out the dashcam from the package box.



2. Unscrew and Open the tamper-resistant cover.

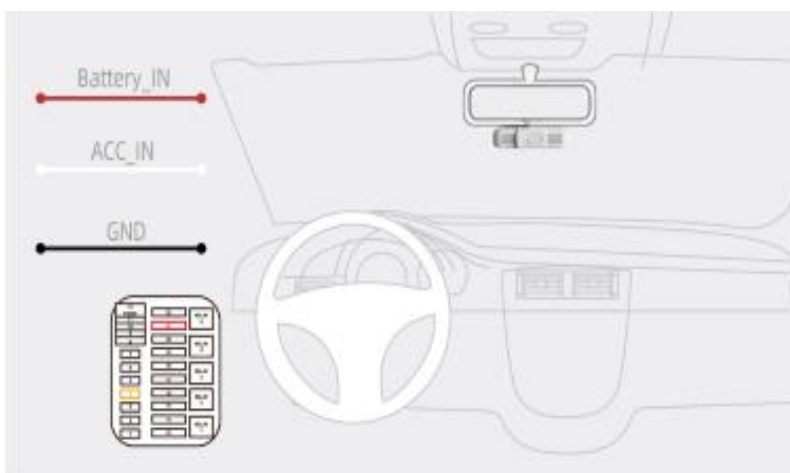


3. Place SIM card and memory card into slots gently.



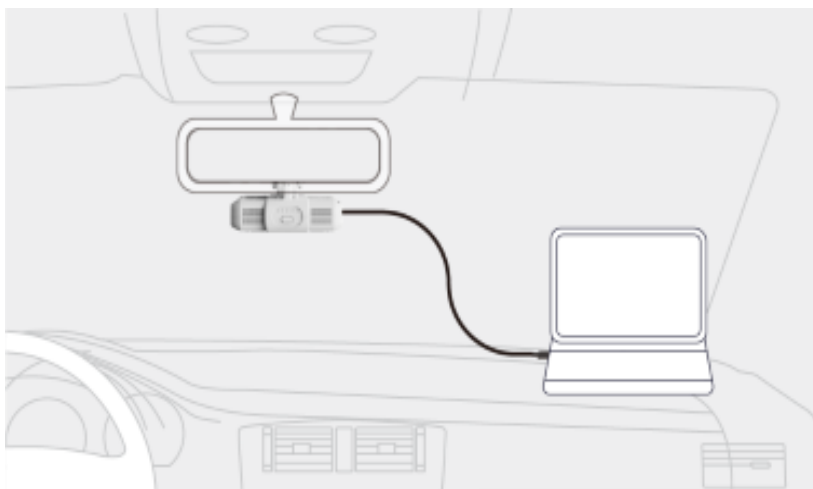
- *Before inserting the TF card, ensure that the metal contacts on the TF card are facing towards the mount connector of the product.
- *The product only accepts the MicroSD (TF) type cards.
- *UHS type TF cards provide high speed write and read performance.
- *We strongly recommend to use a storage capacity of 64GB or above for longer recording time
- * Metal tray is provided to mount SIM card correctly.

4. Connect the vehicle battery from fuse box to power on the dashcam via function cable.



- *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.

5. Plug the USB-C connector into dashcam and plug both USB-A connectors into computer



*Need to install the cable driver probably for USB_COM communication
*Need to install ADB driver for USB_ADB communication.
Please inquire them from technical support team if there is any problem.

6. Decompress the “Manage Tool” package and run it to setup the parameters. Mount the Tamper-Resistant cover back after completing configuration.

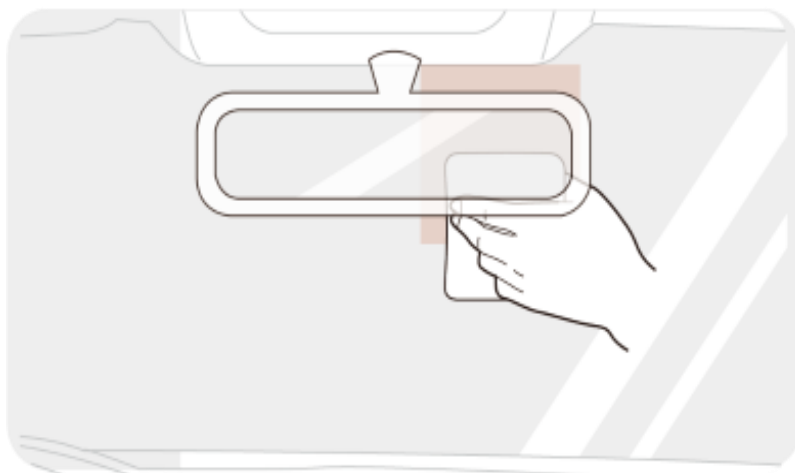


*Debug cable isn't included into standard package, please contact the supplier if necessary
*After the product is powered on, wait for 30-60 seconds until it's fully started

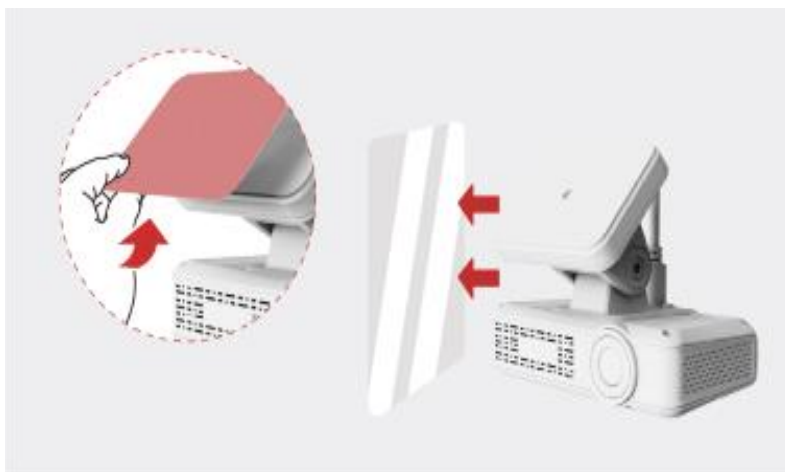
3.2. Mounting the dashcam

Follow the steps to mount the dashcam into vehicle correctly.

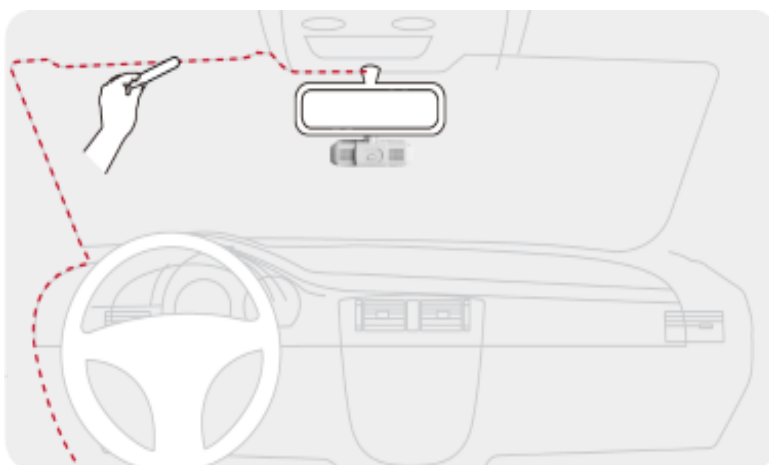
1. Install the dashcam behind the rear-view mirror. Clean the windshield by wiper and make sure there is no stain.



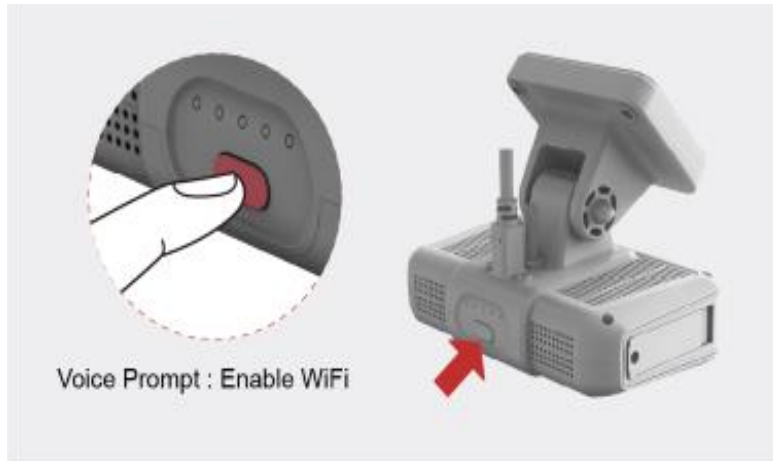
2. Peel off the protective film from the double-sided tape and attach the dashcam to the windshield.



3. Use the pry tool to lift the edges of the windshield trim/molding and tuck in the power cord.



4. Click the function button twice to activate Wi-Fi hotspot after the dash camera is running.

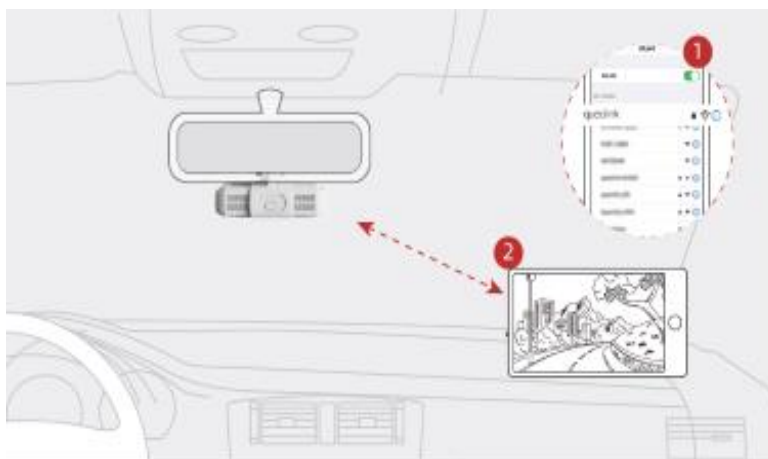


5. Download Qucam mobile application, search the Wi-Fi hotspot of product and connect to it.



*Default hotspot SSID / Password: queclink / 12345678

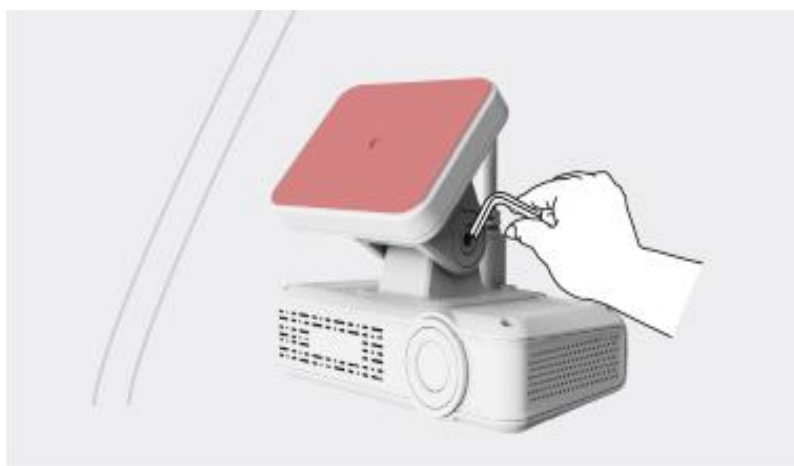
6. Login the “Live” tab of mobile application to get the live view of front-facing camera.



7. Unscrew the bracket shaft by hex drive. Adjust the angle until approx. 30% view of your vehicle bonnet is showing at the bottom of view, and then remove the protection film of lens.



8. Screw the bracket shaft to complete the installation.



*The dashcam should record the entire view in front of the vehicle without obstructing the drivers view

* If the adhesive tape is with stickiness lost, please change new tape.

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

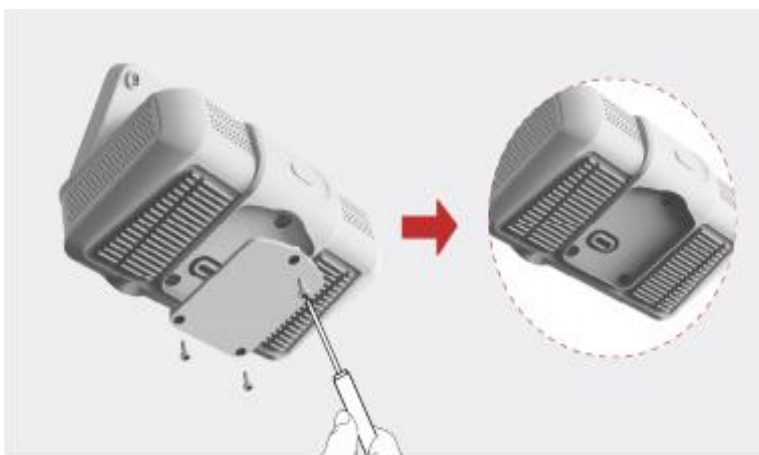
*The dashcam automatically starts hotspot and only keeps 5 mins waiting for connection, please activate the hotspot manually if it can't be found by mobile phone.

3.3. Installing the in-cab view camera

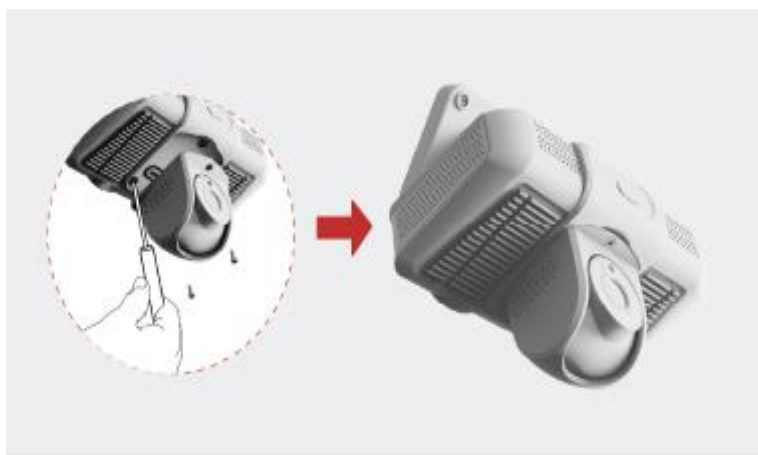
Follow the steps to install the interior camera properly.



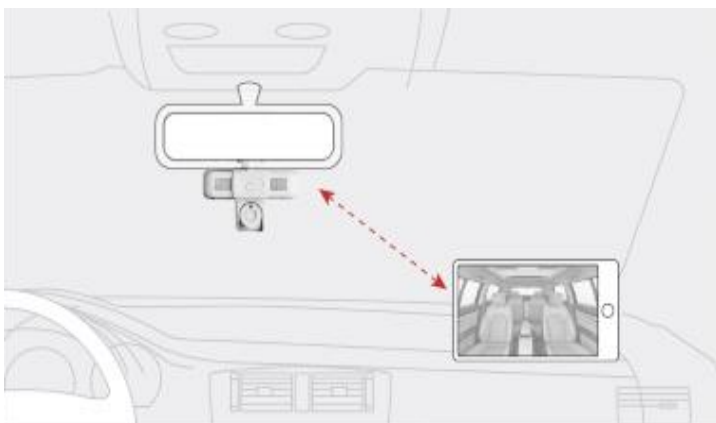
1. Unscrew and Open the cover from the bottom of dashcam



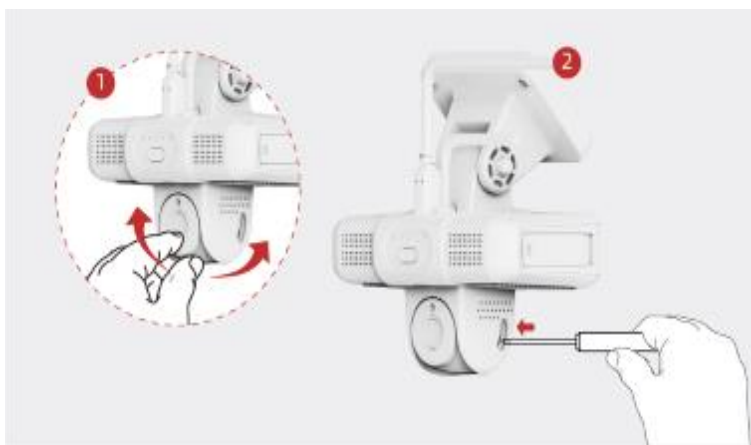
2. Plug the In-cab view camera into the Typc-C slot lightly and fix it with 3* screws.



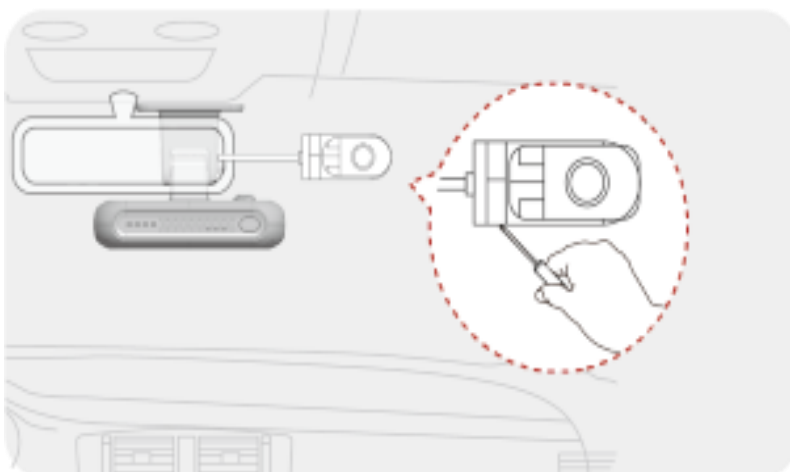
6. Login the “Live” tab of mobile application to get the live view of in-cab view camera.



3. Rotate and adjust the angle of in-cab view camera.



4. Remove the protection film of lens, and screw the shaft to complete the installation.



4. Manage the local storage

4.1. TF card contents

The product only accepts the TF card that is running the FAT32 file system.

All folders will be generated automatically after the TF card is mounted successfully. Follow the steps to operate the folders and files.

- 1) Insert the TF card into card reader, and place it into the computer's USB port.
- 2) 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 to 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 unknown storage exception.
- *All data will be erased after formatting, please carry out the operation with caution.

4.2. Folder definition

- 1) /DVR/bin

The folder stores the updating firmware, and the file types are shown as below:

File type	Description
bin	Incremental firmware

- 2) /DVR/config

The folder stores the configuration files that is generated after clicking "send all to device" button by Manage Tool. File format: CV200_MT_CONFIG_YYYYMMDD.txt.

Symbol	Description
YYYYMMDD	indicates year, month, and day

- 3) /DVR/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) /DVR/track

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

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

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

- 5) /DVR/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) /DVR/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) /DVR/pic

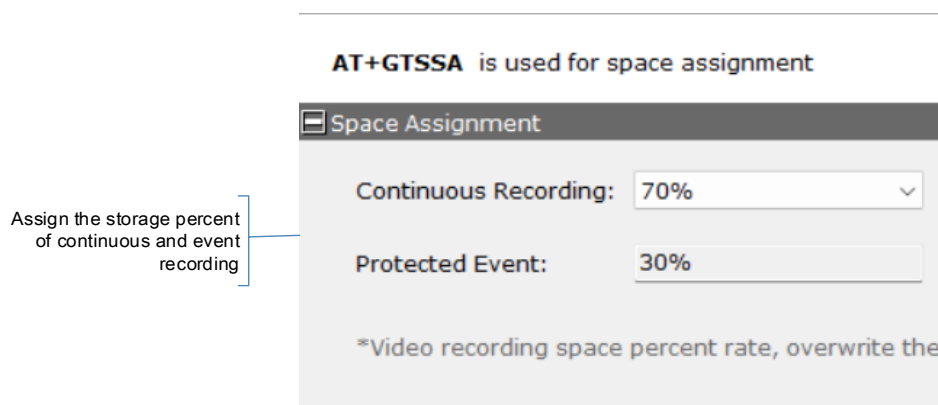
The folder stores all crucial events snapshots circularly.

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

4.3. Storage space assignment

The local storage is overwritten circularly, and the oldest files will be removed automatically while the capacity is full.



- * 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 to avoid 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.

5. Updating the firmware

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 in feature exceptions.
*The recommended sequences of updating are "MCU", "firmware".

5.1. Updating over OTA

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

5.1.1. Preparation before operations

- 1) MCU Application "CV5000_MCU_R00A01V16.enc"
- 2) Firmware Application "cv5000_package_R00A01V15_to_R00A01V16.bin"

5.1.2. FOTA based on HTTP & FTP service

- 1) Copy the application file into http & FTP server.

 CV5000_MCU_R00A01V16.enc	
 cv5000_package_R00A01V15_to_R00A01V16.bin	

- 2) Generate the absolute path of updating files, and attach it into AT+GTUPD command.

For example.

AT+GTUPD=cv5000,0,0,10,0,,,http://192.168.90.21:8080/CV5000/deltabin/
CV5000_MCU_R00A01V16.enc,,1,,,,0001\$

AT+GTUPD=cv5000,0,0,10,0,,,http://192.168.90.21:8080/CV5000/deltabin/
cv5000_package_R00A01V15_to_R00A01V16.bin,,0,,,,0001\$

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

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 .bin file.
Value "1" means .enc 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.

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

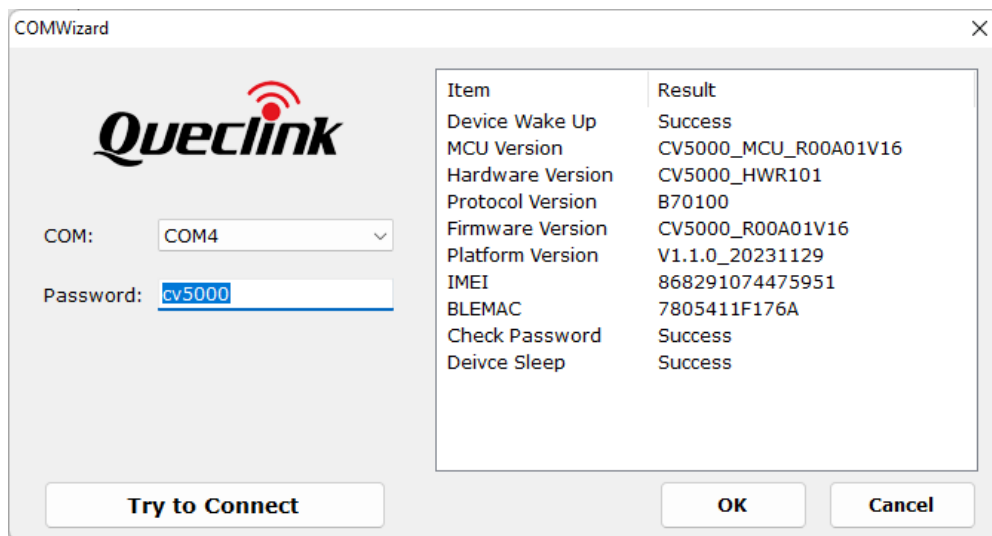
4) Monitor the report feedback on the server or debug window of Manage tool, the local Power indicator is fast flashing during updating. The updating is completed after hear the beep sound.

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

*Query the document "CV5000 @Track Air Interface Firmware Update Protocol" to get more information

5) Double check the current version of applications.



5.2. Updating over TF card

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

5.2.1. Preparation before operations

- 1) TF Card, SDHC or SDXC, FAT32, w/ card reader
- 2) MCU Application "CV5000_MCU_R00A01V16.enc"
- 3) Firmware Application "cv5000_package_R00A01V15_to_R00A01V16.bin"

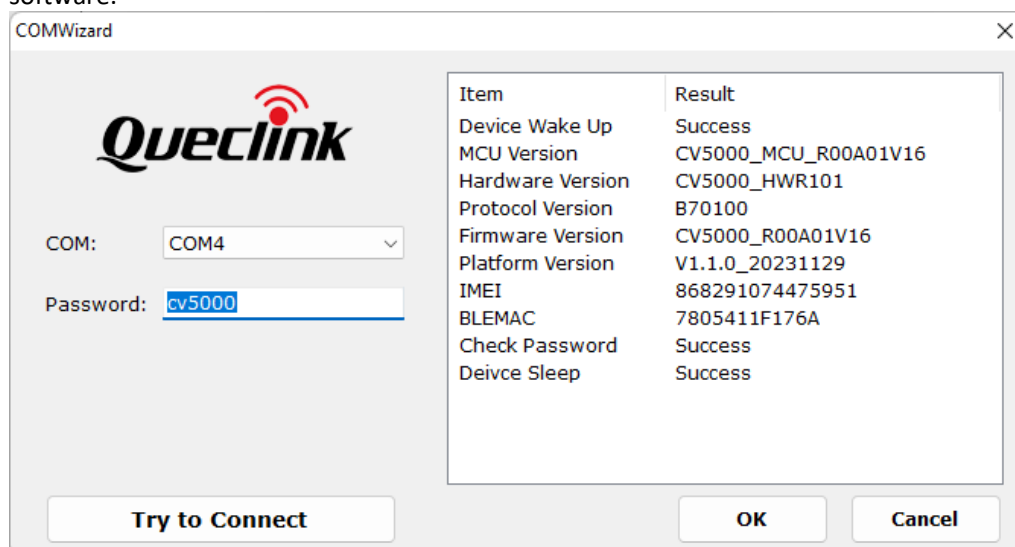
*The default updating path is "DVR/bin", the path folder will auto be generated by the product if the card has been used to record. Please create the folder path if the card is brand-new.

5.2.2. MCU updating

- 1) Copy the CV5000_MCU_R00A01V16.enc file into card path "DVR/bin".
- 2) Plug the card into product, confirm the power indicator status while updating. (The indicator is starting fast blinking)
- 3) The product will auto reboot and load the new firmware after updating finished.
- 4) Run Manage tool to login the product and check the version information from the bottom of software.

5.2.3. Firmware updating

- 1) Confirm the current application version by mobile app.
- 2) Copy the cv5000_package_R00A01V15_to_R00A01V16.bin file into card path "DVR/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.



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

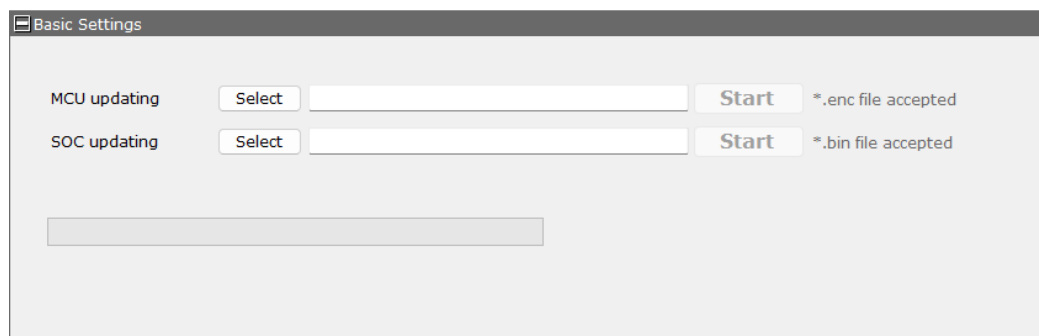
5.3. Updating over debug cable

5.3.1. Preparation before operations

- 1) Manage Tool with debug cable
- 2) Cable drivers, includes "USB-COM" and "Google ADB" drivers.
- 3) MCU Application "CV5000_MCU_R00A01V16.enc"
- 4) Firmware Application "cv5000_package_R00A01V15_to_R00A01V16.bin"

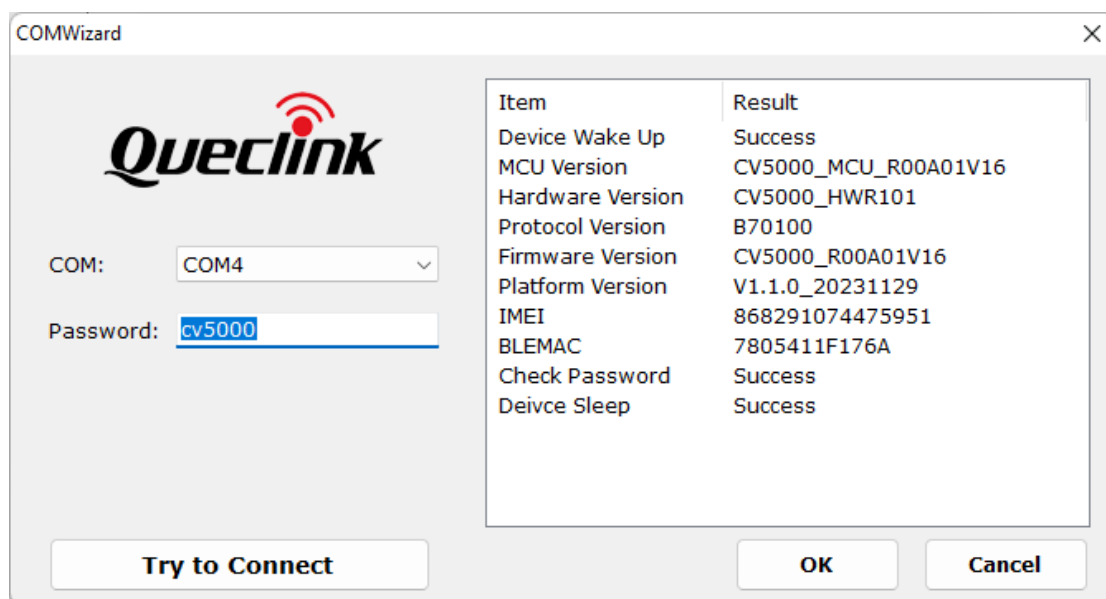
5.3.2. Operate over Manage tool

- 1) Install both drivers above and plug the USB-A connector into computer to connect with the product.
- 2) Login the manage tool and open the "Upgrade" window.
- 3) Import the application and click Start button to upgrade instantly.



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

- *Confirm the updating files are latest and newest.
- *Confirm the file type for MCU and firmware, make sure the file path is proper to access.
- *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.
- *It needs to install "USB-COM" and "Google ADB" driver on the computer firstly, please contact for help if needed.



6. Maintenance

6.1. Reboot the product

6.1.1. Reboot 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.

6.1.2. Reboot command

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

Query the CV5000 @Track Protocol for more information about “RTO sub command: 3”.

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

6.2. Retrieve the logs

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

We can request the logs 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 supplier.

7. LED description



Status	Power (Red)	GPS (Blue)	Record (White)	Cell (Green)	MIC (Orange)
ON	Power on or sleep	GPS fix normal	Record normal	Network connected	Mic Pickup OFF
OFF	Power off or lost	Not defined	Record stopped	Not defined	Mic Pickup OFF
Fast Blinking 100ms ON / 200ms OFF	Firmware updating	GPS fixing	Event Recording	Network connecting	NO
Slow Blinking 200ms ON / 1000ms OF	Low power voltage	GPS fix abnormal	Record abnormal	Network abnormal	NO

8. TF card selection

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

What kind of speed of TF card should be used?

We strongly suggest you use high-quality with high-speed class card, such as the **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.

9. Event recording type

Event Code	Recording Type
00	Normal Record
01	Ignition ON
02	Ignition OFF
03	Power Disconnected
04	Crash Detection
05	Harsh Acceleration
06	Harsh Braking
07	Harsh Turning
08	Over Speed Alarm
09	Panic Button Clicking (Panic Event)
0A	Panic Button Hold On (SOS Alarm)
0E	GEO-PEO-Fence
0F	Parking Safeguard
F0	Manual Record
F1	SOD Time Range Record File
D1	Eyes close detection
D2	Yawning detection
D3	Distraction detection
D4	Smoking detection
D5	Phone use detection
D6	Driver abnormal detection
D7	IR blocking detection
D8	Seatbelt unfastened detection
A1	Forward Collision Warning
A2	Pedestrian Collision Warning
A3	Headway Monitoring Warning
A4	Lane Departure Warning
B1	Blind Spot Detection

10. 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.

Headquarter Address:

No.30, Lane 500, Xinlong Road, Minhang District, Shanghai, China 201101

FCC regulatory conformance:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

NOTE: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user ' s authority to operate the equipment.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

RF Exposure

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.