



User Manual Book

4G ADAS DMS 2CH DASHCAM

Model: LCD02

We're appreciated that you choose on LCD02, a 4G ADAS DMS 2CH DASHCAM as an active safety management tool for your fleets. Please read this user manual book carefully and follow the instruction. It is suggested that you keep this user manual book for future use.

CATALOG

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1. Product description

To continue the trend in improving safety and reach the industry's goal of zero vehicle-related accidents and fatalities, vehicles must help drivers stop hitting things, so it is time to take Active Safety with ADAS and DMS etc. LCD02 supports 4G + 3G + 2G + Bluetooth + WIFI network communication, GPS real-time location and alarms, 2CH cameras (ADAS + DMS) in 1080P resolution, and so on, helps fleet managers easily to identify those good drivers from bad ones, lowering the operation cost and insurance fee, therefore improving transportation efficiency.

2. Warning

- 1) This device is suitable for adults. People with physical disability and cognitive impairment must use it under the supervision of guardian.
- 2) Keep the product accessories and packaging materials away from children, otherwise there may be accidents or choking hazard.
- 3) Do not use if it is damaged obviously.
- 4) The device is only used for its designed purpose and must be used in the manner indicated. The manufacturer shall not be responsible for any damage caused by any improper or reckless act.
- 5) It is strictly forbidden to use the equipment in violation of the operating instructions, disassemble it without permission, collide, charge, soak in water, exceed 80°C, man-made failure, force majeure damage, etc., otherwise it may cause short circuit, insufficient working time, battery deformation, night leakage, explosion, etc. Loss, no warranty and compensation will be made.
- 6) Clean the equipment in the prescribed way. Do not use any solvents and disconnect the power supply in advance when cleaning.

3. Precautions

- 1) There are 2 versions of LCD02, which correspond to different network frequencies, please pay attention to the label on the body when using it.
- 2) Do not exposed this device to rain and high temperature during installation and use.

- 3) This product uses GPS and BeiDou satellite positioning, and there are irresistible factors that cause positioning failure or abnormal communication, such as bad weather, artificial shielding of wireless signals, blind areas of wireless signal coverage, etc.
- 4) This device supports 4G, 3G and GSM/GPRS wireless communication network. To achieve better communication and positioning performance, please be sure not to place it in metal shielding boxes or under place with metal surface.
- 5) This device requires the cooperation of the monitoring platform to implement all its features. For details, please refer to the relevant monitoring platform usage specifications.
- 6) The contents of this manual may be subject to change without notice. Please refer to the actual product.
- 7) During installation, calibration with Android APP (ReachengOperation Tool) is needed.

4. Production composition



Package Items:

| Items | Description | Quantity |
|------------|---------------------------------------|----------|
| Main Unit | ADAS Camera + base included | 1pcs |
| DMS Camera | Internal cameras (BMW 4pin connector) | 1pcs |
| Harness | Power supply, connecting cameras | 1pcs |
| Unit Cover | Cover for TF card, SIM card and USB | 1pcs |
| Screws | For fixing the cover | 1pcs |

Note: two types of base for light vehicle and heavy vehicles, in default it comes with light vehicle version.

Interface Introduction:



5. Hardware operation

5.1 Insert TF Card

LCD02 records video and alarm events in SD card, please prepare a TF card in FAT32 format, ranging from 16GB to 512GB. To optimize device's performance and storage, 128GB or 256GB TF cards are recommended.

5.2 SIM network and WIFI connection

User could choose WIFI network connection or SIM card connection.

For SIM network, please insert a Micro SIM card in the direction shown as device SIM card slot.



Normal



Micro



Nano



Precautions:

- 1) The terminal SIM card needs to activate SMS and network function.
- 2) Please ensure that the terminal SIM card has balance.
- 3) If your SIM card is turned on and you are required to enter the SIM PIN, please refer to your mobile phone user manual to turn off the SIM PIN input function.

For WIFI network, it will be turned off when ACC off. Please make sure there is a stable and high-speed-transmission WIFI router in vehicle. First time WIFI connection need to be set up by Micro Android data cable with PC by Android screening software. (Further details, please get help from your supplier.)

5.3 Wiring

When wiring device to vehicle, the device must be power off status.

| Cables | Wires | Description |
|-----------------|-----------|---------------------------|
| Power Harness | 12V+ | 12V/24V Power Positive |
| | GND | Negative (Ground) |
| | ACC | Corresponding to ACC line |
| | RX and TX | To be defined |
| External Camera | 4pin BMW | Connect to DMS camera |

After wiring, wrap the exposed wire connector with black tape (electrical tape).

5.4 Power on Verification

After completing the wiring, do a reconfirmation wires all connected rightly. Then turn device power on, if the LED turns from red to green, device is working normally.

5.4 Operation of indicator light

By checking the status indicator, you can understand the working status of the device. The status of the indicator is described as follows:

| LED | LED Status | Meaning |
|-----|------------|---------|
|-----|------------|---------|

| | | |
|-------|----------------|-----------------------------------|
| Blue | Slow flashing | Searching GSM signal |
| | Quick flashing | Connected to server |
| | Solid bright | Network connected and GPS located |
| Red | Solid bright | Charging |
| Green | Solid bright | Battery fully recharged |

6. Installation on Car/Vehicle

6.1 Preparation

It is highly recommended to install the device by experts in vehicle. Here the tool list may be in use.

| Name | Note | Must |
|---------------------------------------|----------------------------------|------|
| Cigarette lighter or vehicle fuse box | 12V/24V power supply | Yes |
| Screwdriver | To take off cover and fix device | Yes |
| Android Cellphone | Install the calibration app | yes |
| 5 meters tapeline | For measurement | Not |
| Micro USB data cable and laptop/PC | To connect with PC | No |
| Tripod, calibration target | To demarcate | No |
| Marker | To mark distance | No |

6.2 Installation

The DMS camera is mainly installed in top of the dashboard within 60-90cm from the driver, and the main camera is installed in the middle of the windshield facing front. Uncover the 3M adhesive sticker of the base and DMS camera respectively, and gently stick the device on the recommended position. Then press and hold the device firmly for 20 seconds to make sure it is fixed. To gain higher location accuracy, it is recommended to install the device in car or vehicle as images shown.



Suggested Installation Position

There are two types of base for light vehicle and heavy vehicles, in default it comes with light vehicle version. According to different models, the installation method is slightly different.

7. Calibration for ADAS and DMS

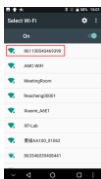
Whether ADAS and DMS could measure and alert accurately, it is highly depending on the installation and setting of vehicle parameters. Therefore, a calibration on ADAS and DMS is necessary.

First park the vehicle aside the flat road and make sure there are no obstacles within 30 meters in front, it would be the best if there are road marking lines such as image below:



7.1 Android APP: Nebula

APP: ReachengOperation Tool (ReachengOperation Tool.apk), only supports Android 5.1 and above

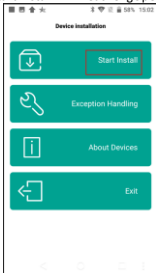


7.2 WIFI hotspot

WIFI hotspot is used for sharing WIFI, video & images transmission and calibration. Power on the device, its LED changes from red to green, then press & hold the "Power Button" and "Volume down (-)" together for 3 seconds, LED will be off and turns blue, it means that the hotspot is successfully started. WIFI hotspot is named by its IMEI number (shown on device), password in default is 12345678.

7.3 Calibration on ADAS

Step 1: click "Start Install " in ReachengOperation Tool APP



Step 2: there are 3 green line shown on screen, adjust the camera position to make sure the skyline is at the same level as the green line.

Step 3: "Calibration" button to end ADAS calibration.



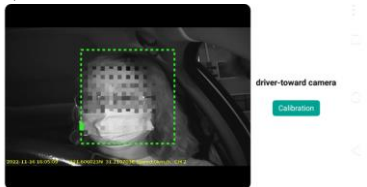
main camera

Calibration

7.4 Calibration on DMS

Step 1: Click the "DMS Calibration" on ReachengOperation Tool APP

Step 2:



Step 3: After DMS calibration, auto detection, analysis and warnings work when vehicle speed is higher than 30km/h.

8. ADAS and DMS introduction

When driving speed is higher than 50km/h, ADAS and DMS warnings will generate 10 seconds video (5s before and 5s after) and 3 pieces images and upload them all to monitoring system.

8.1 ADAS

Horizon's Advanced Driver Assistance System (ADAS) can accurately perceive, identify and locate vehicles, pedestrians, traffic signs and other targets on the road forward, and prompt drivers to make travel safer. The device has the following functions:

HMW Headway Monitoring & Warning monitors the distance keeping with the vehicle in front. **Voice: Please keep the vehicle distance!**

FCW Forward Collision Warning when speed higher than 30km/h, it detects the dangerous situation that vehicle speed is much higher than the vehicle in front, and a collision is about to occur. **Voice: Watch out!**



8.2 DMS

Horizon DMS (Driver Monitoring System) provides customers with a complete driver behavior detection system that can be used to driver safety behavior detection and early warning functions, such as fatigue driving, looking around, looking down, smoking, making calls and other dangerous behaviors. Thanks to the 940nm infrared low-power camera, it can accurately obtain the driver's facial features under various lighting conditions such as strong light, dark light, and metering in the cab, as well as when the driver wears sunglasses, for effective real-time monitor.

DFW Driver Fatigue Warning occurs if the driver is identified for closing eyes and yawning. **Voice: Attention, drowsiness is detected. Or Please awake.**

DDW Driver Distraction Warning, If the driver does not look straight ahead for a period (including looking left and right, head swinging left, head swinging right, head up, head down), the system will issue a warning. **Voice: Please face forward.**

DSA Driver Smoking Alarm occurs if the driver's smoking behavior is recognized. **Voice: No smoking!**

DCA Driver calling Alarm occurs when driver having a hand-held phone call for a period of time. **Voice: Please do not use mobile phone.**

DAA Driver Abnormal Alarm happens when the driver is not being detected. **Voice: Please do not block the camera. Or please return to the driver seat.**

9. Data sheet

| APPEARANCE | | |
|--------------------|-----------------------|---|
| Shell Material | Plastic | PC+ABS |
| Cable harness | Main cable | Power Positive: red |
| | | Power Negative: black |
| | | ACC: orange |
| | | RS232 TX: |
| | | RS232 RX: |
| | DMS or AHD | DMS or AHD camera |
| Interface | SIM card slot | Micro SIM |
| | SD card slot | |
| | USB interface | Micro USB 2.0, for debug |
| Button | Power | Power on/off |
| | Volume + | |
| | Volume - | |
| One LED (4 colors) | Green solid on | Working Normally |
| | Red flashing | The system is starting or Failed to power on |
| | Red solid on | Device error in below circumstance: Wrong IMEI no. Wrong camera number or no AHD connected SD card error SIM card error |
| | Blue flashing | Under calibration mode, WIFI hotspot is on and waiting for connection |
| | Blue solid on | Under calibration mode, WIFI is connected |
| | Yellow flashing | SIM card detected but failed to connect to network |
| PERFORMANCE | | |
| Temperature | Operating temperature | -20℃ to 70℃ |
| | Storage temperature | -40℃ to 85℃ |
| Humidity | Operating humidity | 95% |
| | Storage humidity | 95% |

| | | |
|-----------------------|--------------------------------|--|
| Power | Operating voltage | 11–24V |
| | ESD protection | Contact: 6KV; Air: 10KV |
| | Reversed connection protection | Protects against positive-negative reversed connection |
| Flame retardancy | Main unit | UL94 V-0 |
| | Accessories | UL94 V-0 |
| NETWORK | | |
| Version | 4G LTE | BAND 1/3/5/7/8/20 BAND 38/39/40/41(100Mhz) |
| | WCDMA | BAND 1/8 |
| | GSM | GSM900/1800MHz |
| HARDWARE | | |
| CPU | MTK8665 | Quad-core ARM® Cortex-A53MPCore™, operating at 1.5ghz LPDDR 3 can be up to 3GB, 640 MHz |
| GPU | √ | Dual-core Mali - T720 GPU |
| RAM | 1GB | |
| ROM | 8GB | |
| ADAS Camera | Build-in | MIPI / 1920x1080 / 25FPS |
| DMS Camera | External | AHD / 1280x720 / 25FPS |
| SD Card | √ | 1*TF card (Max. 512G), Format: FAT32 |
| SIM card | √ | 1*Micro SIM |
| G-Sensor | √ | TDK40608, 6-axis |
| Communication Network | Build-in | 2G, 3G, 4G |
| GNSS Antenna | Build-in | GPS+BDS |
| Bluetooth | Build-in | BT4.0 2.4G |
| WIFI | 2.4G | 802.11 b/g/n |
| Speaker | √ | 1.2W |
| MIC | √ | |
| External Interface | 1*RS232 | |
| SOFTWARE | | |

| | | |
|-------------------------|----------------------------|-------------|
| Operating System | Android 5.1 | |
| Language | English | |
| Audio | AAC | |
| Video | Format: MP4 | Code: H.264 |
| Power Consumption | Normal working: 200~800mah | ACC ON |
| | Standby average power: 5ma | ACC OFF |
| CERTIFICATION (pending) | | |
| CE | ✓ | |
| FCC | ✓ | |

10. Repair and disposal

- 1) Never attempt to repair the instrument or adjust it yourself. We can no longer guarantee perfect functioning if you do it.
- 2) Repairs may only be performed by Customer Service or authorized dealers.
- 3) For environmental reasons, do not dispose of the device in the household waste at the end of its useful life. Dispose of the unit at a suitable local collection or recycling point. Dispose of the device in accordance with EC Directive – WEEE (Waste Electrical and Electronic Equipment).
- 4) If you have any questions, please contact the local department responsible for waste disposal.

11. Warranty card

Maintenance Card

| | |
|----------------------|--|
| Maintenance shop | |
| Delivery information | |
| Fault description | |
| Maintenance result | |
| IMEI number | |
| Operator | |

Caution:

For the following equipment:

Product Name: 4G ADAS DMS 2CH DASHCAM

Brand Name: Lotimcloud

Model No.: LCD02

Guangzhou Lotim Technology Co., Ltd.

E-mail: lotim01@lotimcloud.com

hereby declares that this [Name: 4G ADAS DMS 2CH DASHCAM, Model: LCD02] is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.



The product shall only be connected to a USB interface of version USB2.0 and that the connection to a power USB is allowed.

This product is intended for sale and application in a business environment.

RED Article 10 2

-This product can be used across EU member states

RED Article 10 10

-The product is class 1 product, No restrictions

The RF distance between body and product is 20cm.

2G

Frequency Range: GPRS900: Tx: 880-915MHz, Rx: 925-960MHz
GPRS1800: Tx: 1710-1785MHz, Rx: 1805-1880MHz
RF Output Power: GPRS900: 32.35dBm, GPRS1800: 29.04dBm
EDGE900: 27.66dBm, EDGE1800: 25.23dBm

3G

Frequency Range: WCDMA Band 1: Tx: 1920-1980MHz, Rx: 2110-2170MHz
WCDMA Band 8: Tx: 880-915MHz, Rx: 925-960MHz
RF Output Power: WCDMA Band 1: 22.76dBm, WCDMA Band 8: 22.87dBm

4G

Frequency Range: FDD-LTE Band 1: Tx: 1920-1980MHz, Rx: 2110-2170MHz
FDD-LTE Band 3: Tx: 1710-1785MHz, Rx: 1805-1880MHz
FDD-LTE Band 7: Tx: 2500-2570MHz, Rx: 2620-2690MHz
FDD-LTE Band 8: Tx: 880-915MHz, Rx: 925-960MHz
FDD-LTE Band 20: Tx: 832-862MHz, Rx: 791-821MHz
TDD-LTE Band 38: Tx: 2570-2620MHz, Rx: 2570-2620MHz
TDD-LTE Band 40: Tx: 2300-2400MHz, Rx: 2300-2400MHz
FDD-LTE Band 1: 23.19dBm, FDD-LTE Band 3: 22.78dBm,
FDD-LTE Band 7: 22.92dBm, FDD-LTE Band 8: 23.69dBm,
Max.RF Output Power: FDD-LTE Band 20: 23.89dBm,
TDD-LTE Band 38: 24.18dBm,
TDD-LTE Band 40: 23.32dBm

Bluetooth

Frequency Range: 2402-2480MHz
Max.RF Output Power: 6.88dBm (EIRP)

Wi-Fi(2.4G)

Frequency Range: 2412-2472MHz for 802.11b/g/n(HT20)
2422-2462MHz for 802.11n(HT40)

Max.RF Output Power: 17.49dBm (EIRP)

GPS

Frequency Range: 1575.42MHz Receiving

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

FCC Warning

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, and (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 2: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

