M1N 2.0 Installation Guide

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Foreword

This M1N 2.0 Installation Guide is hereby prepared to better guide engineering personnel to install M1N 2.0 and its accessories properly and quickly, and to improve installation efficiency.

This document mainly includes the following parts: foreword, system overview, preparation for installation, introduction to installation, calibration, and acceptance and cleaning.

This document is applicable to installation engineering personnel.

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Important Instructions

1. Before installation, please park the vehicle on the horizontal ground and shut down the engine (do not park the vehicle on a ramp or an inclined road).
2. Please read the section of packing list carefully and check carefully at the time of unpacking.
3. Please read the section of tool list carefully and provide installation tools before product installation.
4. Before installation, please observe the vehicle environment and follow the principles below:
   a. The installation position and wiring of the product shall neither affect the driver's view nor affect the adjustment of the rearview mirror and sun visor;
   b. The camera lens for monitoring the road condition ahead of the vehicle must be within the working range of the windshield wiper;
   c. The installation position of the camera for monitoring the driver in the vehicle shall comply with local regulations;
   d. The installation position shall be convenient for the replacement and maintenance of TF card and SIM card.
5. The appropriate installation position shall be selected according to the vehicle environment, and this document is for reference only.
6. The appropriate power supply connection method shall be selected according to the vehicle environment. **The connection to the power supply and all signal cables of vehicle shall be carried out by specialized personnel, as it may be dangerous for non-specialized personnel to operate the power system of the vehicle without authorization.** This document is for reference only.
7. In case of any problem in the installation for special vehicles, please contact the product supplier in time for support.

8. Veyes App is required to debug and configure M1N 2.0 during installation.
9. Please scan the QR code below, or search and download the Veyes APP in the App Store. After the download is completed, connect the APP to the equipment for related operations according to the prompt on the interface of the APP.

IOS (Apple Store)

Foreign Android (Google Store)

1. System Overview

1.1 Product Overview

M1N2.0 is a multifunctional in-vehicle intelligent terminal composed of storage module, encoding module, communication and power module, etc., with the integration of in-vehicle video monitoring, platform remote video monitoring, and driver driving behavior analysis.

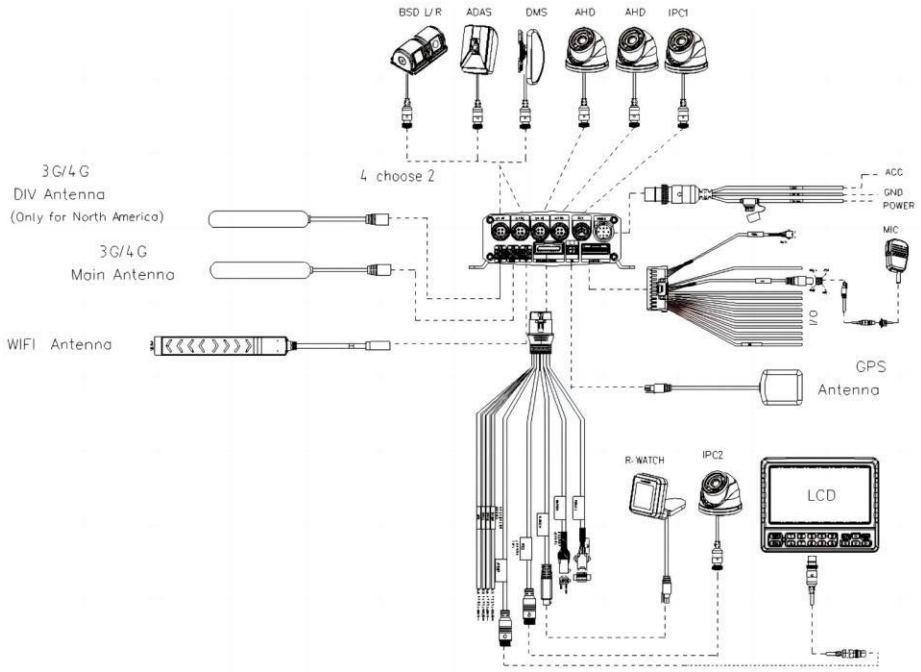
It has a powerful video access and encoding capabilities, maximum support for 4Ch AHD and 2Ch IPC . Can simultaneously support 6Ch 1080P@30fps full HD real-time full frame encoding and recording capabilities, to ensure that the video quality frame rate is not lost.

The product has built-in rich wireless communication capability, supporting 4G/3G high-speed network, WIFI wireless network, and GPS/BDS/GALILEO/GLONASS multi-band quad-constellation global GNSS positioning system at the same time.

Products built-in powerful NPU processing capabilities, based on AI algorithms, can support 2Ch built-in AI, which can fully cover ADAS, DMS, BSD. effectively improve driver safety driving and reduce pedestrian-vehicle traffic accidents

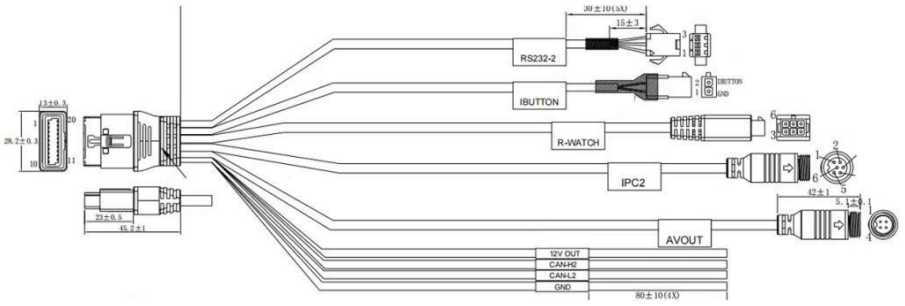
At the same time, M1N2.0 has a strong anti-interference ability of the vehicle environment, the product meets the ISO16750, ISO7637 vehicle test standards, to meet the use of different vehicle types installed.

1.2 Schematic Diagram of Equipment Connection

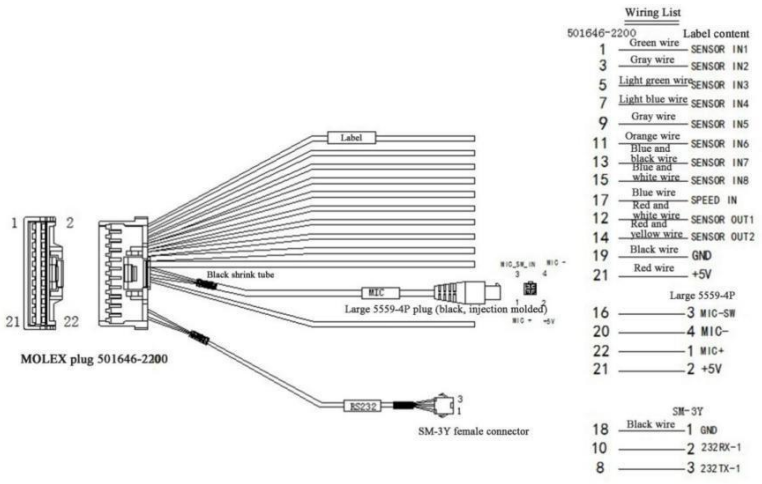


1.3 Schematic Diagram of System Connection

1.4 Definition of External Cable Interface



20PIN IPC2/AVOUT/RS485 Signal Connecting Cable



22PIN IO/RS232 Signal Connecting Cable

2. Preparation for Installation

2.1 Technical Requirements for Installation

Relevant personnel shall be familiar with the functions, applications and the overall composition principle of the product.

Relevant personnel shall understand the electrical circuits and structure of motor vehicles, and common installation methods of in-vehicle equipment.

2.2 Understanding of Installation Environment

Before equipment installation, relevant personnel shall have a clear understanding of the vehicle model concerned, the installation positions of the main unit and auxiliary cameras of the EDR, the type and length of cables required for each vehicle model, and the list of common auxiliary materials, so as to ensure successful completion of equipment installation and commissioning.

2.3 Confirmation of Vehicle Conditions and Vehicle-related Electrical Information

Confirmation of vehicle information is the basic precondition of successful installation and also the guarantee of division of responsibilities to avoid any damage to the vehicle. For each component, proceeding to next step is only allowed after clear confirmation, and each operation shall be confirmed by the person in charge of the vehicle and the installation personnel.

(1) Check the appearance and interior trims of the vehicle for any damage.

(2) Check whether the vehicle can ignite normally.

(3) Check whether the vehicle power supply system is in good condition.

*Note: Confirmation of the above information is crucial. Installation can only be carried out after the above information is considered normal through confirmation.

2.4 Power Supply Connection of Vehicle

The main unit is connected to the vehicle power supply. For specific power supply connection method, refer to 4.3 for details.

(1) Required tool: multimeter.

(2) Selection of power supply connection position

When the vehicle is shut down, use a test pencil to detect whether the circuit is live. If it is live, it is judged as a constant power supply, and then measure the voltage.

When the vehicle is shut down and is in ACC position or ignition state, use a test pencil to detect whether the circuit is live. If it is electrically neutral in shutdown state, and is live in ACC position or ignition state, it is judged as an ACC power cable, and then measure the voltage.

(3) Voltage measurement of power supply connection

Constant power supply: When the vehicle is shut down, use a multimeter to measure whether the voltage of the constant power supply cable is about 24V. If the voltage of multiple cables is about 24V in shutdown state, select the cable with higher current as the constant power supply connection cable.

ACC:When the vehicle is in ACC position or ignition state, use a multimeter to measure whether the voltage is about 24V. If the voltage is 0 in shutdown state and about 24V in ACC position or ignition state, select the cable as the ACC power supply connection cable.

*Note: During power supply connection, first conduct measurement at the positive and negative terminals of the power supply with a multimeter, to avoid wrongconnection.

2.5 Connection of Necessary Signal Cables

Where required, the following signal cables must also be connected to enable the intelligent assisted driving functions of M1N 2.0:

(1) Vehicle speed pulse cable or CAN data cable - to obtain accurate vehicle speed data;

(2) Left and right steering signal cables - to obtain left and right steering information of vehicle;

(3) Brake signal cable - to obtain vehicle braking information.

Please consult the maintenance engineer of the vehicle discipline for specific position of vehicle speed pulse cable/CAN data cable.Generally, the left and right steering signal cables and the brake signal cable are arranged on the fuse board below the steering wheel or below the front passenger dashboard, and measurement for these cables can be conducted using a multimeter.

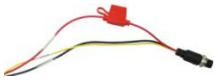
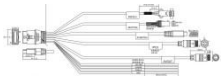
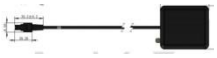
*Note: If the measured signal is a pulse signal, the source of left steering/right steering/brake signal shall be set as pulse on the setting interface of the main unit; if the measured signal is a continuous high or low level signal, the source of left steering/right steering/brake signal shall be set as level on the setting interface of the main unit.

3. Preparation of List of Installation Materials and Tools

3.1 Inspection as per Packing List

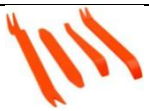
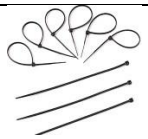
After unpacking the product, please confirm whether the EDR is intact and whether the accessories are complete.

List of Product Materials				
S/N	**Picture**	**Product Name**	**Purpose**	**Qty.**
1		M1N 2.0	On-board main unit with hard disk	1 pcs
2		ADAS camera	Road condition detection	1 pcs
3		DMS camera	Driver behavior detection	1 pcs
4	 （Example）	BSD camera	Blind spot detection	1 pcs
5		R-WATCH	Intelligent display screen	1 pcs
6		CP4	Video display screen, optional	1 pcs
7		CP4 bracket	Support the display screen on a slant	1 pcs
8		CP4 patch cord	Display screen patch cord	1 pcs
9		CP4 extension cable	Display screen extension cable	1 pcs
10		4G antenna	4G communication antenna	1 pcs
11		Alarm serial connecting cable	RS232 serial port with IO alarm input	1 pcs

12		9PIN power cable	Power input cable	1 pcs
13		IPC2/AVOUT/RS485connecting cable		1 pcs
14		MINI key	Unlock	1 pcs
15		WIFI antenna	Enhance the WIFI signal	1 pcs
16		7.5A fuse	Socket-mounted fuse, plug-in, ordinary type 32V, 7.5A	1 pcs
17		15A fuse	Socket-mounted fuse, plug-in, ordinary type blue case, 32V, 15A	1 pcs
18		Wet and dry paper	Clean the camera lens or the windshield	2 pcs
19		Standard SIM card	Dial-up, self-purchased	1 pcs
20		6PIN audio and video extension cable (optional length)	IPC camera audio and video extension cable, optional	1 pcs
21		4PIN audio extension cable (optional length)	AHD camera audio and video extension cable, optional	1 pcs
22		External GPS module	High-precision positioning, required	1 pcs
23		M.2 SSD cartridge pick-up auxiliary wrench	Auxiliary Removal of Hard Disk Box	1 pcs

3.2 Preparation of Installation Tools

Before installation, the following installation accessories and tools shall be made available.

List of Installation Tools and Accessories				
S/N	**Picture**	**Name of Tool**	**Purpose**	**Qty.**
1		Torsion drill	Tighten screws	1 pcs
2		Common screwdriver socket	Tighten screws; optional	1 pcs
3		Crow plate	Pry up the vehicle panel	1 pcs
4		Ties	Bundle cables	Several
5		Dry cleaning cloth	Clean the countertop	1 pcs
6		Smartphone/pad	Install the EasyCheck App for video preview and parameter configuration	1 pcs
7		Steel tape	Measure the installation height of the forward-facing ADAS camera lens and assist the installation in other scenarios	1 pcs
8		Mark pen	Mark lines for main unit installation	1 pcs
9		Cutting nippers	Cut and strip wires	1 pcs
10		Insulated rubber tape	Wrap wire ends	1 pcs
11		Scissors	Cut insulated rubber tape or wire clip	1 pcs

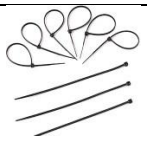
12		USB flash disk	Standby	1 pcs
13		Multimeter	Locate vehicle power supply	1 pcs
			Measure the conduction of harness	
			Measure pulse signal	
14		3M adhesive tape	Fix DMS camera	1 pcs
15		Rubber sleeve	Rubber sleeve at the opening for cable protection	Several
16		Corrugated conduit	Aesthetic wiring and cable protection	

The following installation tools are also required for the installation of DMS camera if required:

DMS Camera Installation Tools				
S/N	**Picture**	**Name of Tool**	**Purpose**	**Qty.**
1		PH2 cross screwdriver	1. Adjust and fix the DMS camera lens at certain angle (generally included in the DMS camera packaging) 2. Tighten the lens screws; for ADAS calibration	1 pcs
2		3.5mm*25mm self-tapping screw	Fix camera; standard (generally included in the DMS camera packaging)	4pcs

The following installation tools are also required for the installation of BSD camera if required:

BSD Camera Installation Tools				
S/N	**Picture**	**Name of Tool**	**Purpose**	**Qty.**

1		Wire stripper	Strip and cut wires, and cut ties	1 pcs
2		Multimeter	Locate vehicle power supply Measure the voltage of vehicle	1 pcs
3		Common screwdriver Socket	Fix bracket and camera	1 set
4		20m tape measure	Ranging and calibration	1 pcs
5		Electric hand drill	Drill holes on the carbody	1 pcs
6		High-speed steel drill bits	Drill holes on the carbody 3.4mm and 3.8mm drill bits	Several
7		Tapper	Drill holes on the carbody for the concealed installation of tail harness 18mm and 20mm drill bits	Several
8		A piece of steel wire	Lead wires to pass through holes	1 pcs
9		EasyCheck App	Calibrate camera	1 pcs
10		Ties	Put harness in order	1 bag
11		3M insulated rubber tape	Connection insulation	1 pcs
12		Mini type level	Ensure that the camera is installed vertically	1 pcs

13		SUPER 918A Glass sealant	Seal holes on carbody for waterproofing	1 pcs

3.3 Preparation of SIM Card and SD Memory Card

To ensure normal online communication and data storage of the equipment, please prepare a supporting Micro SIM card and Micro SD card that meets the quality requirements before installation.

4. Installation of M1N 2.0 Main Unit

4.1 Installation of SIM Card and Memory Card

Take out the main unit (without powering on), unlock the front panel of the main unit with the key in the package, and then insert SIM card 、Micro SD card、M.2 SSD Box.

4.1.1 Install SIM card and Micro SD card as shown in the figure below (pay attention to the insertion direction of the cards).

①Unlock with the key;

② Open the front panel;

③Pull out the SIM card tray

④Place the SIM card into the card tray in the direction of the silkscreen logo.

⑤ Push the card tray with card (**metal side up**) into the card slot

⑥SIM card tray pushed in to the bottom

⑦ Insert the card into the Micro SD card slot in the direction shown in the illustration

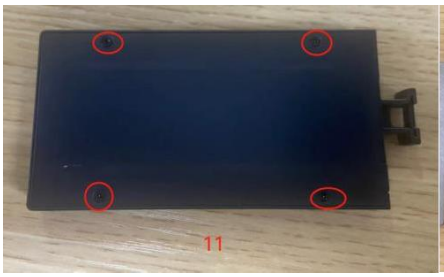
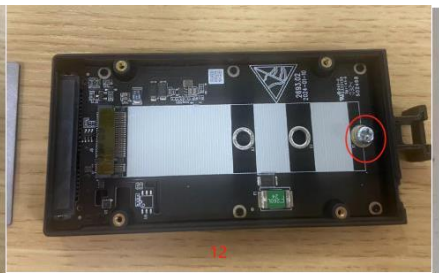
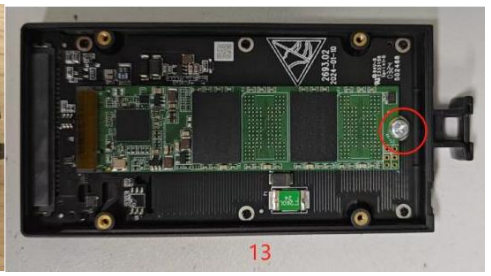
⑧ Be sure to let the Micro SD card push in to the bottom

4.1.2 M.2 SSD BOX installation method:



⑨Use of M.2 SSD BOX pick-up auxiliary wrench (optional)

⑩With the tool tabs facing down on the M.2 SSD BOX wrench, pull the BOX out with force.

⑪ Open the 4 screws on the bottom cover of the hard disk enclosure.

⑫ Loosen the M.2 SSD retaining screws

⑬ Insert the hard disk and secure the screws

*Note:

- Load SIM card needs to be loaded together with the SIM card tray in the direction of Figure 5 and pushed to the bottom, it is strictly prohibited to insert SIM card without the card tray.
- M.2 SSD drives only support SATA protocol, not Nvme protocol SSDs.
- If you feel smooth and flexible during installation of SIM card and SD card, and hear a clear sound of "Da" when pushing in the cards completely, it indicates that the cards are installed in the correct direction; if there is obvious friction resistance during installation, it indicates that the installation direction is wrong. Take out the cards in time to avoid any damage to the cards and the card holder.
- Do not touch the surface of the metal contact of the SIM card with hands when taking and installing the card, for fear of contaminating the SIM card by dust and sweat stain.
- Before installing SIM card, please check the surface of the metal contact of the SIM card for any dirt (such as dust, fingerprints and water stains). If any, clean the surface with a piece of non-woven fabric or rubber.
- Close the front panel and lock it with the key after the SIM card 、Micro SD card and M.2 SSD BOX are installed.

4.2 Installation of M1N 2.0 Main Unit

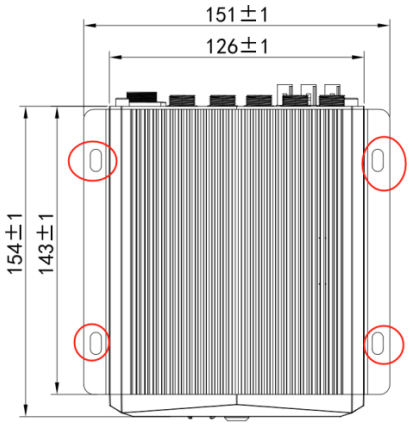
The installation position and method of the main unit shall be determined according to relevant electrical equipment construction specifications and on-site vehicle installation conditions.

(I)Mounting position

The installation position shall be determined with careful consideration given to safety, vibration resistance, heat dissipation, waterproofing, damp-proofing, dust-proofing, protection against damage and easy maintenance, and shall meet the following requirements:

1. Vibration resistance: The terminal shall be installed at the position with weak vibration in the vehicle, and should be kept away from the engine.
2. Heat dissipation: The terminal shall be kept away from on-board heat sources and be installed at a ventilated position for heat dissipation.
3. Waterproofing: During installation of the terminal, attention shall be paid to high temperature prevention and waterproofing.
4. Damp-proofing: The terminal shall be installed at a dry and ventilated place.
5. Dust-proofing: The terminal shall be installed at a place with less dust.
6. Electrical: The terminal shall be kept away from complex electromagnetic environment and strong interference environment as far as possible.
7. The installation position of the main unit shall be flat. Keeping the main unit sidelong and on a slant shall be avoided as far as possible.
8. There shall be enough space to open and close the front panel (without affecting the removal and replacement of SIM card、Micro SD card and M.2 SSD BOX).
9. There shall have enough distance at the tail of the main unit to plug and unplug the aviation connector (without affecting the connection), and the tail harness must be wrapped firmly and neatly.

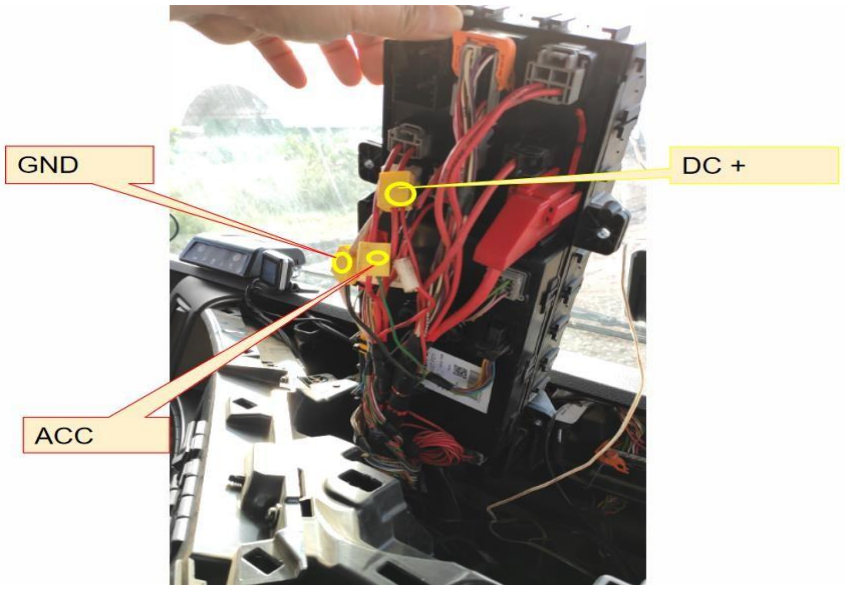
If the above conditions are met, tighten the screws to fix the main unit, as shown in the figure below.

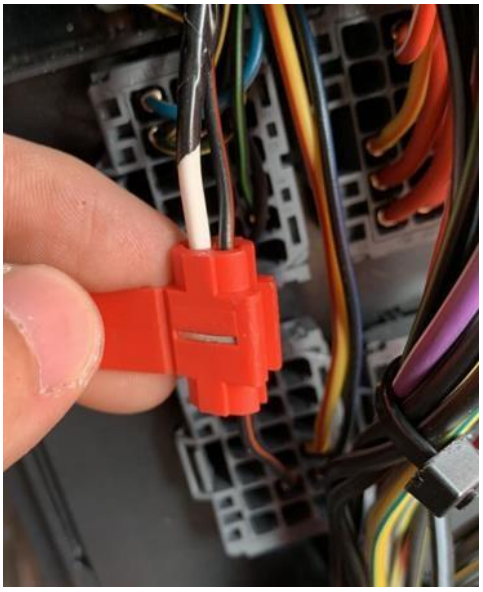


4.3 Power Supply Connection and Connection of Signal Cables

4.3.1 Power Supply Connection

Power cable: Connect DC+ to the vehicle constant power supply, ACC to the vehicle power cable, and GND to the vehicle ground wire.





*Note:

The power line shall be connected using "special stripping-free connection terminal" where possible (no stripping is required, so as to avoid the risk of electric leakage), and the connection shall be wrapped with insulated rubber tape to avoid electric leakage/short circuit.

If there is no special stripping-free connection terminal, stripped wires can also be used for connection. In this case, the connection process must conform to the standard specifications. After the connection is completed, the connection shall be wrapped with insulated rubber tape to avoid electric leakage/short circuit.

4.3.2 Connection of Signal Cables (Pulse or CAN/Left/Right Steering Signal/Reversing)

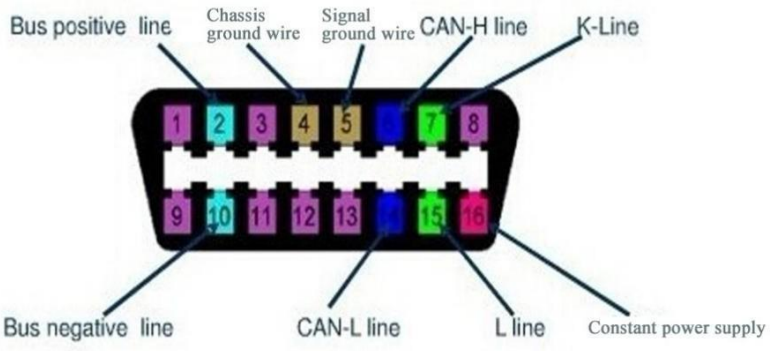
1. Vehicle speed pulse or CAN (one out of two)
   (1) Consult the maintenance engineer of the vehicle discipline to locate the vehicle speed pulse cable. In the discrete-wire alarm serial connecting cable:
   Connect "SPEED IN" to the vehicle speed pulse cable;
   After the connection is completed, log in to the EasyCheck App to connect the M1N main unit. Enter the configuration interface, and set the speed source of the equipment as "Pulse". At the same time, drive the vehicle for a short distance at the installation site to test the accuracy of vehicle speed pulse data.
   (2) Consult the maintenance engineer of the vehicle discipline to locate the OBD interface of the vehicle. Generally, the position of the OBD interface of the vehicle is as shown

in the figure below. Locate CAN-H and CAN-L cables of the vehicle behind the OBD interface. Take the standard 16PIN inverted trapezoidal OBD interface as an example, CAN-H and CAN-L cables generally correspond to pins 6 and 14, respectively. (The cable sequence varies with the shape of OBD interface. The example here is only for illustration.)

After the connection is completed, log in to the EasyCheck App to connect the M1N main unit. Enter the configuration interface, set the CAN model and baud rate of the equipment, and set the speed source as "OBD". At the same time, drive the vehicle for a short distance at the installation site to test the accuracy of vehicle speed pulse data.

General Position of OBD Interface of Each Vehicle Model

Pin Definition of OBD Interface of Vehicle



2. Left steering/right steering/reversing signal

After locating the fuse board below the steering wheel or the front passenger dashboard, measure the cable corresponding to left steering/right steering/reversing signal according to the tips on the cover back of the fuse board or using a multimeter.

There are eight IO signal cables in the discrete wire, and the signal cables such as left steering, right steering and reversing all need to be connected. Moreover, it is necessary to

connect the M1N 2.0 main unit through the EasyCheck App, so as to enter the configuration interface and set the use of corresponding signal cable.

Example:

① Connect SENSOR IN1 to the left steering signal cable of the vehicle. In this case, click 【Preferences】>【Alarm】>【Base】>【IO Alarm】 in sequence to set the "**Sensor Uses**" as "**Left Steering**", and then click "**Save**".

② Connect SENSOR IN2 to the right steering signal cable of the vehicle. In this case, click 【Preferences】>【Alarm】>【Base】>【IO Alarm】 in sequence to set the "**Sensor Uses**" as "**Right Steering**", and then click "**Save**".

③ Connect SENSOR IN3 to the reversing signal cable of the vehicle. In this case, click 【Preferences】>【Alarm】>【Base】>【IO Alarm】 in sequence to set the "**Sensor Uses**" as "**Reversing**", and then click "**Save**".

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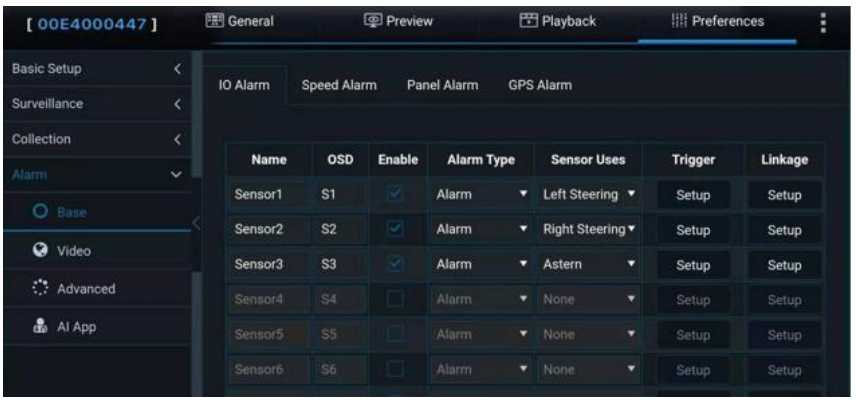


*Note:

If the measured signal is a pulse signal, the source of left steering/right steering/brake signal shall be set as pulse on the setting interface of the main unit; if the measured signal is a continuous high or low level signal, the source of left steering/right steering/brake signal shall be set as level on the setting interface of the main unit.

4.4 Installation of GPS, 3G/4G and WiFi Antennas

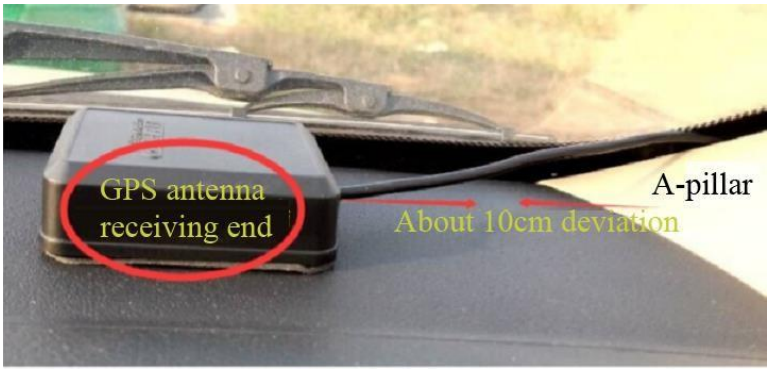
4.4.1 Installation of GPS Antenna

Installation requirements of GPS antenna:

1. The front side (labeling side) of the GPS antenna shall be up as required;
2. It is recommended that the antenna be installed on front passenger side, more than 10 cm away from the A-pillar.

3. There shall be no other equipment above the antenna. Moreover, the antenna shall be kept clear of in-vehicle audio-video, interphone and other electronic equipment to prevent interference;
4. The antenna installation position shall be far away from the position with severe vibration;
5. The antenna shall be far away from the air outlet of the air conditioner to prevent condensate accumulation due to temperature change.

The GPS antenna is fixed in the vehicle.



4.4.2 Installation of 3G/4G Antenna

Installation requirements:

1. The equipment that may interfere with 3G/4G signals, such as original on-board GPS positioning module, shall be kept more than 15 cm away from the antenna.
2. Excess tail harness of the 3G/4G antenna shall be concealed in the A-pillar or the center console.

Tear off the 3M adhesive film on the 3G/4G antenna and stick the antenna under the A-pillar at the front passenger side.

4.4.3 Installation of WiFi Antenna

Tear off the 3M adhesive film on the bottom of the WiFi antenna to stick the antenna to one side of the center console of the vehicle.

Installation requirements:

1. The antenna cannot be installed in a confined space, as this may affect signal reception.
2. Excess tail harness of the WiFi antenna shall be concealed in the A-pillar or the center console.

5. Installation and Calibration of Optional Components

5.1 ADAS Camera

*Before installation and calibration of the ADAS camera, it must be ensured that the vehicle is parked on the flat ground. It is forbidden to park the vehicle on a slope or a potholed road for ADAS installation and calibration.

5.1.1 Requirements for Installation Position

1. If conditions permit, it must be installed in the middle of the front windshield.
2. If the wiper stops at the lower part of the front windshield, the ADAS installation position shall be at least 10 cm above the lower edge of the front windshield to avoid being covered by the windshield wiper at stop position.

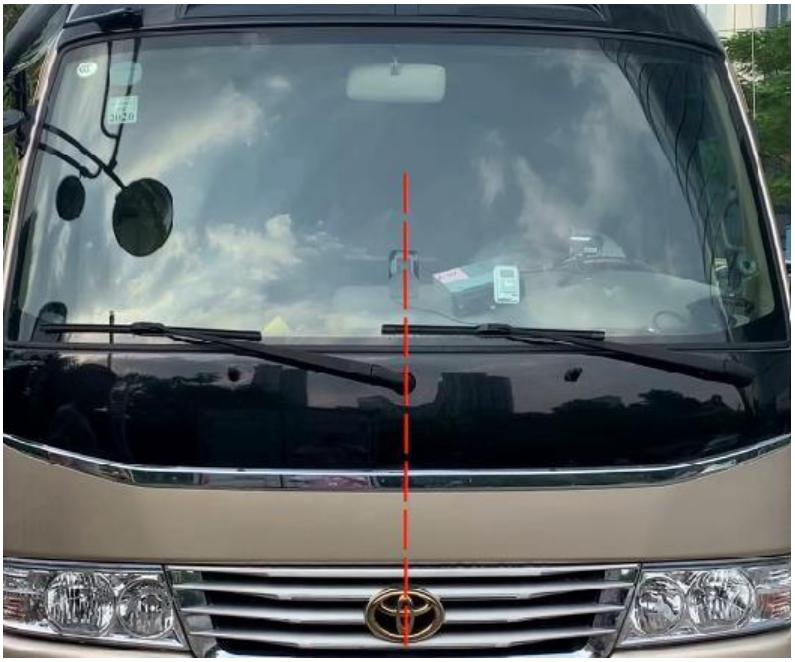
3. If the wiper stops vertically in the middle of the front windshield, the ADAS camera lens shall be installed as close to the middle position as possible (to avoid too high sensitivity for any lane deviation on this side) and be less than 10 cm away from the centerline, provided that the lens will not be covered by the windshield wiper at stop position.

4. Make sure that ADAS is installed within the working area of the left and right windshield wipers (so as to ensure that the area within the range of the ADAS camera lens can be cleaned by the windshield wiper).
5. For ADAS, the optimum installation height is 150 cm - 240 cm and the optional one is 120 cm - 260 cm.

5.1.2 Requirements for Installation Details

There are several methods to determine the centerline of the front windshield of a vehicle:

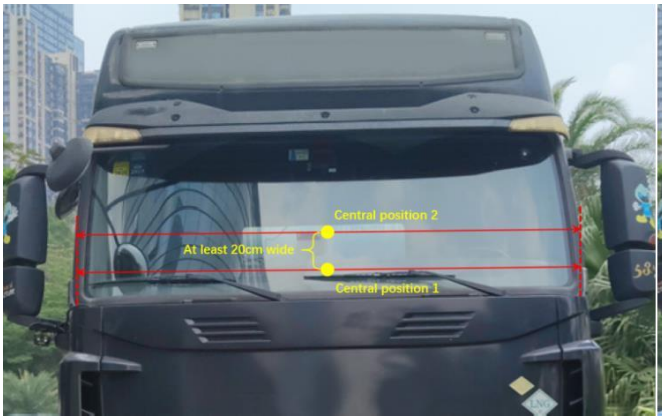
1. Generally, there are symmetrical air outlets on the dashboard near the front windshield. The centerline of the front windshield can be found based on the symmetry of the air outlets.
2. The centerline of the front windshield can be determined through the vehicle emblem, as shown in the figure below:

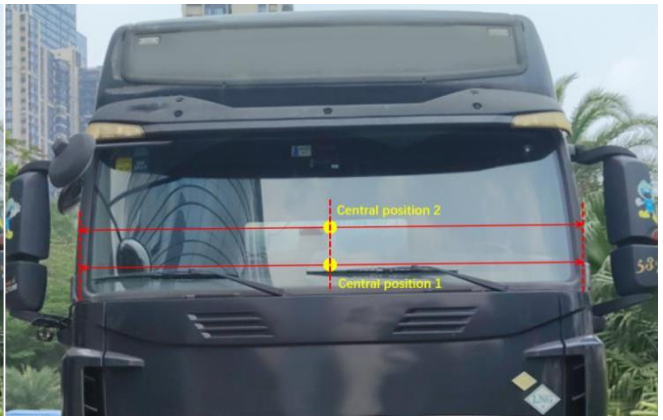


3. If the centerline cannot be determined by the above method, the following traditional method can be adopted:

Measure the width of the front windshield with a steel tape to locate the center point of the front windshield, and then locate and mark horizontal center point 1.

Next, in the vertical direction, locate another horizontal center point 2 on the front windshield at least 20 cm away from center point 1. Connect center points 1 and 2 with a mark pen, to draw the centerline of the front windshield.





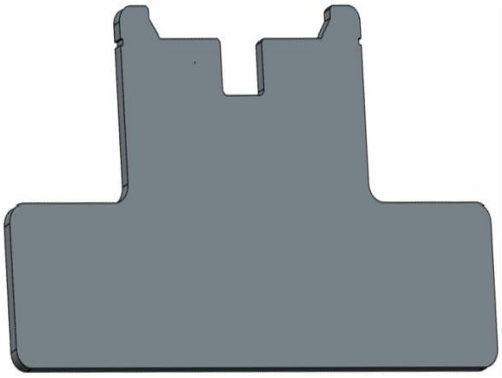
5.1.3 Installation Steps

After the installation area and the centerline are determined, the following shall be done:

1. Clean the interior and exterior of the glass in the target installation area with alcohol cotton in the packaging (to ensure that no dirt will affect the angle of view of the ADAS camera lens), and ensure the glass in the wiping area is dry.
2. Tear off the 3M adhesive film on the ADAS camera lens, and then stick the ADAS camera horizontally and vertically on the front windshield.
   (1) If there is no special mounting bracket for ADAS installation, it is recommended that one person should stand outside the vehicle to observe whether the ADAS camera is installed horizontally and vertically, and the person in charge of ADAS camera installation should make fine adjustments to ensure that the camera is indeed installed horizontally and

vertically, and then can press the ADAS camera tightly to ensure no bubble between the 3M adhesive tape and the glass.

(2) If there is a special mounting bracket for ADAS (as shown in the figure below), the following steps are implemented: Place the mounting bracket vertically on the dashboard below the target installation area, and then tear off the 3M adhesive film on ADAS, and align the lower edge of the ADAS camera to the notched ADAS fixing seat above the special bracket. Finally, press the camera onto the glass continuously to ensure no bubble between the 3M adhesive tape and the glass.



Note:

The ADAS camera must be installed horizontally and vertically; otherwise, the ADAS algorithm will be greatly affected due to a skew angle of view of the ADAS screen.

5.1.4 Calibration Requirements

There are two calibration methods for ADAS, namely automatic calibration and manual calibration. It is recommended to use automatic calibration.

5.1.4.1 Automatic Calibration

Calibration steps:

After installing the ADAS camera, follow the steps in the figure below to open the back cover of the ADAS camera and adjust the angle of the ADAS lens to ensure that the image meets the following conditions:

（1） After turning on the guidelines, adjust the angle of the ADAS lens so that the horizon line is in the middle of the image vertically.

（2） The deviation of the horizon line from the middle guideline of the image should be less than 10% of the width of the image, as shown in the figure below.

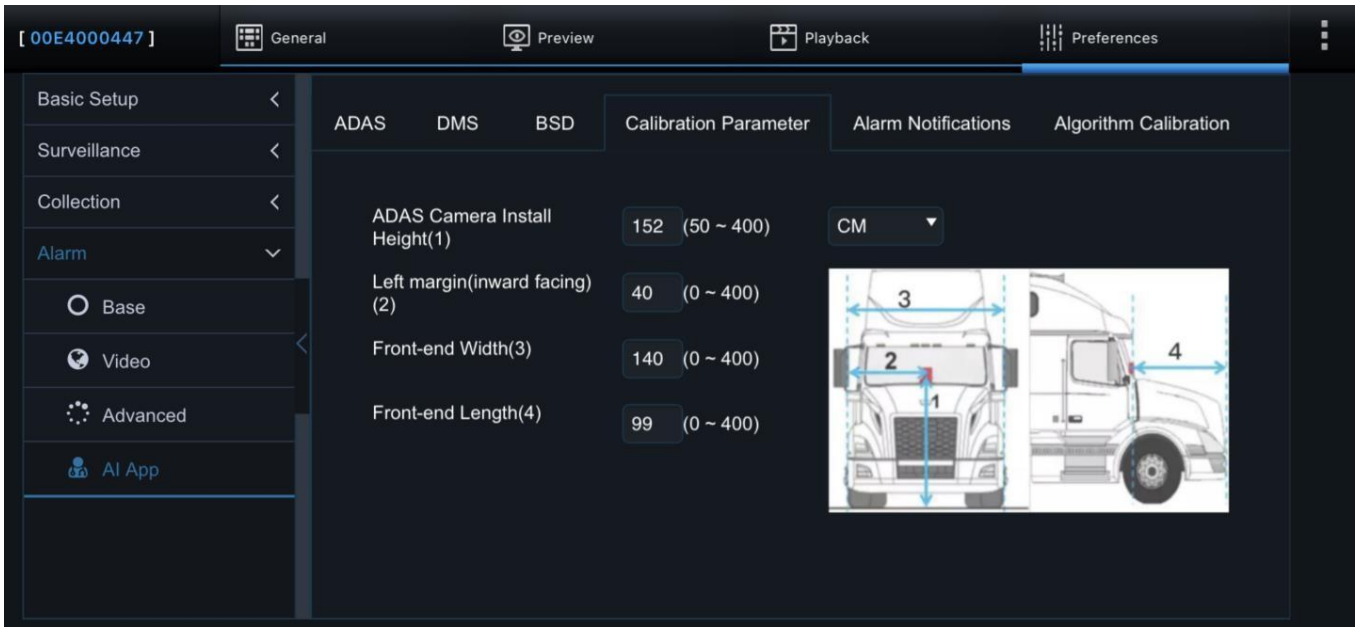
Dismantle the screw　Remove the back cover　Unscrew the screw and adjust the lens

After adjusting the angle of the ADAS lens, securely tighten the screws for adjusting the ADAS angle and the back cover screws. Then proceed to measure the mounting height of the ADAS lens.

Using a ruler or tape measure, measure the vertical height from the ground to the ADAS lens (precisely to cm/inch), which serves as the mounting height of the ADAS

lens. Note: When measuring the vertical height from the ground to the ADAS lens, ensure that the ruler or tape measure is perpendicular to the ground before reading the height value **(Note: Measure at the lens, not at the top or bottom edge of the ADAS housing).**

Next, enter the Veyes operating interface, click on 【Preferences】>【Alarm】>【AI App】>【Calibration Parameter】, as shown in the figure below:



In the ADAS calibration height setting, you can choose between centimeters or inches as the unit. Input the installation parameters of the ADAS lens into the parameter input box. After completing the input, click on 'Save' to confirm."

5.1.4.2 Manual Calibration

There are two methods for manually calibrating ADAS:

One is the long-distance calibration method. This method applies if the installation site is open and has at least a 30m flat road section.

One is the short-distance calibration method. This applies if the installation site has limited conditions and a 5m or less flat road section.

The two calibration methods are introduced below. To ensure the calibration effect and the recognition effect of ADAS, if conditions permit, **the "long-distance calibration method" is preferred**.

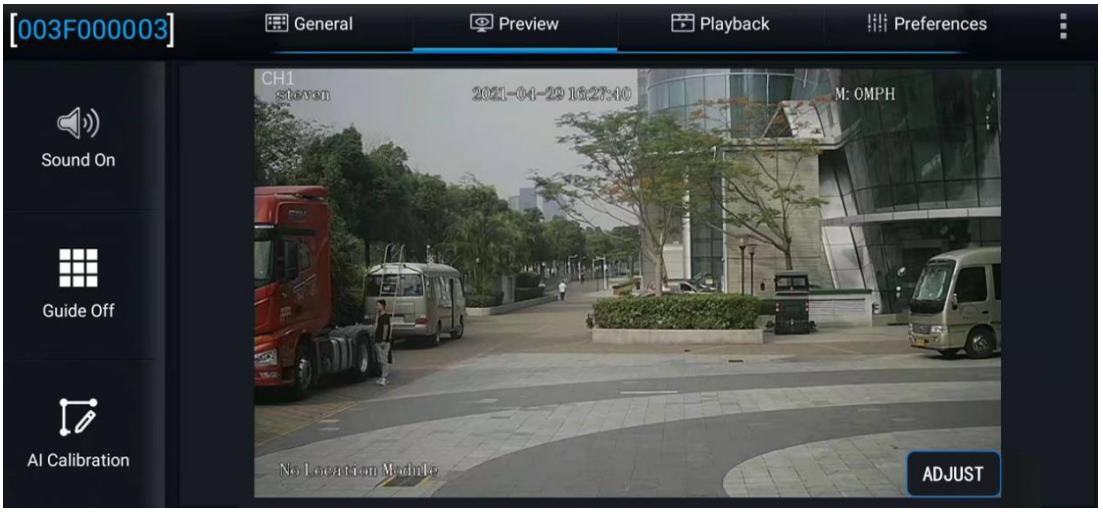
5.1.4.2.1 Long-distance calibration method (20m/30m/40m)

Application scenario: The installation site is open and has at least 30m flat road section. To ensure the calibration accuracy, this method is preferred.

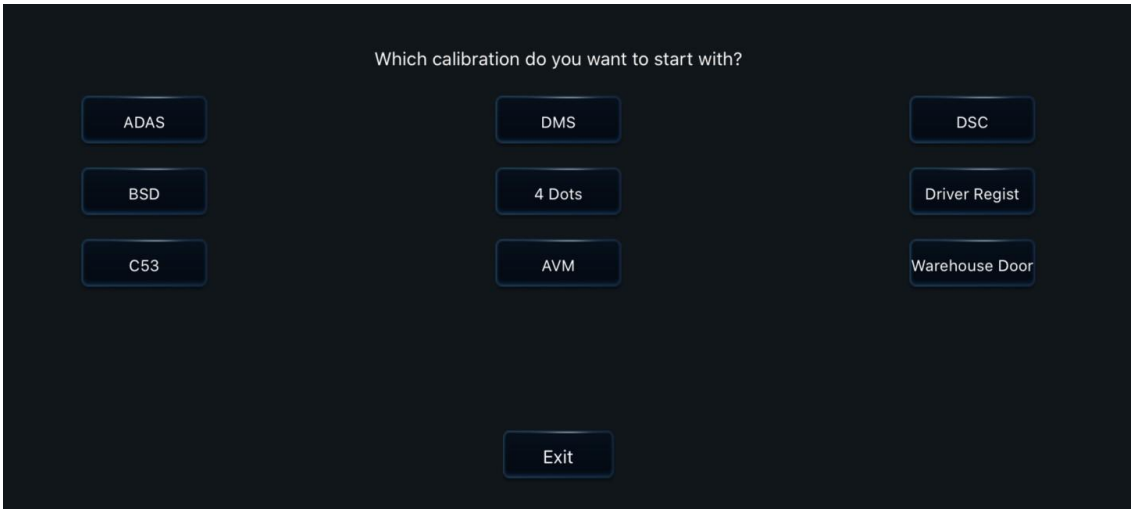
Calibration process:

Log into the Veyes APP to enable the ADAS calibration process.

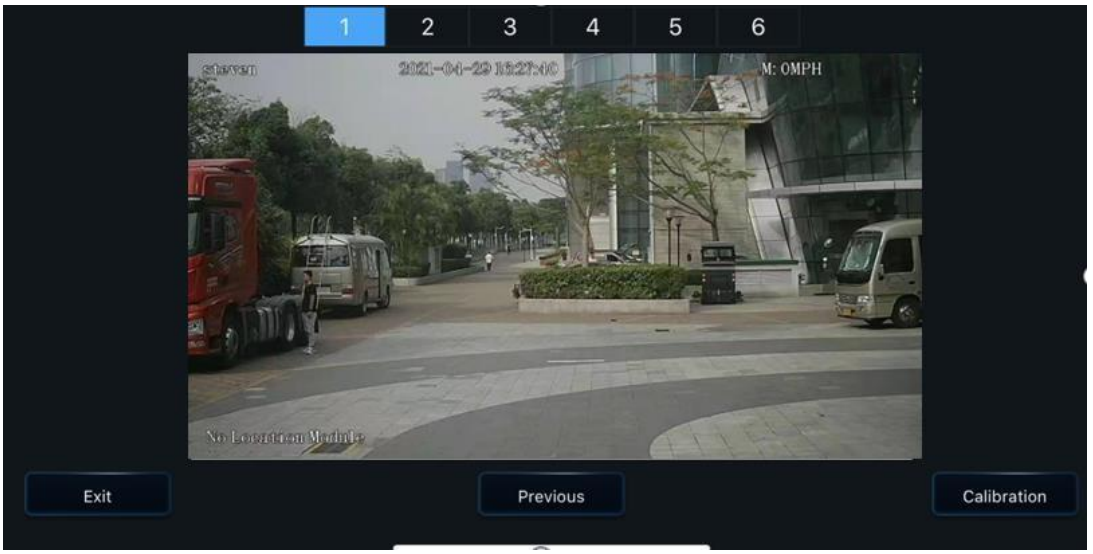
1. Click [Preview] on the homepage to enter the preview interface, and then click [AI Calibration] on the lower left corner of the screen for calibration selection.



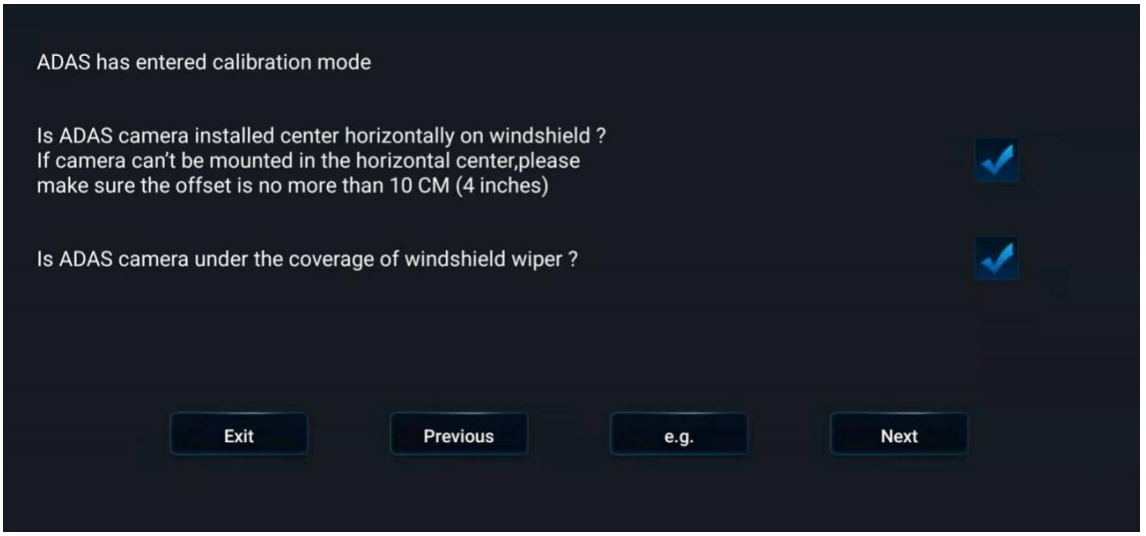
Enter the real-time preview interface and double-click the ADAS channel screen to enter the main stream, and then click "AI Calibration" at the lower left corner of the screen to enter the AI calibration selection interface for ADAS calibration.



2. Select calibration channel. Since ADAS cameras are all installed in channel 1, select channel 1 here. Next, click "Calibration" at the lower right corner of the screen to enable the calibration process.



3. Confirm that ADAS is installed at a reasonable position on the front windshield and is within the working range of the windshield wiper.



4. During the manual calibration process for ADAS, it is necessary to measure the installation height of the ADAS system(Please note that this measurement refers to the height of the lens relative to the ground and must be precise to the centimeter/inch.). And enter the value in the APP screen. To ensure the accuracy of the ADAS algorithm recognition, three additional parameters need to be entered in the app interface, including the left offset of the ADAS lens, the width of the front of the vehicle, and the length of the front of the vehicle.

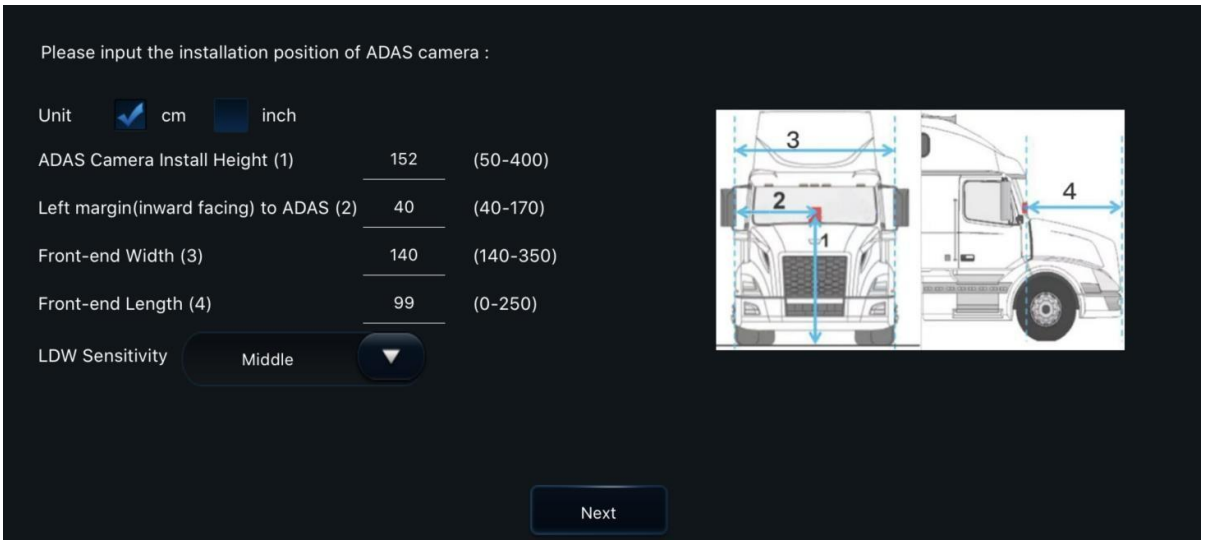
The measurement methods for these three parameters are as follows:

Left Offset of ADAS Lens: This refers to the horizontal distance from the ADAS lens to the outer edge of the left tire of the vehicle. To measure this, stand outside the vehicle, facing the front, and measure to the left side of the outer edge of the tire.

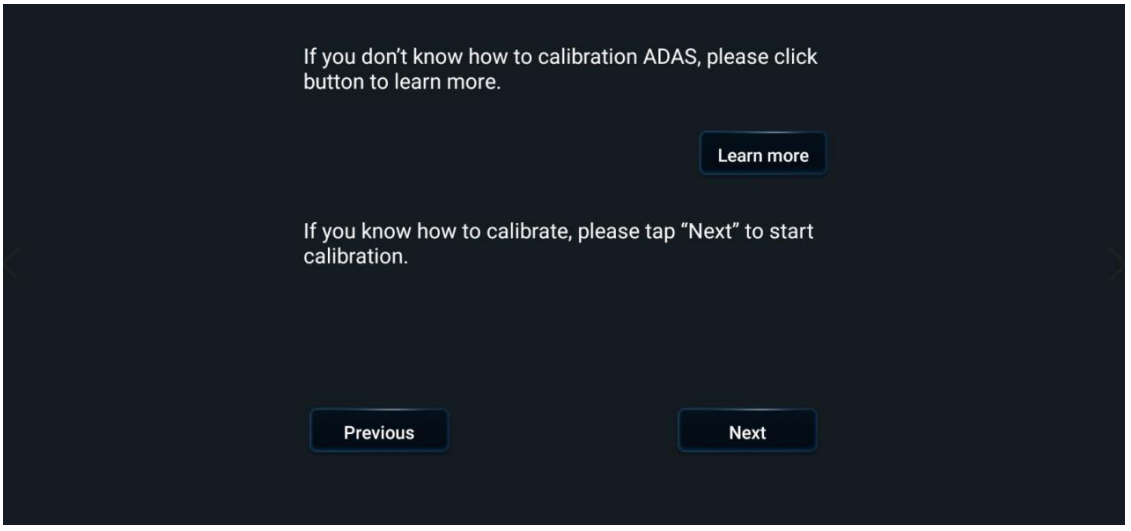
Front Width of the Vehicle: This parameter indicates the distance between the outer edges of the two tires.

Front Length of the Vehicle: This refers to the horizontal distance from the ADAS lens to the license plate.

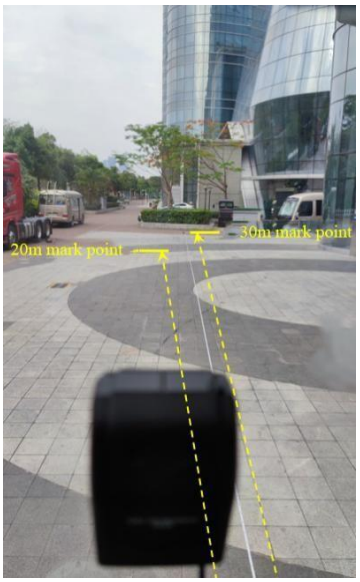
Please refer to the diagram below for examples of how to measure these distances.



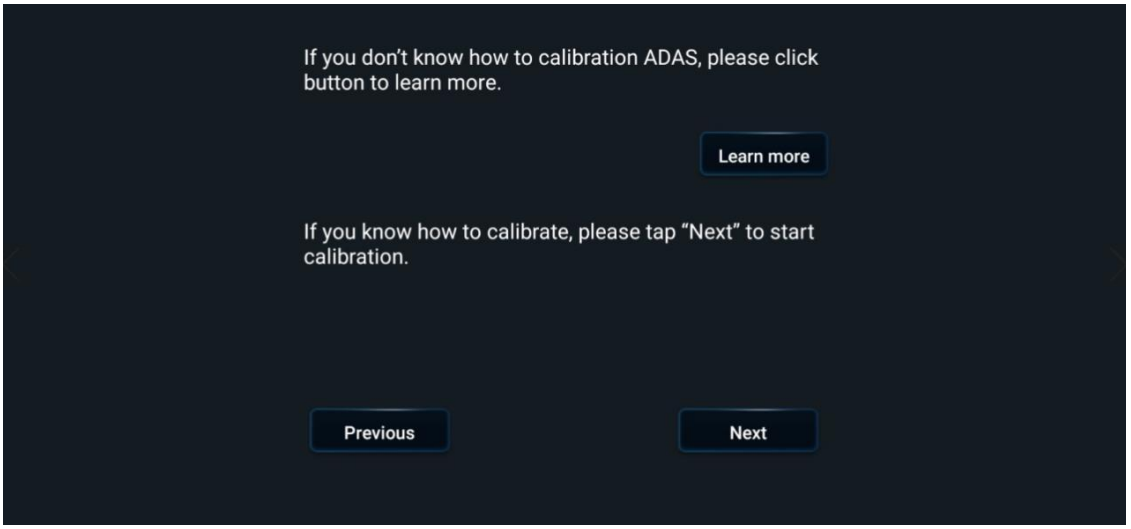
5. Enter the following interface. You can view the ADAS calibration tutorial in this interface, if you already know how to calibrate, continue to click **[Next].**

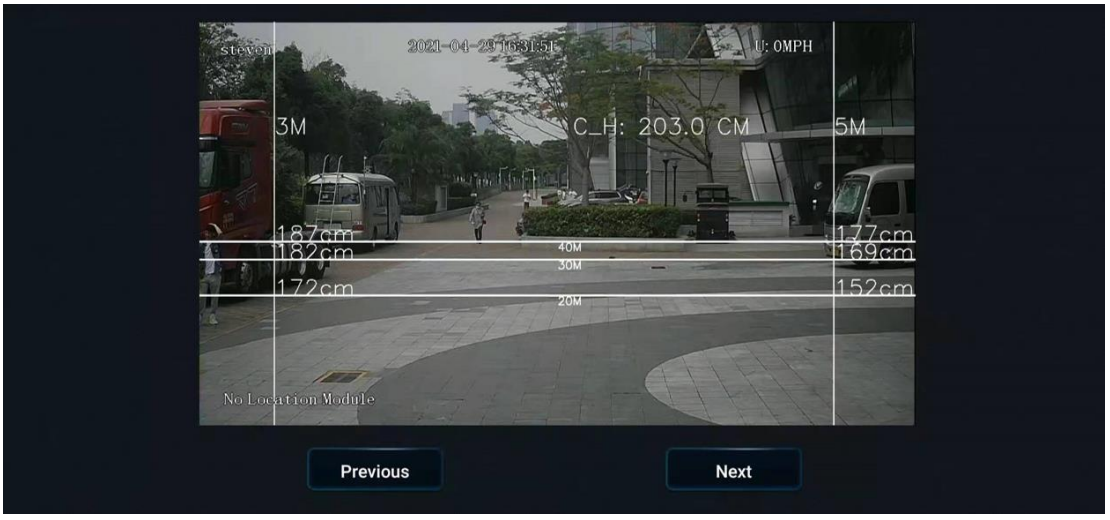


Use a leather measuring tape to pull the line forward from the point (point C) of ADAS lens to the ground in the direction parallel to the vehicle body, and set obvious marks at the position of 20m and 30m respectively. It is recommended to use a conspicuous rod for marking.



After entering the installation height of lens, click "Next" on the operation interface of EasyCheck App to enter the following interface. You can view the ADAS calibration tutorial on this interface. If you know how to calibrate, continue to click "Next".





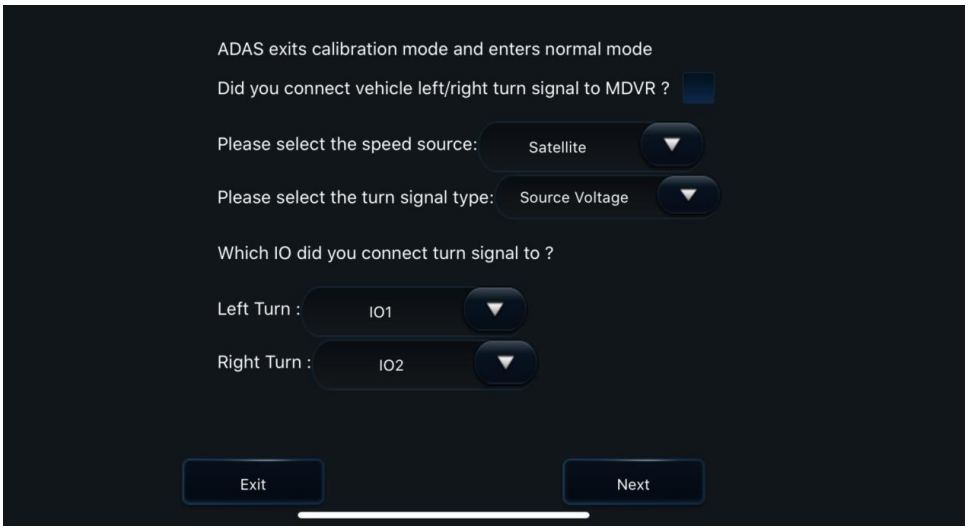
Open the back cover of ADAS camera and adjust the angle of ADAS lens to make the 20m calibration line in ADAS calibration screen coincide with the mark point at 20m on the ground, and the 30m calibration line in ADAS calibration screen coincide with the mark point at 30m on the ground.

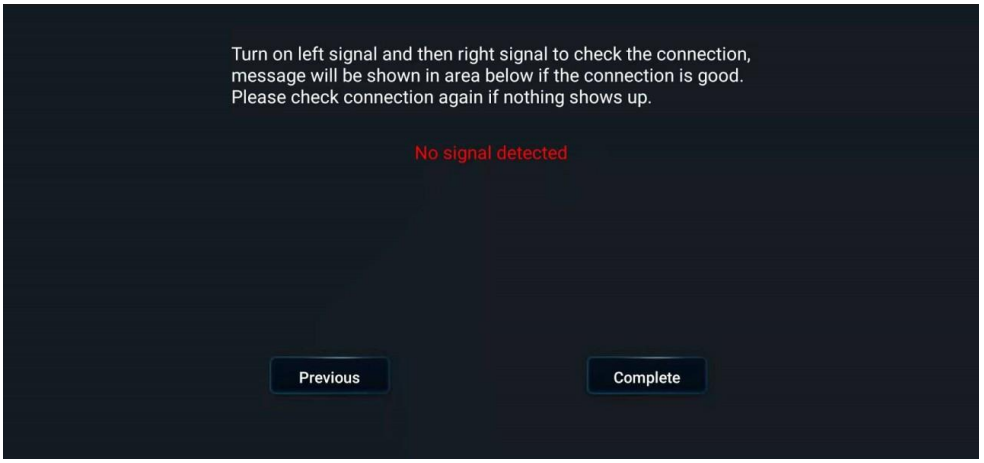
Dismantle the screw

Remove the back cover

Unscrew the screw and adjust the lens

6. After that, click "Next", select the source of speed according to the actual installation situation, set the left and right turn signal parameters, and then click "Next". In the next interface, check whether the left and right turn signals are valid according to the prompts. After checking, click [Complete] to exit the calibration interface.





7. Go back to the real-time preview interface of ADAS channel (double-click the ADAS channel screen to enter the main stream), and check that there is no calibration line superimposed on the screen at this time, which means that ADAS channel has returned to normal mode at this time.

At this point, tighten the screws for adjusting the ADAS angle and the screws of the back cover to complete the long-distance calibration.

5.1.4.2.2 Short-distance calibration method (3m/5m)

Application scenario: The space of installation site is limited, but there is at least 5m flat road surface. Although 3m or 5m can be selected for short-distance calibration, 5m is preferred in order to ensure calibration accuracy.The following is introduced with short-distance calibration (5m).

Principle of short-distance calibration:

When the long-distance calibration method is used, a mark point (point K as shown in the figure below) will be set 20m/30m/40m forward from the point of the ADAS lens (point A as shown in the figure below) to the ground (point C as shown in the figure below), and the 20m/30m/40m

calibration line in the ADAS screen will be adjusted to match the corresponding mark point on the ground.

In case of short-distance calibration, it is limited by the environment of the installation site, and it is impossible to set mark points at 20m/30m/40m. According to the principle of similar triangle, when a telemeter rod is set at 3m/5m (as shown at point F below), corresponding height |HF| of line AK can be found on the telemeter rod. In this way, the 20m/30m/40m calibration line in the calibration screen can coincide with the mark point H on the telemeter rod at point F by adjusting the angle of ADAS lens, and thus long-distance calibration can be realized in case of short-distance calibration (3m/5m). The calculation method is as follows:

As shown in the following figure, mark the position of ADAS camera lens as A, the projection position of A on the ground as point C, the setting position of telemeter rod as point F, and the 20m or 30m mark point in the long-distance calibration method as point K.

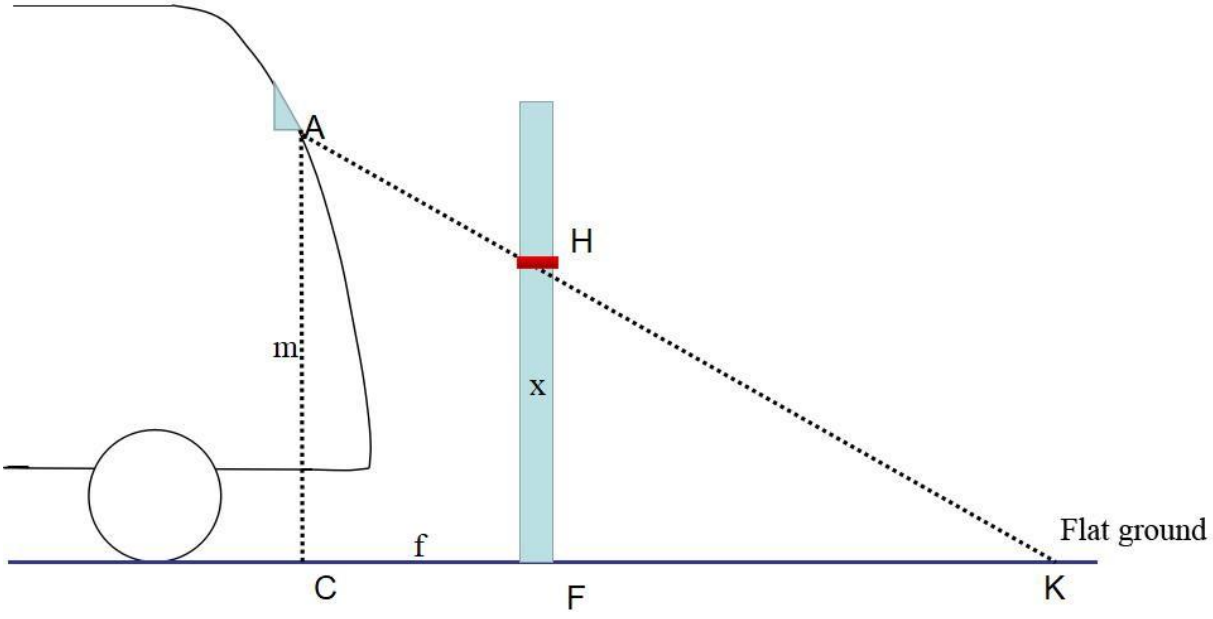
Take |CF|=5m and |CK|=20m as an example:

With C, F and K in the same straight line, |CF|=5m and |CK|=20m, |AC| can be measured and taken as 203cm, and thus |HF| can be obtained according to the similar triangle formula.

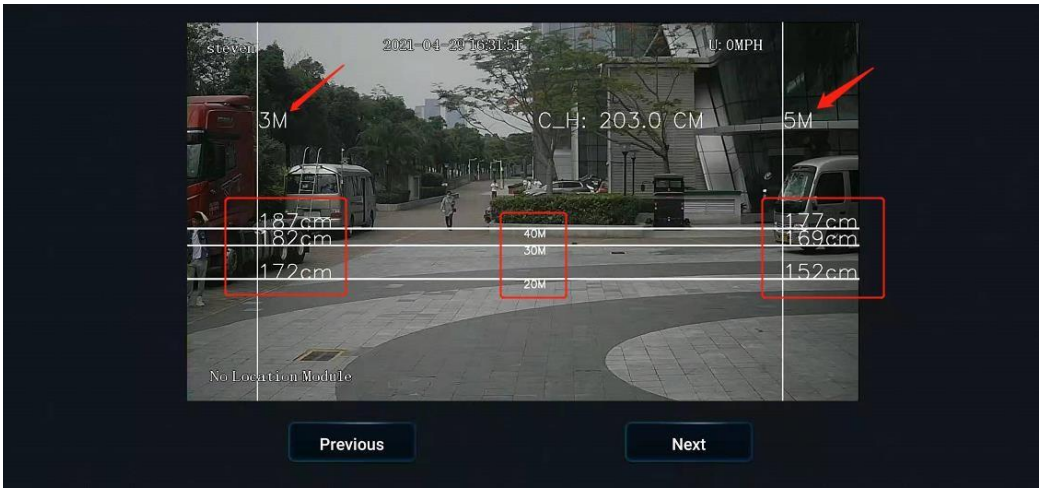
$$|HF|/|AC|=|FK|/|CK|$$

Then, |HF|=(|AC|*|FK|)/|CK|, and |HF|=152.25cm after plugging in the values.

This means that the effect of setting the 20m calibration line on the ground can also be achieved, provided that a telemeter rod is placed 5m in front of the ADAS lens, the height position (152cm) on the telemeter rod is marked, and the angle of the ADAS lens is adjusted to make the 20m calibration line in the calibration screen coincide with the height position (152cm) on the telemeter rod.



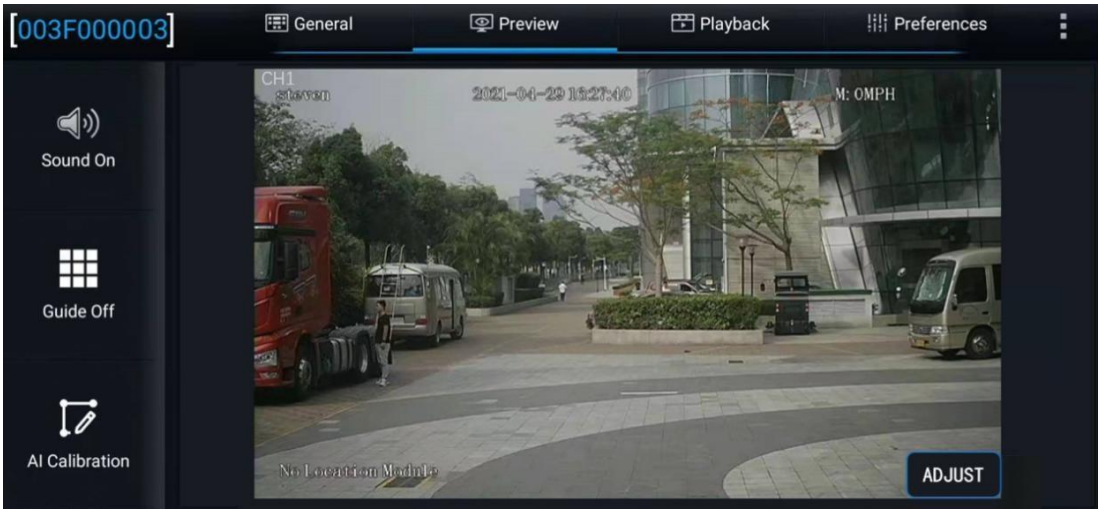
Note: The software will automatically calculate the mapping height of 20m/30m/40m calibration line on the telemeter rod according to the above principle of similar triangle when the telemeter rod is set at |CF|=3m/5m respectively, as shown in the following figure.



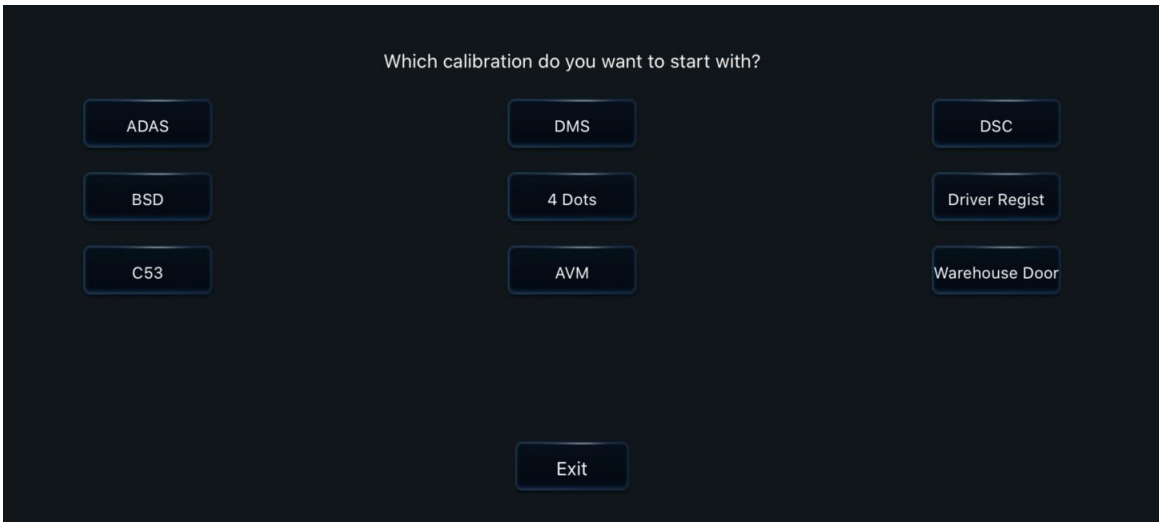
Calibration process:

Log into the Veyes APP to enable the ADAS calibration process.

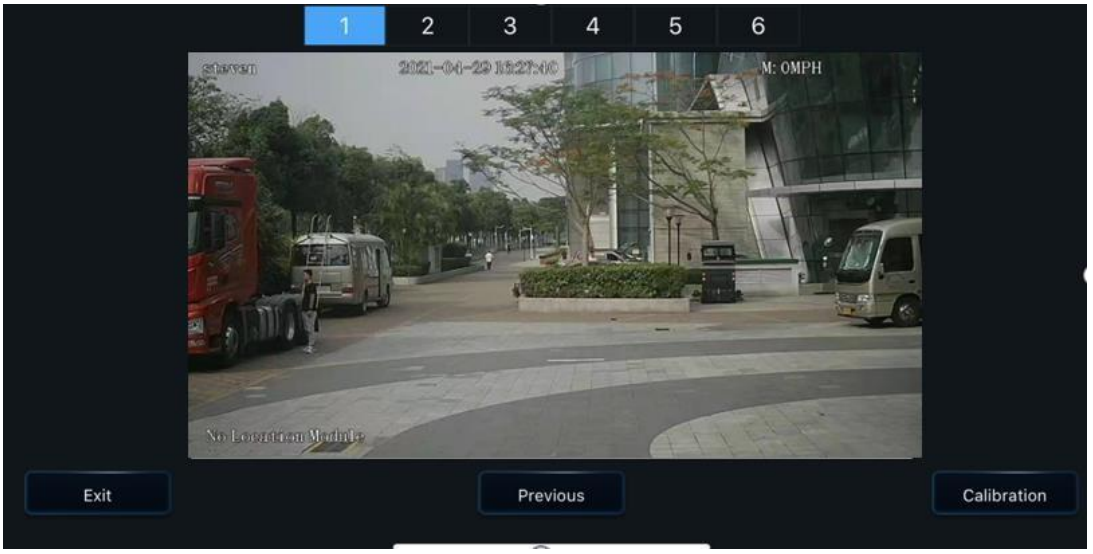
1. Click [Preview] on the homepage to enter the preview interface, and then click [AI Calibration] on the lower left corner of the screen for calibration selection.



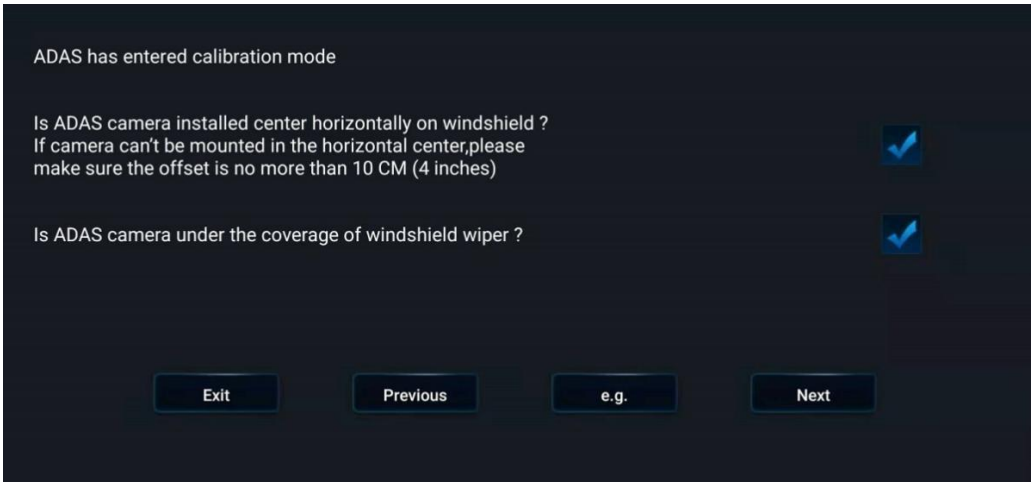
Enter the real-time preview interface and double-click the ADAS channel screen to enter the main stream, and then click "AI Calibration" at the lower left corner of the screen to enter the AI calibration selection interface for ADAS calibration.



2. Select calibration channel. Since ADAS cameras are all installed in channel 1, select channel 1 here. Next, click "Calibration" at the lower right corner of the screen to enable the calibration process.

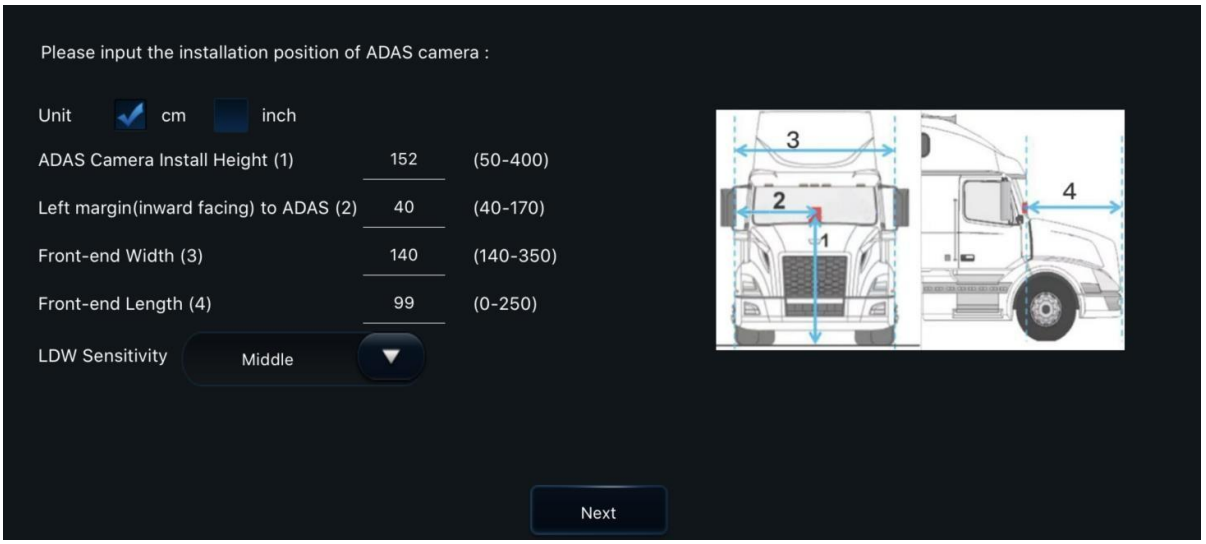


3. Confirm that ADAS is installed at a reasonable position on the front windshield and is within the working range of the windshield wiper.



4. The ADAS mounting height, ADAS lens left distance, nose width and nose length values were measured. The measurement method of these four parameters is the same as that of the remote calibration.

Enter the values of the four parameters in the Veyes APP , and then click [Next].



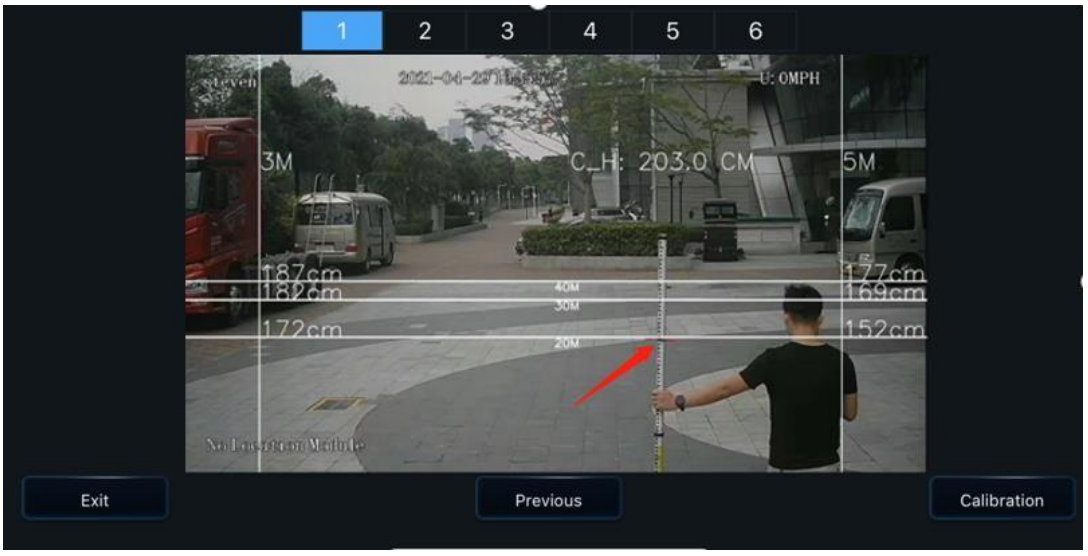
5. Pull a 5m line forward from the point of the ADAS lens to the ground in the direction parallel to the vehicle body, set the telemeter rod with height scale at 5m vertically, and read the value at the intersection of the horizontal 20m calibration line and the vertical 5m calibration line in the ADAS screen, which is 152cm. Then set an obvious mark point at 152cm on the telemeter rod.It is recommended to use a conspicuous rod for marking.

6. Open the back cover of ADAS camera, and adjust the angle of ADAS lens to make the 20m calibration line in ADAS calibration screen coincide with the mark point at 152cm on the vertical telemeter rod at 5m.

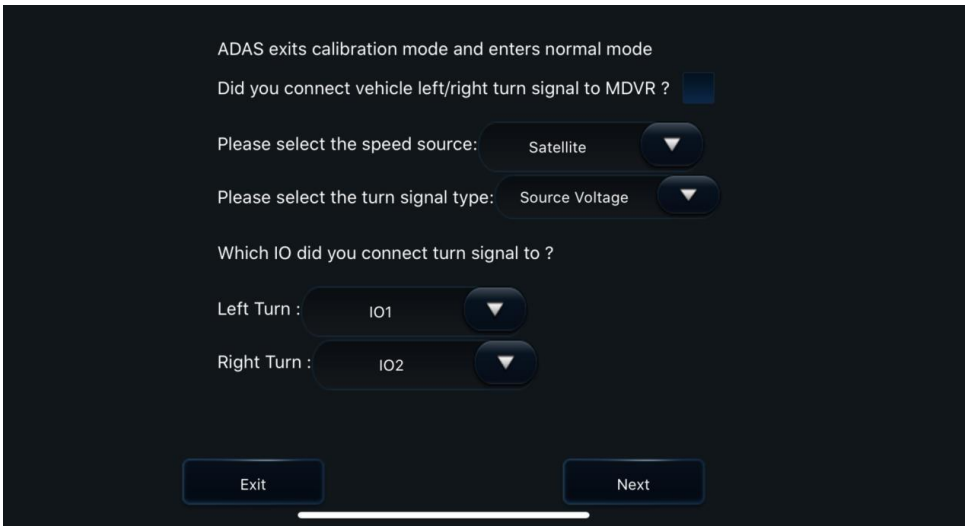
Dismantle the screw

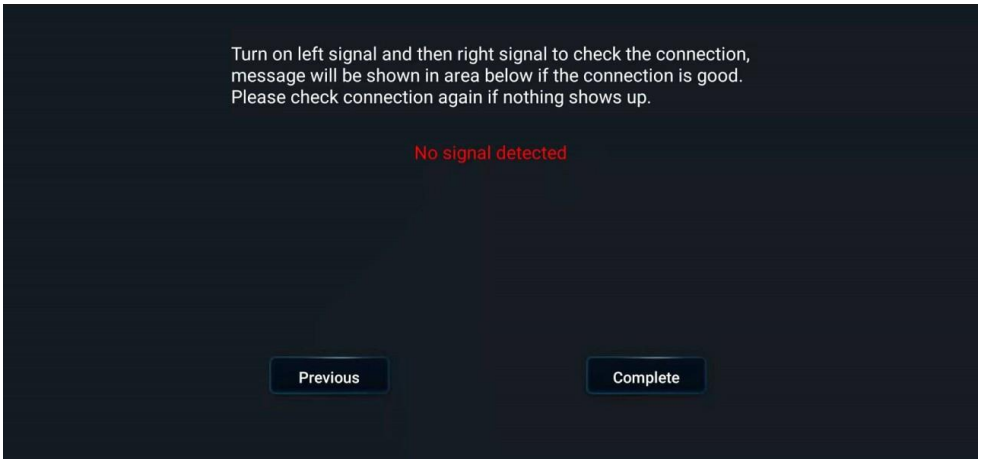
Remove the back cover

Unscrew the screw and adjust the lens



7. After that, click "Next", select the source of speed according to the actual installation situation, set the left and right turn signal parameters, and then click "Next". In the next interface, check whether the left and right turn signals are valid according to the prompts. After checking, click [Complete] to exit the calibration interface.





8. Go back to the real-time preview interface of ADAS channel (double-click the ADAS channel screen to enter the main stream), and check that there is no calibration line superimposed on the screen at this time, which means that ADAS channel has returned to normal mode at this time.

   At this point, tighten the screws for adjusting the ADAS angle and the screws of the back cover to complete the short-distance calibration.

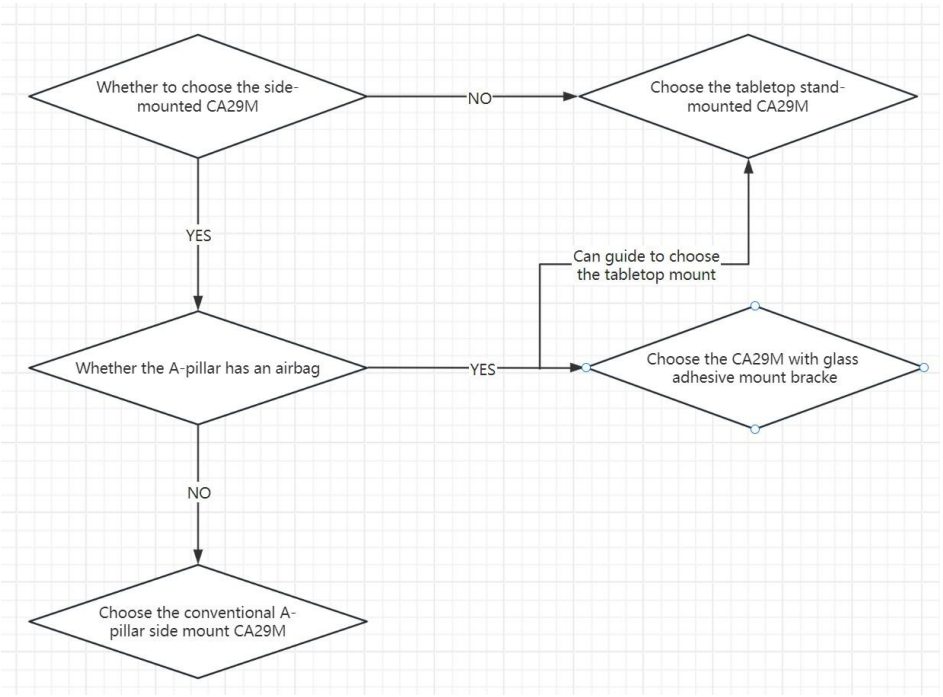
5.2 DMS Camera

For different usage scenarios, there are three options for the external DMS (Driver Monitoring System) camera: A-pillar side mount, A-pillar side glass mount, and tabletop mount. All three options share the same model, CA29M.

For the three types of cameras, they are as follows:

A-pillar side mount: CA29M （LENS:3mm）	A-pillar side glass mount:CA29M （LENS:3mm）	Tabletop mount: CA29M （LENS:4mm）

Generally, customers can choose between the A-pillar side mount CA29M or the tabletop mount CA29M based on their specific circumstances. However, for some customers whose vehicles have airbags installed on the A-pillar, fixing the camera on the A-pillar poses a safety risk. In such cases, they can opt for the CA29M with a glass mount bracket, which can be securely attached beside the A-pillar. Alternatively, frontline staff can guide customers to use the tabletop mount CA29M.



5.2.1 Requirements for Installation Position

1. When selecting the A-pillar side mount or A-pillar glass adhesive mount CA29M camera, the camera should be adjusted to a vertical position. When selecting the tabletop mount CA29M camera, the camera should be adjusted to a horizontal position.

2. Distance requirements between DMS lens and face (for the above three types of CA29M cameras):

3mm lens: Suitable for scenes where the distance from the lens to the face is within 80cm, recommended installation distance is 40-60cm.

4mm lens: Suitable for scenes where the distance from the lens to the face is within 110cm, recommended installation distance is 70-90cm.

3. The mounting height of the above three types of DMS cameras must be lower than the driver's face, and the camera angle must be in an upward viewing angle. In principle, the closer the mounting height of the DMS camera is to the dashboard (the greater the upward viewing angle), the better. However, to avoid obstruction by the steering wheel, the mounting height of the DMS camera can be appropriately raised.

For large trucks, the recommended installation height range of the DMS lens on the A-pillar or windshield is within 10cm above the highest point of the steering wheel.

5.2.2 Requirements for Installation Angle

After powering on the device, adjust with real-time preview assistance. Auxiliary lines can be opened to help determine the position.

1. Ensure that the DMS camera angle is an upward viewing angle.
2. Adjust the vertical and horizontal angles of the DMS camera to ensure that the driver's face is in the center of the video frame, with the bottom edge of the frame below the driver's chest.

3. The fill light of the DMS camera should be on the driver's face (avoiding shining on the seatbelt to prevent overexposure in the video).

4. There should be no other objects (such as the steering wheel) obstructing the driver's face or seatbelt features in the DMS video frame.

5.2.3 Requirements for Installation Details

1. If the A-pillar mount is used (3mm lens, crescent-shaped CA29M, side mount bracket), or if the A-pillar glass adhesive mount bracket is used (3mm lens, crescent-shaped CA29M, glass adhesive mount bracket), then the label surface of the DMS camera must face towards the A-pillar (the curved surface facing the driver's direction).

2. If tabletop mount is used (4mm lens, crescent-shaped CA29M, tabletop stand), then the label surface of the DMS camera must face downwards (the curved surface facing upwards).

3. After angle adjustment and calibration are completed, the protective film on the DMS camera must be removed, and the DMS must be tightened using an Allen wrench to prevent any movement in the vertical or horizontal angles.

Installation on left A-pillar: with the arc side facing toward the cabin and the wire end at the bottom

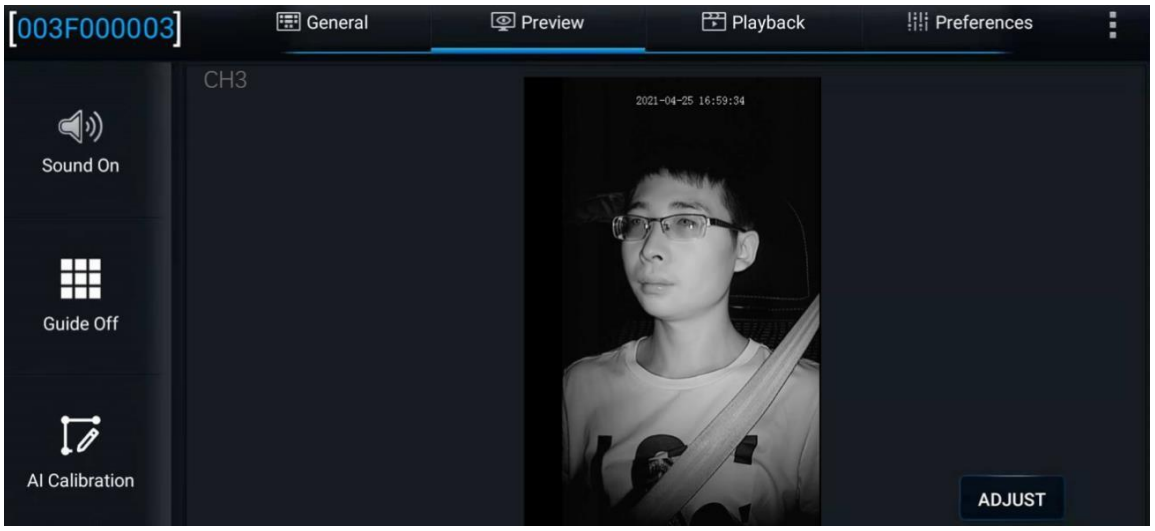
Installation on countertop: with the arc side up

Installation on right A-pillar: with the arc side facing toward the cabin and the wire end at the top

5.2.4 Installation Steps

5.2.4.1 Installation Steps for A-pillar CA29M Camera

1. Firstly, power the device and connect it via the app to access the real-time preview screen. Begin by examining whether the driver's orientation in the image is correct when the camera label surface is facing towards the A-pillar (with the curved surface facing the driver) at the intended installation position.



2. If the image orientation is correct, there's no need to adjust the installation type of the DMS camera. Proceed directly to step 3.

If you find the driver's image in the frame is inverted or rotated, navigate to 【Preferences】>【Surveillance】>【Camera Setup】, select the corresponding channel for the DMS camera (e.g., Channel 3). Adjust the DMS channel's image by modifying the rotation angle parameter and the mirror/flip parameters on the right side of the screen.Typically, if using the tabletop stand-mounted CA29M, set the installation angle parameter to 0. If you encounter image rotation issues with the externally connected 3mm A-pillar side mount CA29M, adjust the installation angle parameter from 0 to -90° or +90° as needed.

*Note: Do not select mirror or flip. Ensure that both mirror and flip settings are set to "No."

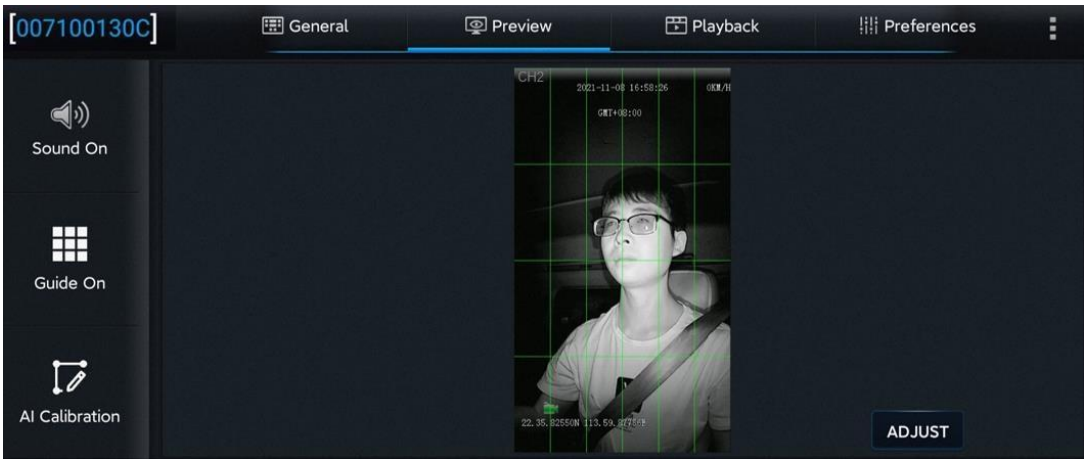
3. Once you have determined the suitable installation position that meets the above installation details requirements through the DMS screen, first tighten the screw above the base of the DMS camera (do not tighten the screws below the base yet, to facilitate adjustment of the vertical angle).

4. Loosen or tighten the hex screws at the joint of the DMS camera to adjust the left and right angles of the DMS camera.

5. After adjusting the vertical/horizontal angles of the DMS camera, ensure that the driver meets the following conditions in a normal driving posture:

(1) The DMS camera must be set at an upward viewing angle.

(2) The driver's face is in the center of the video frame, with the driver's facial features and body vertical and not tilted in the frame. Additionally, the bottom edge of the frame should be below the driver's chest.



(3) The fill light of the DMS camera should illuminate the driver's face (avoiding shining on the seatbelt to prevent overexposure in the video).

(4) There should be no other objects (such as the steering wheel) obstructing the driver's face or seatbelt features in the DMS video frame.

6. Secure the screws below the base of the DMS camera and the screws at the joint for left and right angles to ensure that the camera does not wobble in any direction.

5.2.4.2 Glass Adhesive Mount CA29M Camera Installation Requirements

If the vehicle's A-pillar has an airbag, making it impossible to install the A-pillar side mount CA29M camera on the A-pillar, you can opt for the glass adhesive mount bracket. The specific installation method is as follows:

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1.Firstly, follow the adjustment method for the A-pillar side mount CA29M as described earlier to adjust the camera image to face forward (without flipping the image). Then, without removing the 3M adhesive from the bottom of the glass adhesive mount CA29M camera base, roughly determine the camera's installation position. This installation position needs to ensure that:

(1) The glass adhesive mount bracket should not be too far from the A-pillar, as it may obstruct the driver's visibility. It's preferable for the bracket base to be parallel to the A-pillar direction.

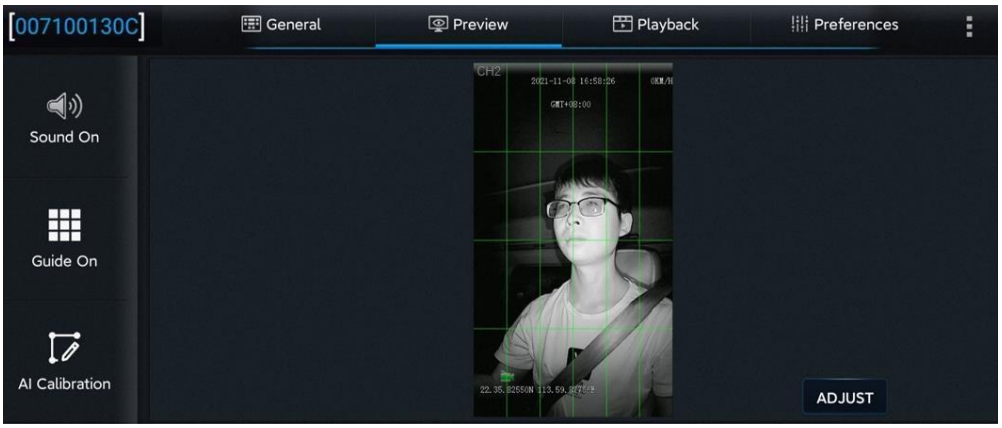
(2) After installing the glass adhesive mount camera, you should be able to see the area above the driver's chest in the frame, ensuring that you can see both seatbelt and facial features, with the face centered in the frame.

2. Once the approximate position is determined, peel off the 3M adhesive from the bracket base, and then, in parallel with the A-pillar direction, adhere the bracket to the windshield.

*Note: When adhering, make sure that the side with the notch on the bracket faces upward, making it easier to adjust the camera's left-right and up-down angles after installation. See the figure below.

3. After mounting the base onto the glass, use the adjustment ball joint on the CA29M camera to adjust the camera's position up, down, left, and right. Ensure that the driver meets the following conditions in a normal driving posture:

(1) The driver's face is centered in the video frame, and the bottom edge of the frame is below the driver's chest.



(2) Ensure that the fill light of the DMS camera illuminates the driver's face (avoiding shining on the seatbelt to prevent overexposure in the video).

(3) Ensure that there are no other objects (such as the steering wheel) obstructing the driver's face or seatbelt features in the DMS video frame.

4. Tighten the screw on the right side of the DMS camera bracket to ensure that the camera does not wobble in any direction.

5.2.4.3 Tabletop Stand-mounted CA29M Camera Installation Requirements

If the DMS camera utilizes the tabletop stand-mounted CA29M, it needs to be fixed above the dashboard. Here are the specific installation steps:

1. Begin by adjusting the tabletop stand-mounted CA29M camera image as described in the previous A-pillar side mount CA29M adjustment method, ensuring the driver's face is facing forward (without flipping the image). Determine the camera's installation position, ensuring that:

(1) The tabletop is flat and easy to secure.

(2) In the DMS channel image, the driver's face is not obscured by the steering wheel, and the area above the driver's chest is visible, ensuring that seatbelt and facial features are visible, with the face centered in the frame.

(3) Ideally, the DMS camera should be fixed in the middle of the dashboard. If not feasible, it can be installed with a left or right offset, but the maximum offset angle should not exceed 30°.

2. Once the installation position is determined, use self-tapping screws or 3M adhesive to secure the bracket to the dashboard.

3. After securing the base, adjust the angle of the DMS lens to ensure that the driver meets the following conditions in a normal driving posture:

(1) The driver's face is centered in the video frame, and the bottom edge of the frame is below the driver's chest.

(2) The fill light of the DMS camera illuminates the driver's face (avoiding shining on the seatbelt to prevent overexposure in the video).

(3) There are no other objects (such as the steering wheel) obstructing the driver's face or seatbelt features in the DMS video frame.

4. Tighten the screws of the DMS camera bracket to ensure that the camera does not wobble in any direction.

5.2.5 Calibration Requirements

Log in to "EasyCheck App/FT Vision".

1. **Click [Preview] on the homepage to enter the preview interface.**

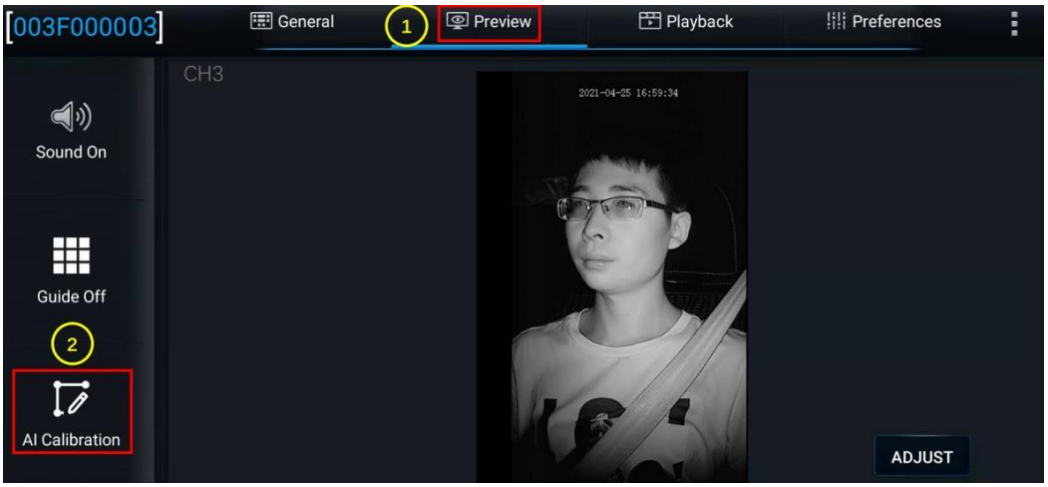
   Double-click the driver channel to enter the main-stream full screen.

   Adjust the angle of the DMS camera so that the driver's face appears in the middle of the screen and the lower edge of the screen is below the driver's chest.

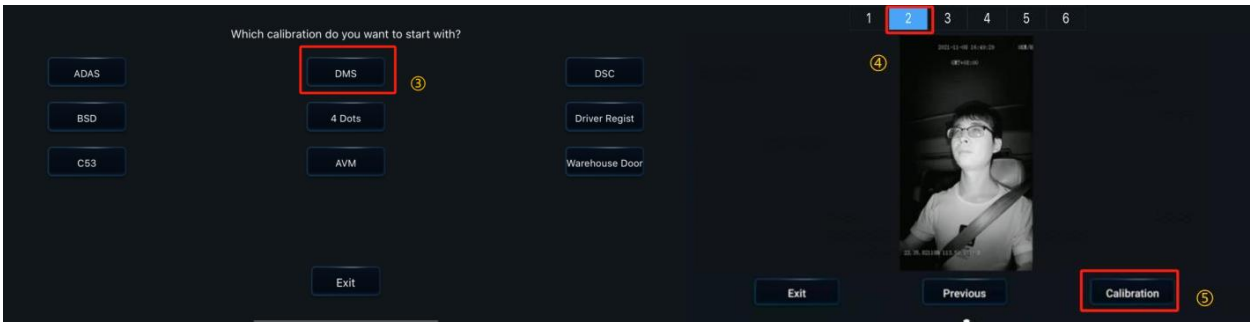
   Make sure that the fill light of the DMS camera faces toward the driver's face (the fill light shall not face toward the seat belt; otherwise, it will lead to overexposure of video).

   Make sure that there is no other object (such as steering wheel) in the DMS video screen that will block the driver's face and the seat belt features.

2. Click [AI Calibration] for calibration selection.



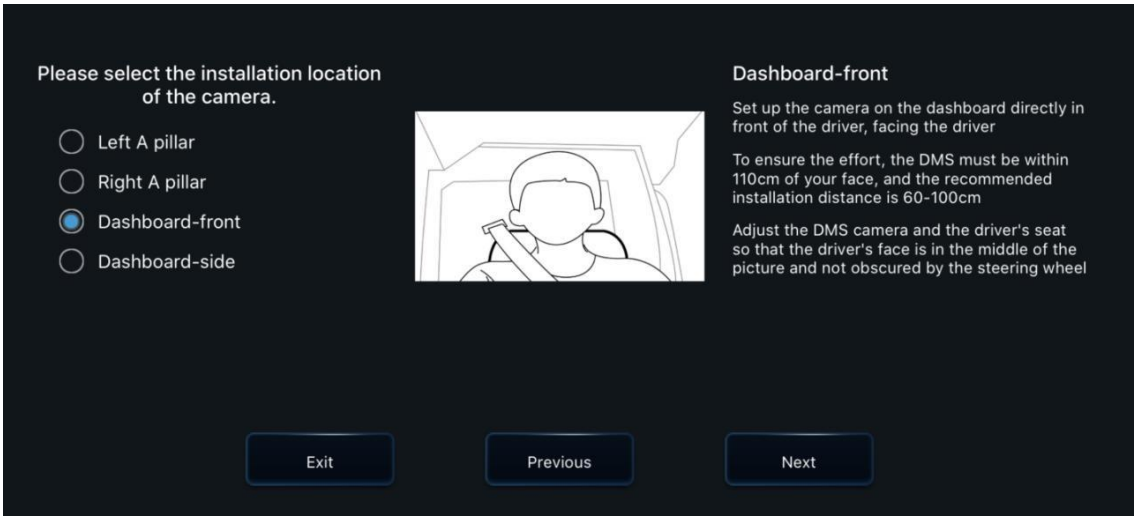
3. Select [DMS] for calibration.
4. Select corresponding channel of the DMS camera (select channel 2 here).
5. Click [Calibration] to move on to the next step.



6. Confirm the prompts — click [Next] to move on to the next step.

7. Selecting the installation position for DMS cameras.

If installed directly in front of the dashboard, select 'Dashboard Front' and perform front-facing calibration.(Make sure the correct one is selected, as this step is very important.)



*Note:

Before clicking [Next] to start formal calibration, the driver shall sit in the normal driving posture and look straight ahead.

Never select front calibration if side installation is selected. The driver shall turn the head sideways to face toward the camera to complete the calibration.

8. Click [Next] to move on to the next step for automatic face calibration.

   During calibration, make sure that the driver sits still according to normal driving habits and posture and looks straight ahead.

   In the process of side calibration, the intelligent algorithm will automatically learn the driver's head deflection angle and the positions of feature data of the driver's face. If the driver moves his head during the calibration, the calibration will restart automatically.

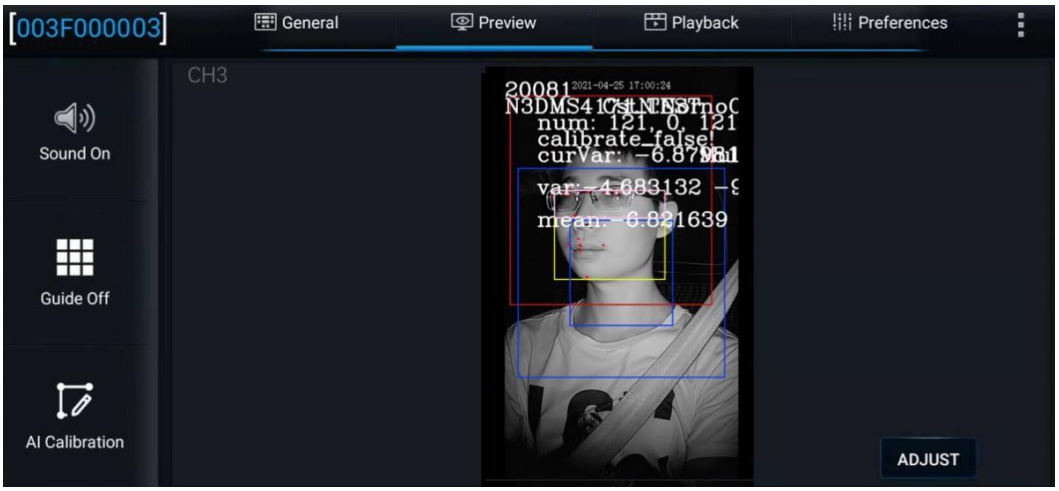
*Note:

In the side calibration mode, there must be an angle between the driver's face and the camera to complete the calibration.

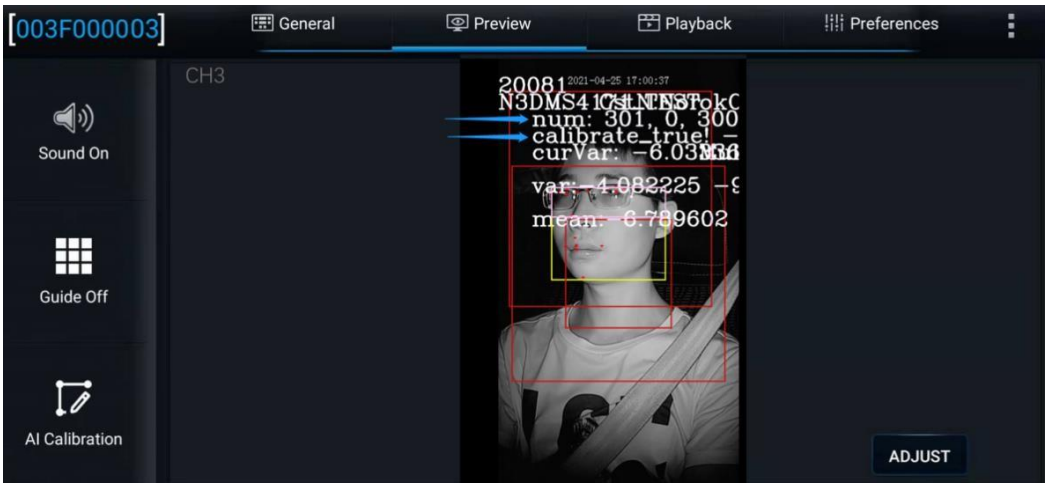
In the front calibration mode, the camera must be in front of the camera to complete the calibration.

The driver sits still and waits for the equipment to be calibrated automatically. When the value of NUM reaches 301 in the mode of side installation and side calibration (51 in the mode of front installation and front calibration), the calibration frame turns from red to blue, and then the automatic calibration ends.

Calibration is ongoing:



Calibration is completed:



Click [Finish] to complete the calibration and exit the calibration mode.

5.3 BSD installation and calibration

5.3.1 Look-Down BSD Installation Calibration

Look-Down installation: including forward Look-Down, right Look-Down, and left Look-Down installations, follows the same principles and steps for calibration. The camera used is the miniC24-MA（**Mini C24 is only supported for POC software. For formal software, use CA46. Installation and calibration instructions for CA46 are pending translation updates.**）, and the installation effect of the camera is shown in the following figure.

[Installation Position]

The camera should be installed at the upper part of the front of the vehicle, with the installation height required to be between 240-320cm, ideally between 270-300cm. When selecting the installation position, care should be taken to avoid the camera being too close to

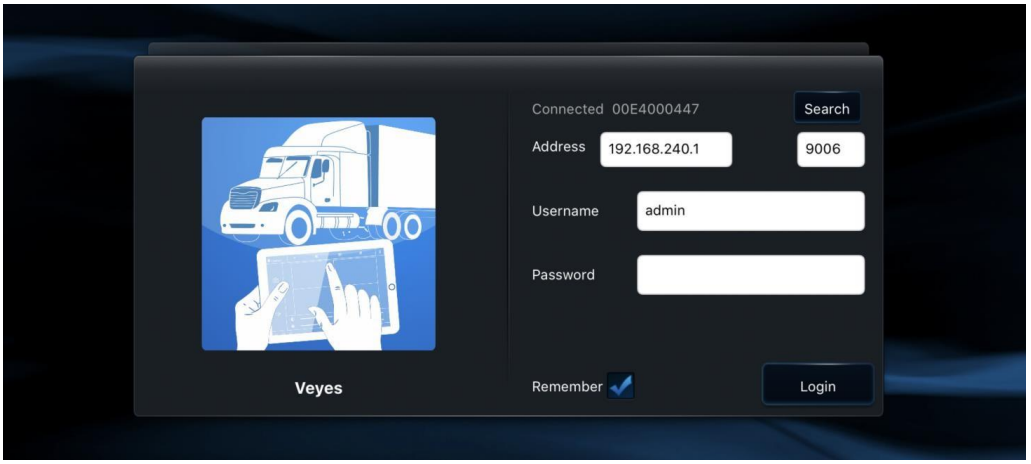
the blind spot mirror, which may result in excessive obstruction of the imaging by the blind spot mirror.

[Imaging Adjustment]

Rotate the ball head of the camera to ensure that the imaging image after installation covers the area of pedestrian detection, and that the area of pedestrian detection is preferably positioned at the center of the image.

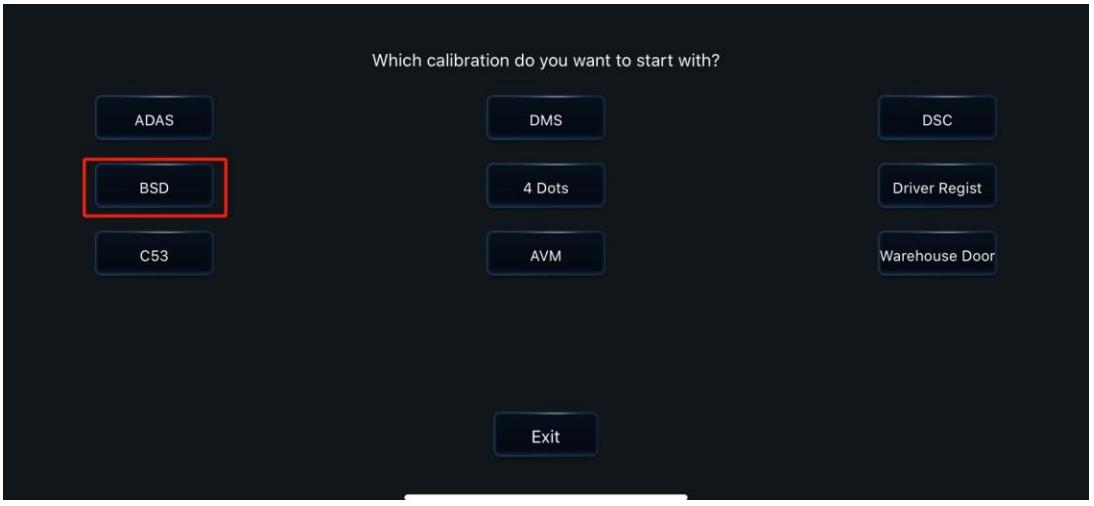
【Calibration and Debugging】

Step 1: Connect to the device's hotspot on your phone, open the Veyes app, enter your username and password, then click 'Login'"



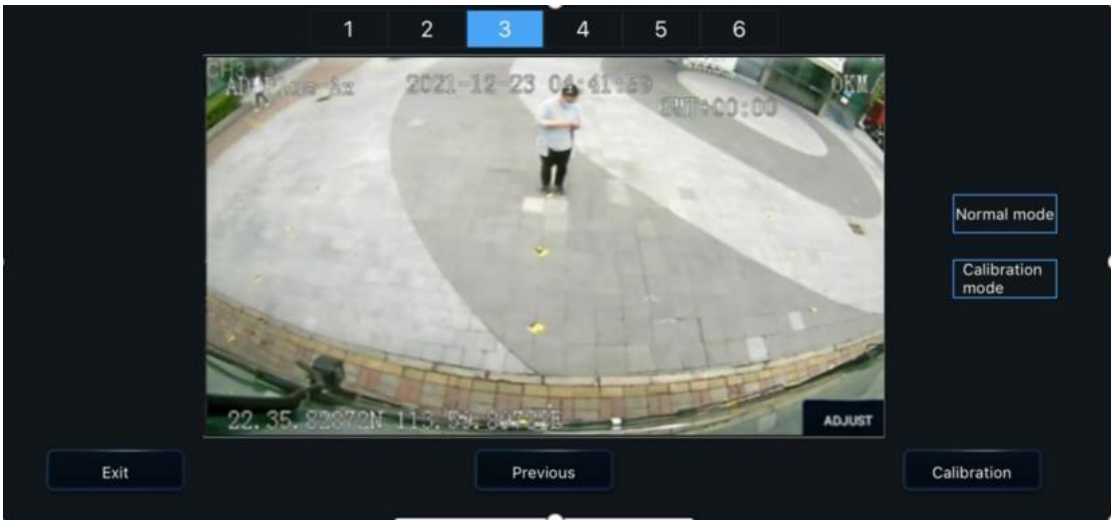
Step 2: After logging into the Veyes app, click on "Preview Interface". This will display the channel screen. Then, click on "AI Calibration".

Step 3: Click on [BSD]

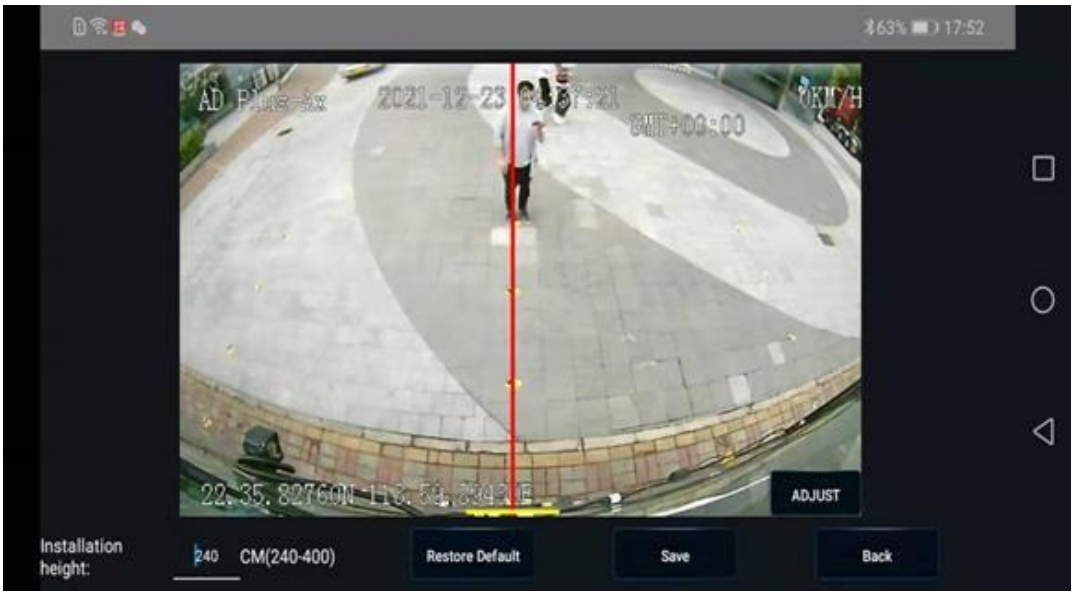


Step 4: Click on "Simple Left Top View BSD".

Step 5: Select the channel to which the camera is connected.



Step 6: Place the yellow line close to the side edge of the vehicle body, then input the installation height.



Note:

When rotating the camera's ball head, ensure that the bottom edge of the imaging image is aligned tightly with the lower right edge of the vehicle. Do not allow the vehicle body to be absent from the picture, as this installation method cannot monitor the right blind spot. Avoid having too much of the vehicle body appear at the bottom of the imaging picture, as this installation method may reflect infrared light at night and cause overexposure in night imaging, resulting in recognition failure.

5.3.2 Side BSD Camera

Side installation refers to right side installation and left side installation. The principles and steps for installation and calibration are the same for both. Here, left side installation is chosen.

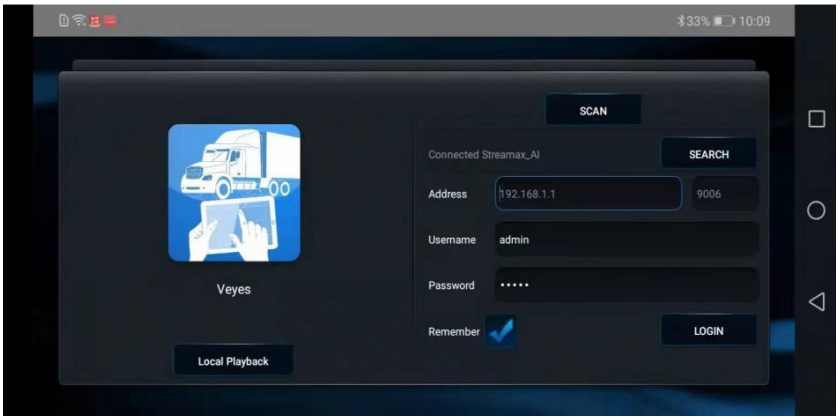
The camera used is CA24S, and the installation position is as shown in the figure.

BSD installation height should be between 190-200cm, and the distance from BSD to the front of the vehicle should be between 100-1700cm.

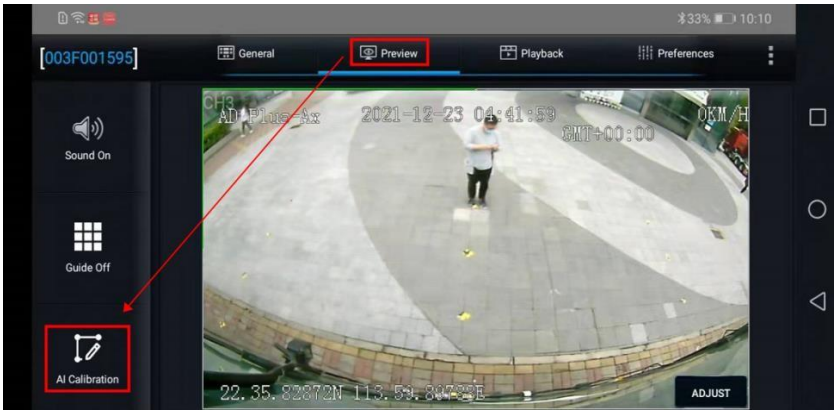
The optimal installation height for side-mounted BSD is 195±15cm."

Start calibration

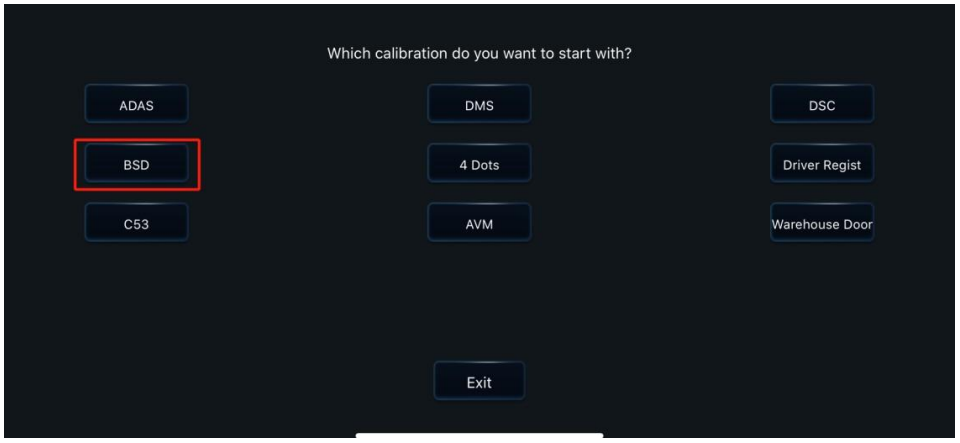
Step 1: Connect your phone to the device's hotspot, open the Veyes, enter your username and password, then click on "Login."



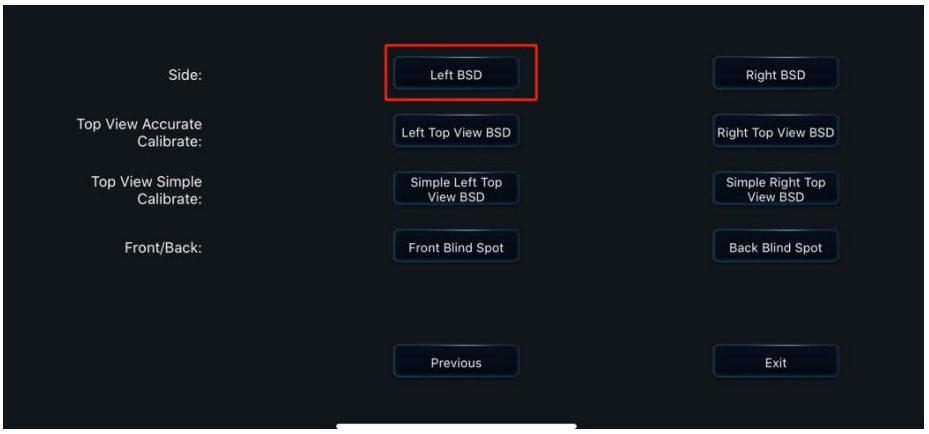
Step 2: After logging into the Veyes, click on "Preview Interface" to display the channel screen. Then, click on "AI Calibration."



Step 3: Click [BSD]

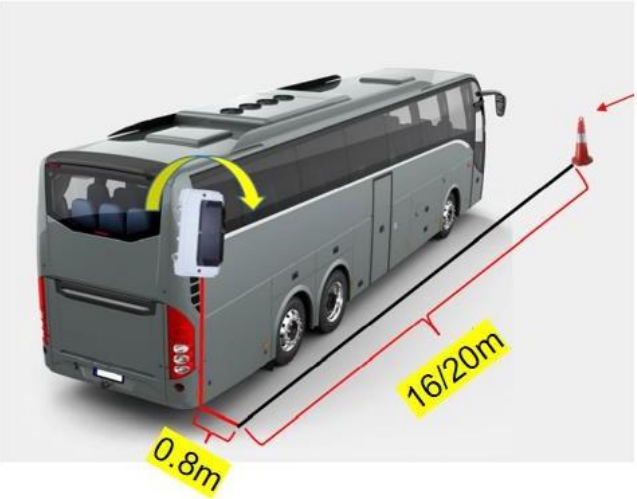


Step 4: Click [Left BSD]

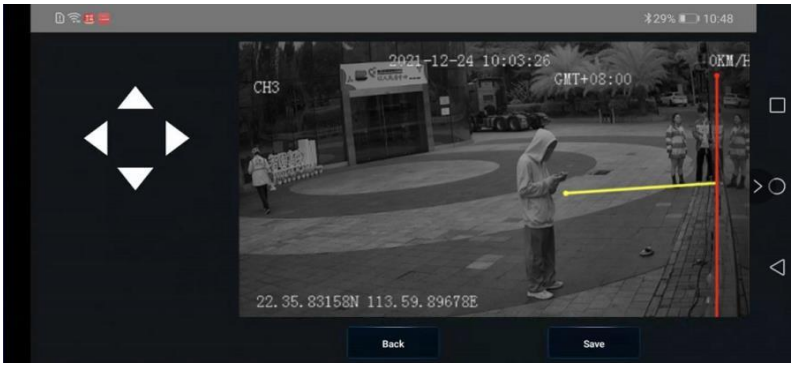


Step 5: Select the channel to which the camera will be connected

Step 6: Place safety cone 2 meters to 3 meters away from the left front of the vehicle (the specific location should be determined based on the actual vehicle conditions, taking the average height of the driver into account, and observing the blind spot size while seated in the car to calibrate all blind spots in the field of view. Use this as a reference). The position relative to the side of the vehicle should be 0.8 meters.



Adjust until the red line is aligned with the left side of the vehicle body, and the yellow line is aligned with the bottom edge of the safety cone (or the person's feet). Once adjusted, click on "Save."



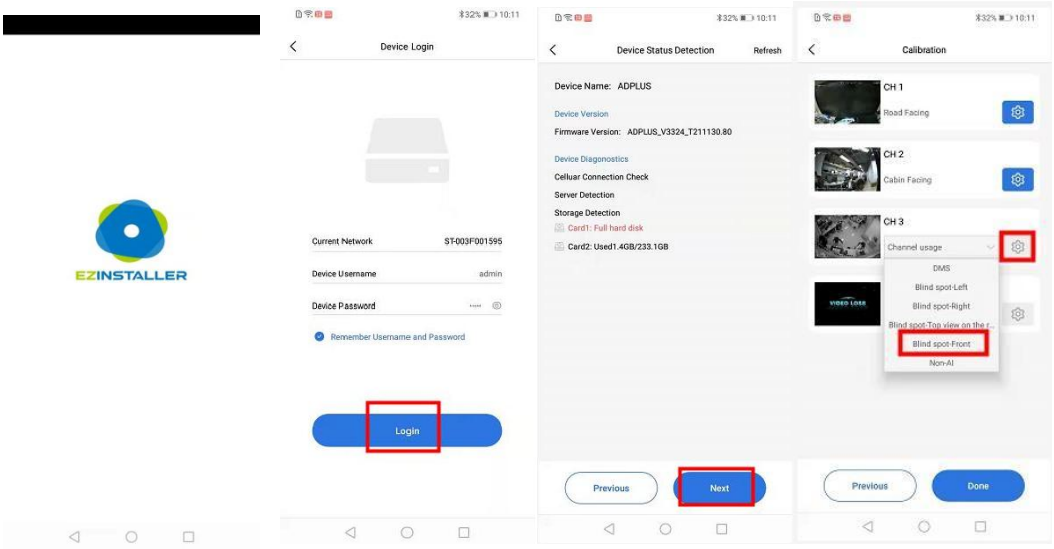
At this point, the interface will display the installation height of the BSD camera and the distance from the BSD camera to the front of the vehicle.

Enter the accurate installation height and the distance from the camera to the front of the vehicle, then click on "COMPLETE"

5.3.3 Front BSD Camera

Step 1: Connect your phone to the device's hotspot, open ezinstall, enter your username and password, then click "Login."

Step 2: Click "Next." The channel screen will be displayed. Then, select [AI Alarm Type]= Blind spot front. Click the settings button to start calibration.

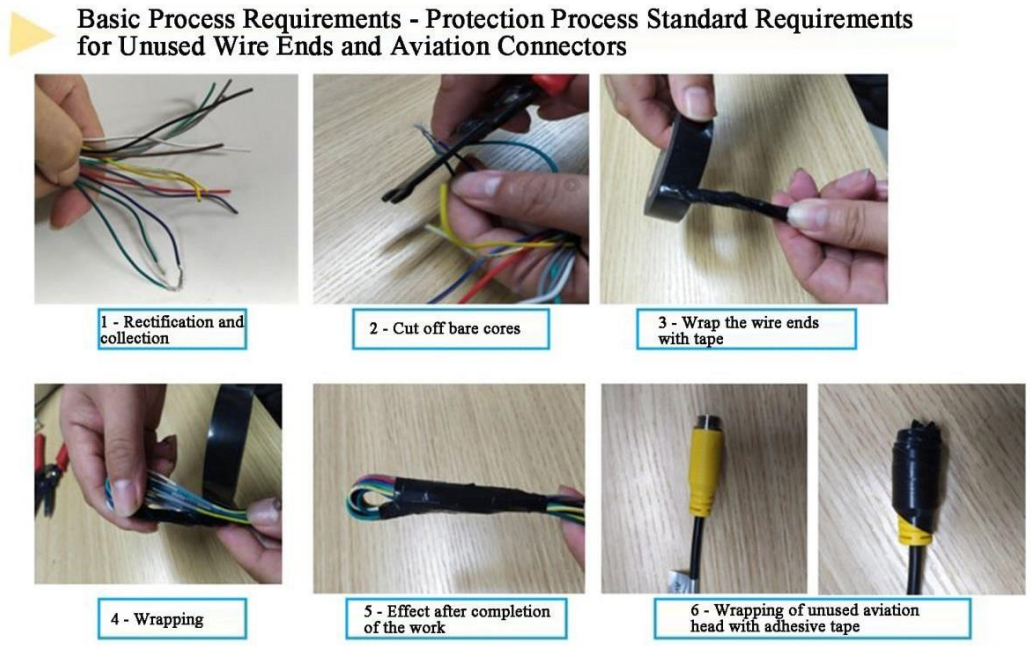


Step 3: Draw the blind spot area by moving four points to form a rectangle. (The drawn area should encompass all of the front blind spot.)

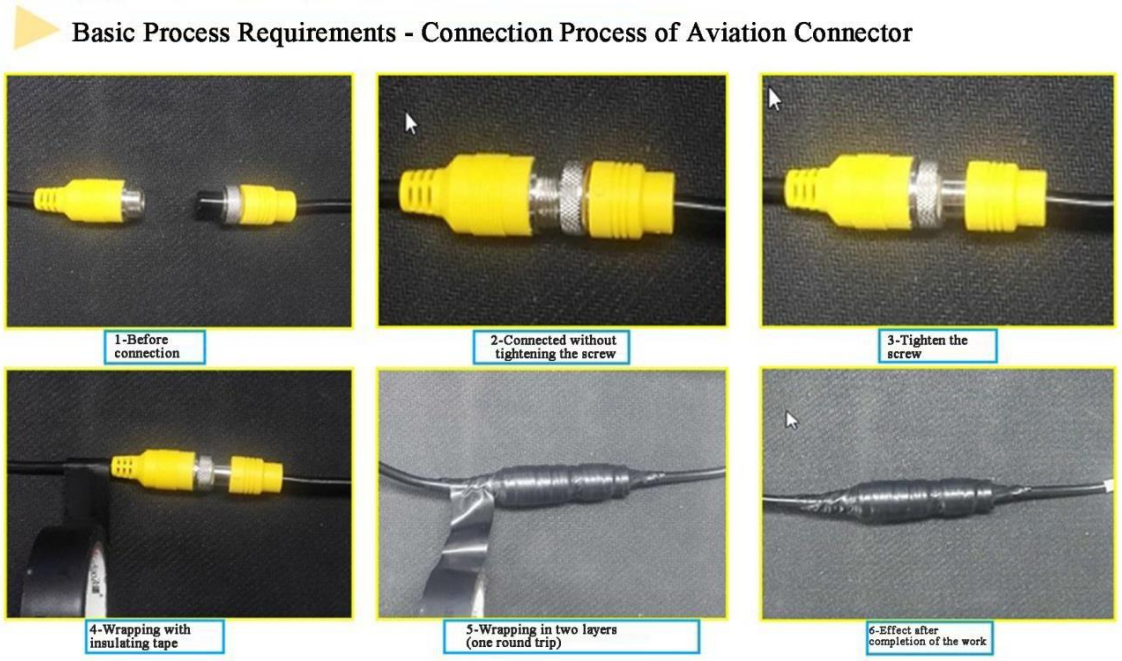
6. Process Requirements

6.1 Treatment Standard of Unused Connection Wire Ends

1. All unused signal connection wire ends must be wrapped. Refer to the figure below for the standard treatment process requirements.
2. Unused aviation connectors must also be wrapped.



6.2 Connection Process of Aviation Connector



6.3 Requirements of Opening for Wiring

6.3.1 Interior Opening for Wiring of Vehicle

① If the mode of opening for wiring is adopted, a rubber sleeve shall be additionally set at the opening to protect the cables from being worn out by the sharp part of the opening.

② To ensure aesthetic wiring, the mode of concealed wiring where possible and arrangement of surface wiring in corrugated conduits shall be adopted.

6.3.2 Exterior Opening of Carbody- Opening for Installation of Tail Harness of Camera

The two requirements described in 6.3.1 shall be met. In addition, waterproof adhesive shall also be applied at the opening to prevent rainwater from entering the vehicle.

① At the screwing part of camera and the opening for installation of tail harness on the exterior of the carbody, glass sealant shall be applied for waterproofing.

② For the purpose of aesthetics, the color of glass sealant shall be the same as or be similar to the carbody.

7. Acceptance and Cleaning

7.1 Cleaning

Clean up the installation site, collect and take away tools and waste separately, and put the original articles in the vehicle to their original place, and then the installation work ends.

7.2 Installation Acceptance

1. Conduct acceptance for the installation details and parameter setup item by item according to the acceptance list provided by the customer.
   (1) Focus on inspection of parameter setup, and save screenshots.
   (2) Focus on inspection of video images, and capture and save videos.
   (3) Allow the driver to drive the vehicle for a short distance to check whether the ADAS/DMS/BSD camera functions normally.
2. Take pictures of all the equipment and the center console after installation.
   (1) Take pictures of the installation positions of all items.
   (2) Take a picture of the rendering inside the cabin after installation.