



Siyata Real Time View

Model: SC22Hv

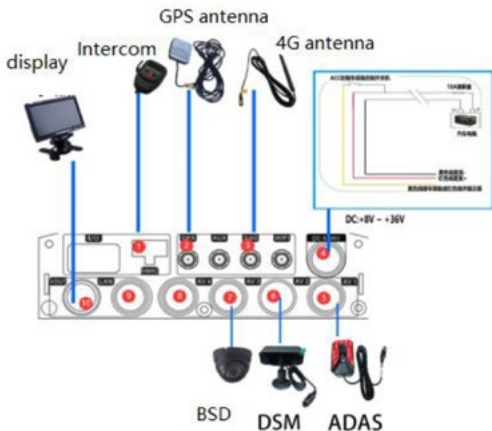
Installation & Operation



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1. Camera access instructions



The camera is inserted into the host according to the label through the two-point conversion cable. ADAS is inserted into the first channel of the device, and DSM is inserted into the third channel of the device. Note that channels refer to channels 1 and 3 on the software definition.



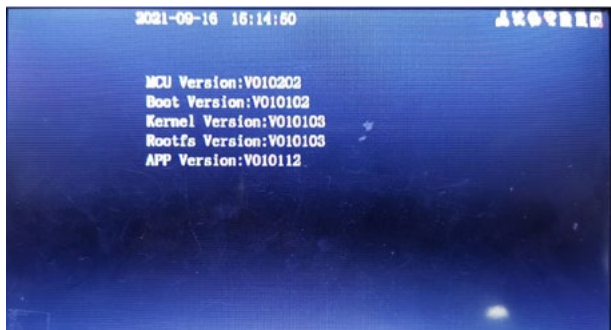
ADAS and DSM camera specifications:

ADAS camera: 1080P, 200W CMOS, IMX307, 6mm, D=63° H=54° V=29°, Color image, PAL, 4P aircraft female head, 12V, Wire length 2.5m, Plastic black case

DSM camera: 720P, 1/3 CMOS, H65, 3.6mm, D=85° H=60° V=53°, 34/5000 Black and white image, PAL, 4P aircraft female head, 12V, Wire length 0.5m, Plastic black case.

2. Device version description

Test machine: SC22HV-AI version T080501



3. The ICONS are displayed



Common icon states are:

 ADAS and DSM enabled successfully,  ADAS and DSM enablement failed,  Platform Registration succeeded,  Platform registration failed,  GPS location succeeded,  GPS location failure,  Client mode,  AP mode,  wifi Module does not exist,  4G Module does not exist,  SIM Card does not exist,  4G Dial-up success,  SD Card does not exist,  SD card exists and records,  HDD not exist,  HDD Exist and video.



Description of the ICONS in the preceding figure: Icon Status Meaning From left to right are DSM status (DSM functional test mode), registration platform, GPS positioning, wifi dialing, 4G dialing, SD card recording, and HDD recording.

DSM and ADAS camera installation diagram



4. ADAS camera installation and related parameter setting

4.1 ADAS camera installation and relevant parameter setting

The camera is fixed in the center of the front windshield, centered on the central axis of the vehicle, and the optimal installation position of the equipment is at the intersection of the horizontal line and the central axis above the wiper (be careful not to be blocked by the wiper), as shown below:



The selected installation position can be marked outside the car to avoid the displacement of the camera installation (colored tape can be used to paste), and then wipe the inner surface of the windshield clean, the equipment 3M plastic protective film and lens protective film tear off the internal paste installation. Ensure that the camera is installed horizontally (you can use a level to refer to the installation). After pasting, it is recommended to press for 30 seconds to ensure that there are no bubbles in 3M glue.

If there is no reasonable installation position on the center line, the installation can be carried out within 15cm on the left and right sides of the central axis of the vehicle, and the closer to the central axis, the better. After installation, the distance from the center should be recorded and set in the calibration parameters.

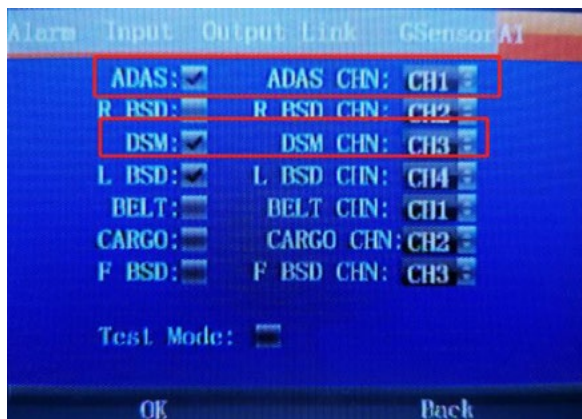
Please connect the ADAS camera to the ADAS interface of the vehicle main engine (SC22HV) or through an extension cable, and then fix the screws.



4.2 ADAS camera parameter calibration



The camera is inserted into the host according to the label. ADAS is inserted into the first channel of the device, and DMS is inserted into the third channel of the device. Please use the ADAS and DSM cameras provided by our company.



Special note: If there is no image on the screen below, please check the above Settings and check whether the camera is plugged into the corresponding physical channel.



ADAS camera calibration and setting instructions: Press the digital "1" button on the remote control and zoom in the CH1 screen at the same time. Further press the "ENTER" button of the remote control to ENTER the calibration mode of ADAS camera.





"ADAS Calibration": see the icon on the screen , Make sure the ADAS camera gets a full view of the road, fine-tune the scales on the camera. First loosen the fixing screw with the matching "7" shape inner hexagon tool, then gently buckle the pointer and slide it to the required scale, and then tighten the fixing screw.



After adjusting the scale of the camera, if the horizontal line of the Red Cross in the camera picture cannot completely coincide with the skyline (the junction of heaven and earth), you can fine-tune it by "up, down and left" to make the horizontal line of the Red Cross coincide with the skyline in the distance of the picture.



Use the "up, down, left and right" button of the remote control to move to the desired position, and then press the "ENTER" button of the remote control to save successfully (as shown in the picture above). Press "ENTER" again to ENTER the interface for setting installation parameters related to ADAS camera (as shown below), and then ENTER the corresponding parameters.



4.3 Measurement of body parameters

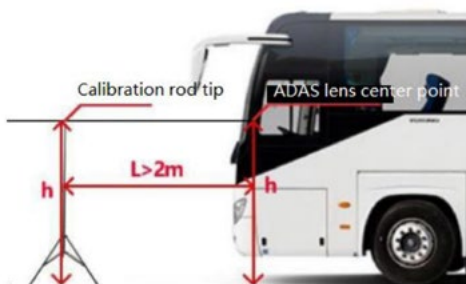
Measure the required vehicle parameters dimensions, body width and ADAS camera height from the ground, and record the test results. Later in the equipment "ADAS calibration" menu, enter the corresponding body parameters.



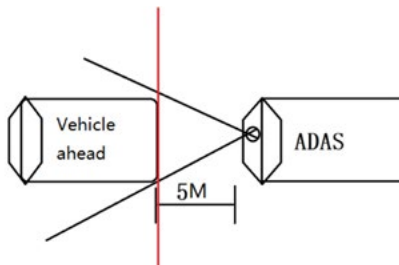
Vehicle width, mounting height, distance to the left, distance to the front, distance to the front wheel (refers to the transverse distance from the camera center to the front wheel axle) write in accordance with the actual measurement. Note: currently, the lens focal length and Sensor size parameters are blocked in the program. If the lens with different parameters is replaced, the lens focal length and Sensor size parameters in the program need to be modified.

4.4 Auxiliary calibration with calibration rod

If the site does not allow, a calibration rod can be placed 2 meters away from the front of the vehicle (it must be in a straight line with the center line of the vehicle). The height of the calibration rod H must be the same as the height H of the center point of ADAS lens from the ground (i.e. the contour line position), and the Angle of the ADAS camera can be adjusted. Make the top of the calibration rod coincide with the horizon position of the picture (if not completely coincide, can be fine-tuned by up and down arrow keys), and the Red Cross is on the center line.



Referring to FIG:



5. DSM camera installation and related parameter setting

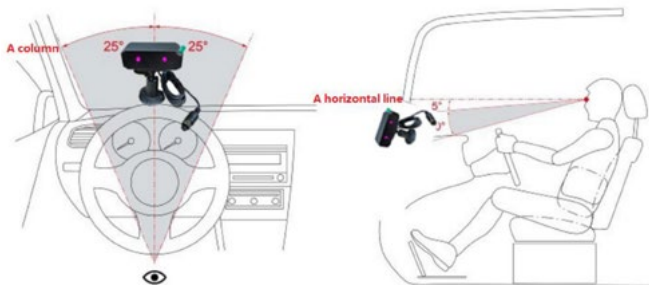
5.1 Selection of DSM Installation Location

The DSM camera should be installed on the instrument platform in front of the steering wheel, and the preferred installation position should be in A straight line with the center line of the steering wheel, as marked in Figure A below. If the installation center point is inconvenient or the driver's sight is affected, you can move to the left and right sides of the steering wheel, and the maximum movement range should not exceed the outer diameter edge of the steering wheel (B marked line in the following picture).



Pay special attention to the installation Angle of the DSM camera. The DSM pitch Angle cannot exceed 30°; otherwise, the accuracy of the DSM algorithm will be affected.

DSM camera installation Angle diagram



The DSM camera is mainly used to monitor drivers' driving behaviors. It provides alarm alerts for abnormal driving behaviors such as sleepiness and yawning with eyes closed, driving fatigue, smoking, making phone calls, looking at mobile phones and looking left and right, distraction and camera occlusion, and reports to the platform through the 4G in-vehicle host to generate reports for inquiry.

5.2 DSM Installation method

Connect the DSM camera to the DSM interface on the host and secure the screws.



After the installation position is selected, tear off the 3M film on the base of the DSM camera, paste the camera on the instrument table, and then use self-tapping screws for secondary fixation to prevent the position deviation of the device after long-term operation. (If the base screw is not fixed well, you can loosen the DSM Angle fixing screw with an inner hexagon wrench).

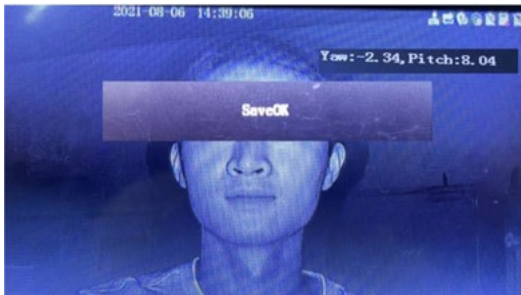
Screw in place



5.3 DSM Angle adjustment calibration



Press the remote control "3" button to enlarge the DSM channel picture, adjust the Angle of THE DSM camera, and make the driver's face in the center of the display interface. After the Angle is fixed, lock the three screws on the bracket to avoid Angle deviation caused by long time vibration. The DSM pitch Angle cannot exceed 30°; otherwise, the accuracy of the DSM algorithm will be affected.



The driver faces straight ahead, press the remote control "ENTER" button again to complete the calibration and there is a voice prompt. The UI interface will refresh the face Angle value in real time.

6. Install BSD camera and set related parameters

6.1 Blind area monitoring principle

The left and right side of the cart is the blind area of the vehicle. In order to strengthen the monitoring of the blind area and the pre-warning of the accident, radar was previously needed to realize the blind area monitoring and alarm function.



Now the host integrates the blind area video algorithm, only need to install the left and right sides of the BSD camera and BSD sound and light alarm, can actively warning.

6.2 BSD Audible and Visual alarm specifications and BSD function Settings

BSD Audible and visual alarm parameters: MX-SL-01 Audible and visual alarm is built with high light emitting diode and 5W high power speaker output, which can realize voice broadcast and simulate rotating light alarm. All-in-one cast aluminum housing with IP69K protection rating for use in very harsh environments. Meet JT/T794-2011, JT/T808-2011, GB/T 19056-2012 standards.

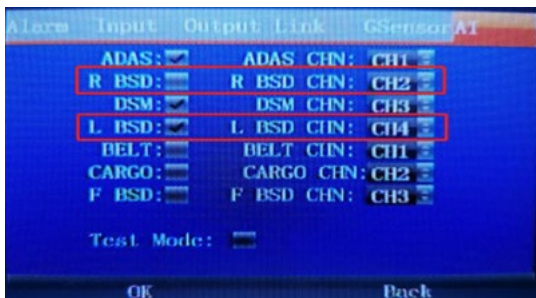


BSD Audible and Visual alarm menu Settings:



Set the serial port index to RS584, serial port function to Alarm Out, and baud rate to 115200. Save the Settings and restart the Settings.

BSD function Settings:



Enter the alarm setting menu bar of Device Settings, enable BSD, save and restart to take effect.

6.3 BSD camera installation and calibration

The camera in the blind area on the right side of the host screen is in CH2 by default, and the screen of the full-screen BSD video channel is displayed. Press ENTER to display the color line grid of the default area, as shown below:



The top line is blue and is numbered 0; The leftmost yellow line (i.e. body line) is numbered 1; The red line is the first-level alarm area line, numbered 2; The yellow line in the middle is the second-level alarm area line, numbered 3; The right-most green line is the three-level alarm area line, numbered 4.

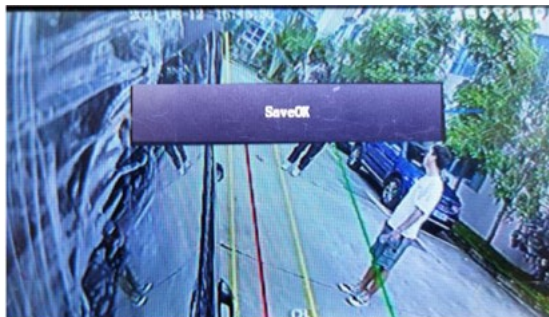
BSD camera blind area alarm area calibration



In full-screen MODE of BSD video, press the digital keys "0, 1, 2, 3, 4" of the remote control to adjust the line position.

- A. To adjust the "blue front line", press the "0" digital key of the remote control, and then press the "up and down" direction key of the remote control to adjust the position of the blue line;
- B. To adjust the "yellow body line", press the "1" digital key of the remote control, and then press the "left and right" direction key of the remote control to adjust the position of the yellow line;
- C. Adjust the "red yellow green" level of the secondary level alarm line respectively according to the remote control "2, 3, 4" number keys, then press "up" or "down" the direction key choose to adjust the corresponding color line of point location, press the "up" direction key is to choose the point location on the adjustment, press "next" under the direction key is to choose the adjustment point location, Then press the "left and right" direction key of the remote control to adjust the position. Press

"ENTER" on the remote control to save the Settings. The screen displays "Save succeeded" and the voice prompt "Calibration completed", and the Settings take effect dynamically.



After the BSD camera is fixed, according to the definition and usage of each line, adjust the car body line and set the alarm area through the vehicle remote control.

Calibration personnel (reference) stand 2 meters in front of the front of the front (the range can be adjusted according to user needs, if the blind area is not enough, can be extended forward), and then drag the blue line up and down as shown below to make the blue line coincide with the calibration personnel's toes, and click "Save", prompting "calibration success".

BSD camera installation:

Single way BSD cameras installed, should be installed in the vehicle back right, in order to better detect the blind pedestrians, NiTou car camera installation height should be 1.65 meters above, other vehicles adjustment according to actual condition, and the camera Angle should be adjusted to slightly outwards downwards, extension cord should be below the vehicle go line, fixed with frame itself, not to fight or the drum of the car there is interference, in

order to avoid unloading or mixing wire affected. The diagram below:

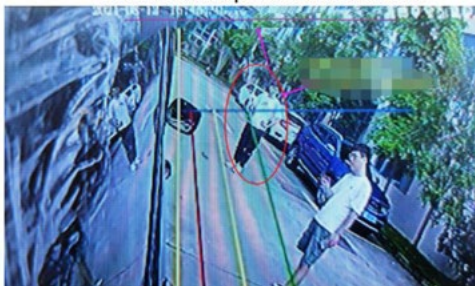


Install and fix the metal cover in the selected installation position. It is recommended to fix the cover on the car body by welding. The base of the protective cover has screw holes matching the screw holes of the BASE of the BSD camera. The camera is fixed to the base of the protective cover through screws (the camera needs to be disassembled). The diagram below:



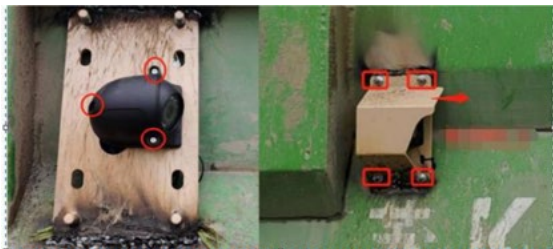
First adjust the Angle of the camera left and right, so that the side line of the body is parallel to the yellow "body line" in the calibration interface, and then move the camera to the outside or inside of the body, so that the side line of the body and the yellow "body line" in the calibration interface coincide. The diagram below:

See the line of overlap between heaven and earth



According to the model and actual needs, the default level 3 area alarm of the equipment is 1 meter each. If it needs to be modified, it can be customized. 2 meters away from the front of the BSD camera, erect a contour object with the same height as the installation of the camera, about 1.6 meters high (it can be used as a reference by individuals standing on the steel ruler).

Press the camera downward to make the top of the contour reference in front coincide with the "line of heaven and earth" in the distance. (As shown above)



After adjusting the Angle, tighten the fixing screws on the camera shell. Ensure that the camera Angle does not change. If it does, adjust it again. Then fix the metal cover housing on the cover base (long side on top) and tighten the screws. (As shown above)

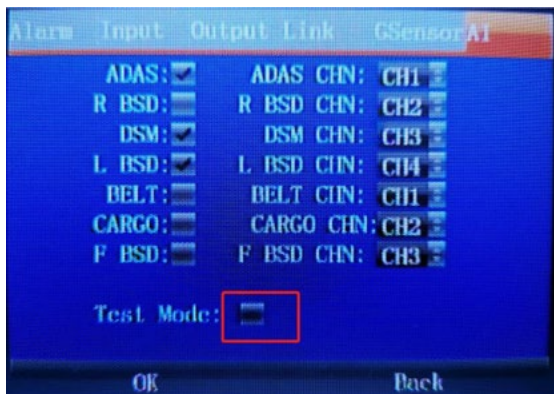
7. Simulation test DSM function



After the installation is completed, it can conduct simulated test and alarm in the stationary state of the vehicle when it is not running. It supports two ways to enter the test mode, and the simulated speed of the test mode is 60KM (there are instructions behind to set the personalized speed value).

7.1 Starting test Mode (To be restarted)

Remote control entry setting – alarm setting – AI menu bar, check "test mode" to save and restart to take effect, this time has entered the test mode; Uncheck the "test mode" to save and restart the host before entering the "driving mode". At this time, the driving speed reaches the set speed value, and there will be a warning and reminder when abnormal driving behavior occurs.



7.2 Key combination enters temporary test mode

Multi-channel interface (as shown in the following figure) Press LOGIN+MUTE to enter the test mode and a voice prompt is played. The ADAS icon in the upper right corner changes to the test icon. Press RETURN to exit the test mode.



The test mode is mainly to test the function of DSM camera. The program automatically simulates the driver's actions such as recognition failure, smoking, talking on the phone, yawning, left and right distraction, shielding the camera and other actions with voice reminder function.

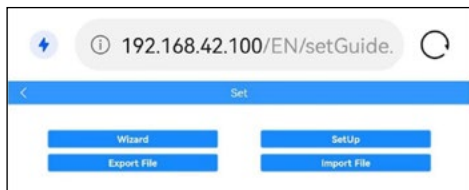
8. WEB operation configuration

If the device is Wi-Fi, you can directly connect to the AP hotspot of the device. If the device is not Wi-Fi, you can use the PC to access the local NETWORK IP address of the device through the network port (the mode interface is the same as the AP interface).

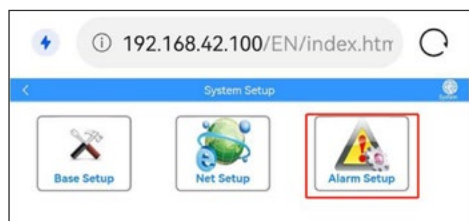
Connect to the AP hotspot of the device and access 192.168.42.100 in the browser (login password: Adm_123) as shown in the following figure:



Click Setup as shown below:



Click Alarm Setup, as shown below:



Enter AI Config, enable the corresponding channel, select the corresponding channel, and click Save. The prompt box indicating that the save is successful will be displayed.

The diagram below:

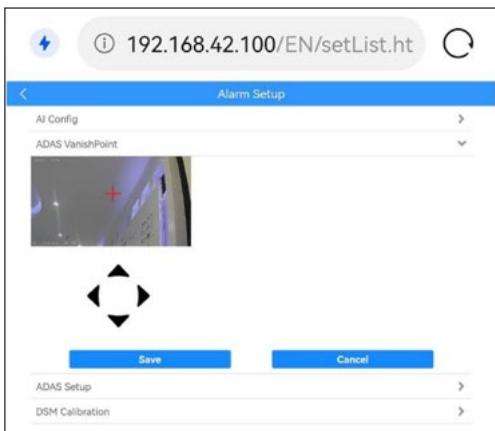
The screenshot shows a web browser interface for 'Alarm Setup'. At the top, there is a status bar with a lightning bolt icon, an information icon, the URL '192.168.42.100/EN/setList.ht', and a refresh icon. Below this is a blue header bar with a back arrow, the title 'Alarm Setup', and a dropdown arrow. The main content area is titled 'AI Config' and contains a list of settings:

Setting	Value
ADAS Enable:	☐
ADAS Channel:	en
R-BSL Enable:	☐
R-BSL Channel:	en
DSH Enable:	☐
DSH Channel:	en
L-BSL Enable:	☐
L-BSL Channel:	en
BSL7 Enable:	☐
BSL7 Channel:	en
Test Mode:	☐

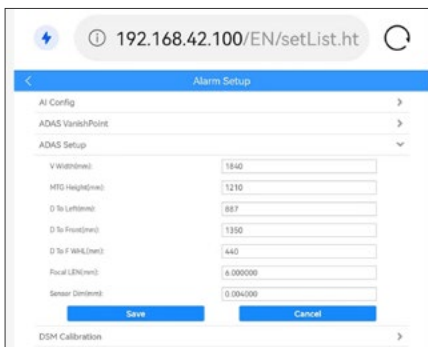
At the bottom of the settings list are two buttons: 'Save' and 'Cancel'. Below the settings list are three expandable sections: 'ADAS VanishPoint', 'ADAS Setup', and 'DSH Calibration', each with a right-pointing arrow.

Enter the ADAS VanishPoint, the way of adjustment with screen debugging, after the adjustment of camera calibration, if the camera images of the Red Cross is horizontal and skyline (junction) of heaven and earth can't completely overlap, can be fine-tuning, through the up and down or so key to the distant skyline pictures and horizontal Red Cross overlap, After adjusting the position, click Save, and it will prompt you to save successfully. The diagram below:

Note: The update of the ADAS calibration screen will not change until you click Refresh to retrieve it again.

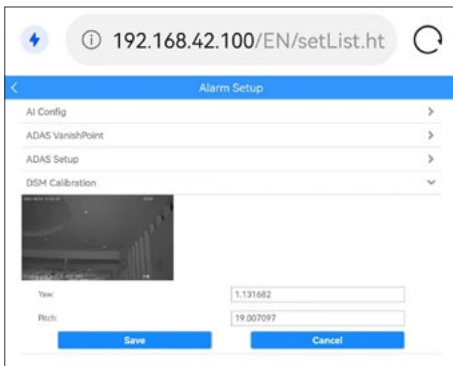


Enter ADAS Setup, fill in the parameters corresponding to loading (refer to the ADAS calibration configuration section of the remote control menu above), and then click Save. The message will be displayed after saving successfully. The diagram below:



Enter THE DSM Calibration, adjust the Angle of the DSM camera so that the driver's face is in the center of the display interface. After the Angle is fixed, lock the 3 screws on the bracket to avoid Angle deviation caused by long time vibration. The pitch Angle of DSM should not exceed 30°, otherwise the accuracy of DSM algorithm will be affected. The driver looks straight ahead and clicks save. There is a message on the screen indicating whether the save is successful and a voice prompt. The diagram below:

Note: the DSM calibration screen will not change until you click refresh to retrieve it again.



9. Alarm instructions

Alarm events have been realized:

Lane departure, please correct

Please keep the distance

Collision risk Notice pedestrians

Notice blind spots

Not smoking

No fatigue driving

No distraction

Do not block the lens

DSM alarm, the same event interval according to configuration parameters.

ADAS only has an interval for crosswalks. According to configuration parameters, other continuous alarm states are reported only once, unless the alarm is cancelled and triggered after alarm and promotion, the device does not control the interval.

10. Various functional parameters and configuration instructions

In addition to the device UI, you can view and set the device status by using custom commands on a remote client or configuration tool.

You can customize commands to view the AI running status:

// Query command

```
<Control><CmdType>AiRuningStatus</CmdType><SN>11</SN></Control>
```

//The return value

```
<?xmlversion="1.0"encoding="UTF-8" ?><Response><CmdType>AiRuningStatus</CmdType><SN>11</SN><AlgVersion>1.0.0.40</AlgVersion><AuthStatus>1</AuthStatus><AuthFunctionType>5</AuthFunctionType><AuthChipID>00000000000000000000A2000000A000000008A00000041000000DF000000C2</AuthChipID></Response>
```

Description:

AlgVersion Algorithm version number

AuthStatus Is it authorized?

AuthFunctionType In bits:

1 ADAS

2 on the right side of the BSD

3 DSM

4 left the BSD

5 seat belts

6 Overmanned detection channel

7 360 image fusion detection channel

8 Container detection channel

9 fisheye BSD

Currently only ADAS and DSM are supported, i.e. the value is 1+4 = 5

AuthChipID Indicates the CHIP ID

Query algorithm threshold Running parameters of the AI algorithm

```
<VariCfgSec Action="DEVICE_QUERY"><stAIThresParam></VariCfgSec>
```

```
//The return value
```

```
<?xml version="1.0" encoding="UTF-8" ?>
```

```
<VariCfgSec Action="DEVICE_QUERY" Result="1">
```

```
<stAIThresParam fFD_DsmLowVel="30.000000" fFD_DsmHighVel="50.000000"
fFD_LeftLookLowVel="4.000000" fFD_LeftLookHighVel="3.000000"
fFD_RightLookLowVel="4.000000" fFD_RightLookHighVel="3.000000"
fFD_HeadUpLowVel="4.000000" fFD_HeadUpHighVel="3.000000" fFD_
HeadDownLowVel="4.000000" fFD_HeadDownHighVel="3.000000" nFD_
DistractedInt="30" nFD_CrossWalkInt="30" fFD_LeftLookAngel="30.000000"
fFD_RightLookAngel="45.000000" fFD_HeadUpAngel="25.000000" fFD_
HeadDownAngel="15.000000" fFD_HmwVel="30.000000" fFD_FcwVel="30.000000"
fFD_LdwVel="30.000000" fFD_PcwVel="50.000000" nFD_LdwDistance="-5"
fFD_BsdFirstVel="5.000000" fFD_BsdSecondVel="5.000000" fFD_
BsdThirdVel="5.000000" nFD_BsdFWarnInt="5" nFD_BsdSWarnInt="10" nFD_
BsdTWarnInt="15" />
```

```
</VariCfgSec>
```

Set the algorithm threshold parameters

```
<VariCfgSec Action="DEVICE_SET"><stAIThresParam fFD_DsmLowVel="30.000000"
fFD_DsmHighVel="50.000000" fFD_LeftLookLowVel="3.000000"
fFD_LeftLookHighVel="2.000000" fFD_RightLookLowVel="3.000000"
fFD_RightLookHighVel="2.000000" fFD_HeadUpLowVel="4.000000"
fFD_HeadUpHighVel="3.000000" fFD_HeadDownLowVel="4.000000"
fFD_HeadDownHighVel="3.000000" nFD_DistractedInt="10" fFD_
LeftLookAngel="20.000000" fFD_RightLookAngel="35.000000" fFD_
HeadUpAngel="25" fFD_HeadDownAngel="15.000000" fFD_HmwVel="30.000000"
fFD_FcwVel="30.000000" fFD_LdwVel="50.000000" fFD_PcwVel="30.000000"
nFD_LdwDistance="-5" fFD_BsdFirstVel="3.000000" fFD_BsdSecondVel="5.000000"
fFD_BsdThirdVel="10.000000" /></VariCfgSec>
```

You can set specific items separately

For example, change the LDW start speed threshold from the default 55KM to 30KM

```
<VariCfgSec Action="DEVICE_SET"><stAIThresParam fFD_LdwVel="30.000000" /></
VariCfgSec>
```

ADAS camera calibration parameters are obtained

```
<Control><CmdType>AdasCalibration</CmdType><SN>11</SN><Mode>Get</Mode></
Control>
```

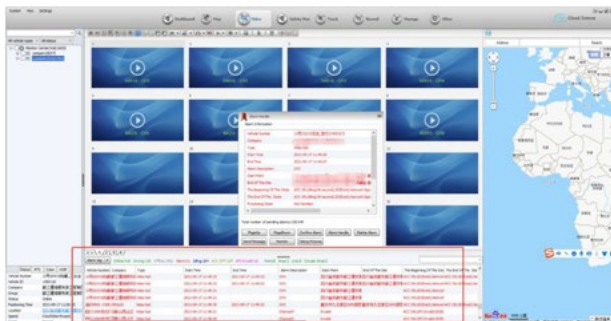
ADAS Set camera installation parameters

```
<Control><CmdType>AdasCalibration</CmdType><SN>11</SN><Mode>Set</
Mode><fCarWidth>1780</fCarWidth><fRefCenter>10</fRefCenter><fRefTop>1600</
```

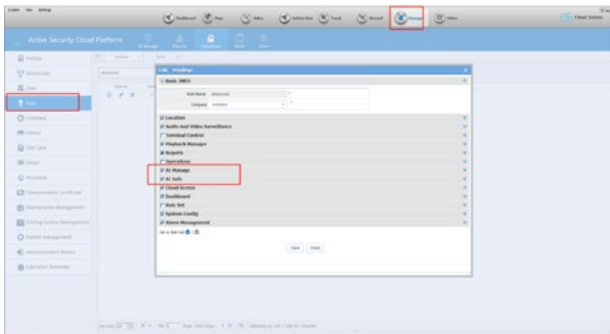

fRefTop><fDisLen2Tyre>570</fDisLen2Tyre><fCameraHeight>1300</fCameraHeight>
><fCameraFocus>6.000000</fCameraFocus><fCameraDx>0.004000</fCameraDx></Control>

11. Effect of using background software

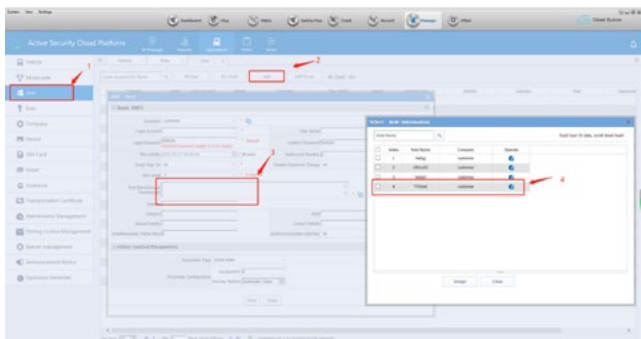
For illegal driving actions on the device side, the alarm bar of the client side has pictures uploaded to notify the real-time alarm information interface of the client side: when the alarm is triggered, the platform will upload alarm information and pictures.



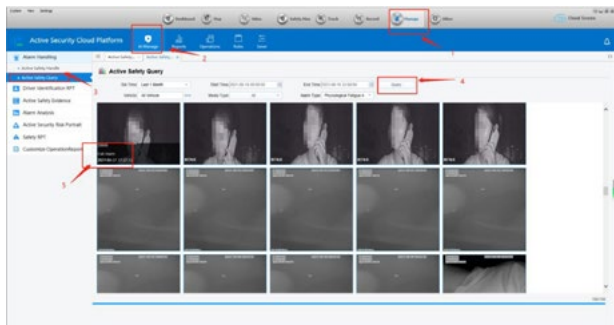
Operation Management on the client – Role Management – select Security Management and Security dashboard to grant the role the two rights.



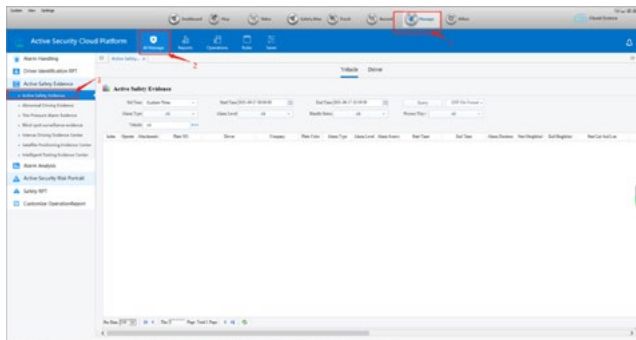
Add user – Assign the user to the role with the permission to view security Management and Security dashboard.



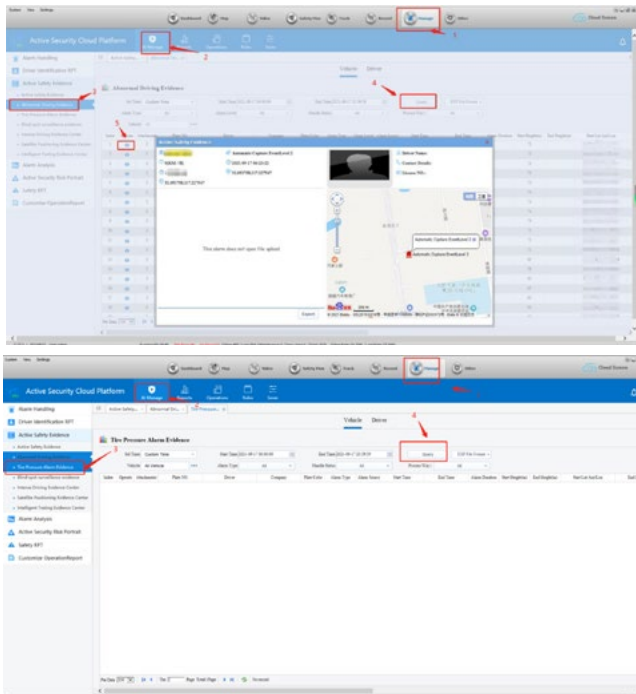
In the safety management – active safety evidence query – by vehicle by time – query, find alarm pictures.



Active safety evidence inquiry:

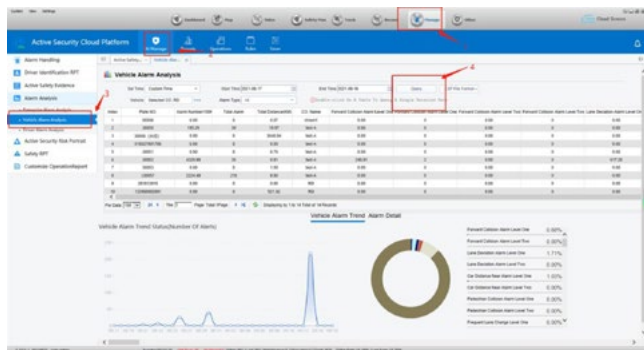


Abnormal driving evidence center:



Users can take the initiative to query videos, pictures, locations, synchronous retention evidence, effectively restrain drivers' driving habits, help the company to carry out reasonable supervision, prevent danger in the future, protect drivers' life and property safety, protect the interests of the company from damage.

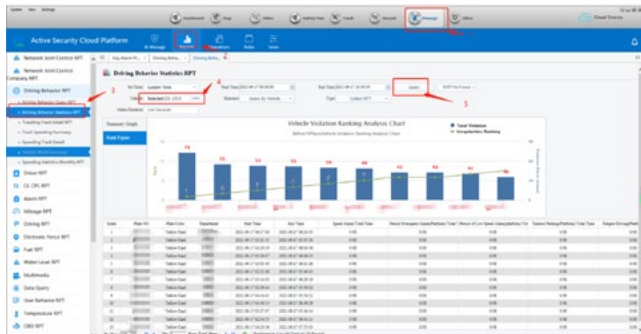
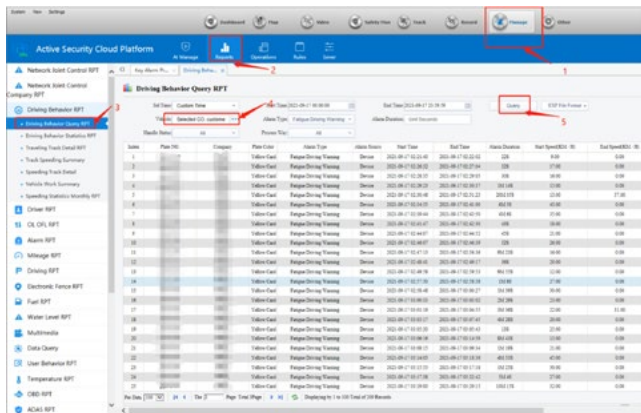
Active safety warning analysis



Driving behavior statistics query function

In the driving behavior statistics, the CMSV platform will be based on: Fatigue alarm, warning, warning, close your eyes phone alarm, smoke alarm, warning, leave glance left and right, yawn, vehicle collision warning, deviating from the early warning, the driver block or lens position deviation, the pedestrian detection alert, not wearing a seatbelt, the vehicles near the non-standard operation to carry on the summary statistics, 14 and statistical figure and ranking is formed.

Summary report



In multimedia, the operator can query the alarm photos or videos of a certain car according to the license plate number, date and options.

Special note: seat belt identification is not implemented in the current version, and ICONS of attachment uploading function and small video uploading are not implemented.



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