Operating Instructions

Bra Vision
Scandinavia AB

FHD 360° Surround View System

Please read this manual thoroughly before operating the unit,
and keep it for future reference.

V1.0

2023-01

Contents

1. Precautions

1.1 Storage and Keeping

1) Do not expose the System to excessive heat or cold. The storage temperature of this device is -40~+85°C, and the operating temperature is -20~+70°C. The humidity is RH90%.
2) Never use this device near a bathtub, wash basin, kitchen, damp basement, swimming pool or similar places.
3) Never use this device in environments with excessive moisture, dust or smoke.
4) Avoid dropping or striking this device.
5) Avoid using this device in enclosed spaces, areas with excessive vibration or subject to severe impacts.
6) Never puncture, scratch or use abrasive cleaning materials on this device.
7) Do not place cables where they may be pinched or stepped on.
8) The Control Box is not designed to be waterproof.

1.2 Operating Precautions

1) The device may be powered by a 12 or 24 volt automotive battery or vehicle electrical system.
2) Make sure all cables are connected properly. Observe polarity. Improper cable connections may damage the system. Remove the power cable connections when you do not intend to use the unit.

⚠ Warning!

1. The opening of the case should be by professionals.
2. Do not watch the video while driving unless you are monitoring the rear view camera display.

1.3 Maintenance

1) Remove all the cable connections from the control box before cleaning the device.
2) Use a mild household detergent and clean the unit with a slightly damp, soft cloth.
3) Never use strong solvents such as thinner or benzine, as they might damage the finish of the device.

	Caution Risk of electric shock Do not open	
Caution: to reduce the risk of electric shock, Do not remove cover (or back). No user-serviceable parts inside. Refer servicing to qualified service personnel.		

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

This symbol is intended to alert the user not to dispose of electrical and electronic equipment.

CAUTION

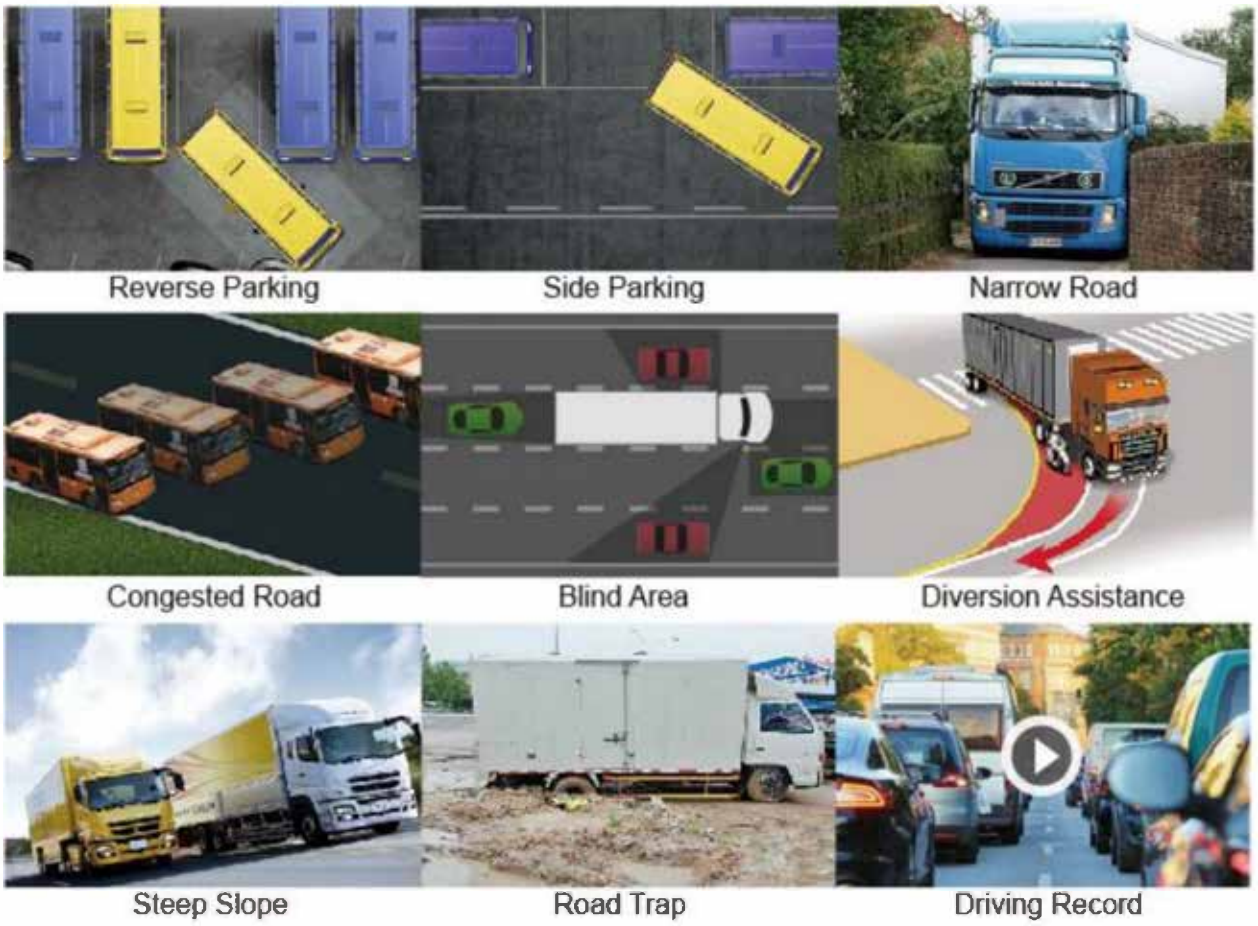
You are cautioned that any changes or modifications not expressly approved in this manual could void your warrant and necessitate expensive repairs.

2. Product Features

2.1 Basic Features

1) 6pcs 190° FHD 1080P wide-angle fisheye cameras, horizontal view angle>170° inputs.
2) Techniques of dual-core ARM Cotex-A7 and SOC development of built-in high-performance H.264 video encoding/decoding engineer core make it efficient to composite high accuracy seamless images.
3) Support 1 pcs 128G SD card and 1 2T SSD card as video media.
4) Low-cost calibration tools, simplified calibration procedures.
5) Maximum 6CH 1080P/30 or 6CH 1080P/25 frames video resolution.
6) High definition 1080P video output.
7) Single-step calibration for built-in and peripherals parameters of cameras, no need to bound the cameras and the main unit.

2.2 Application



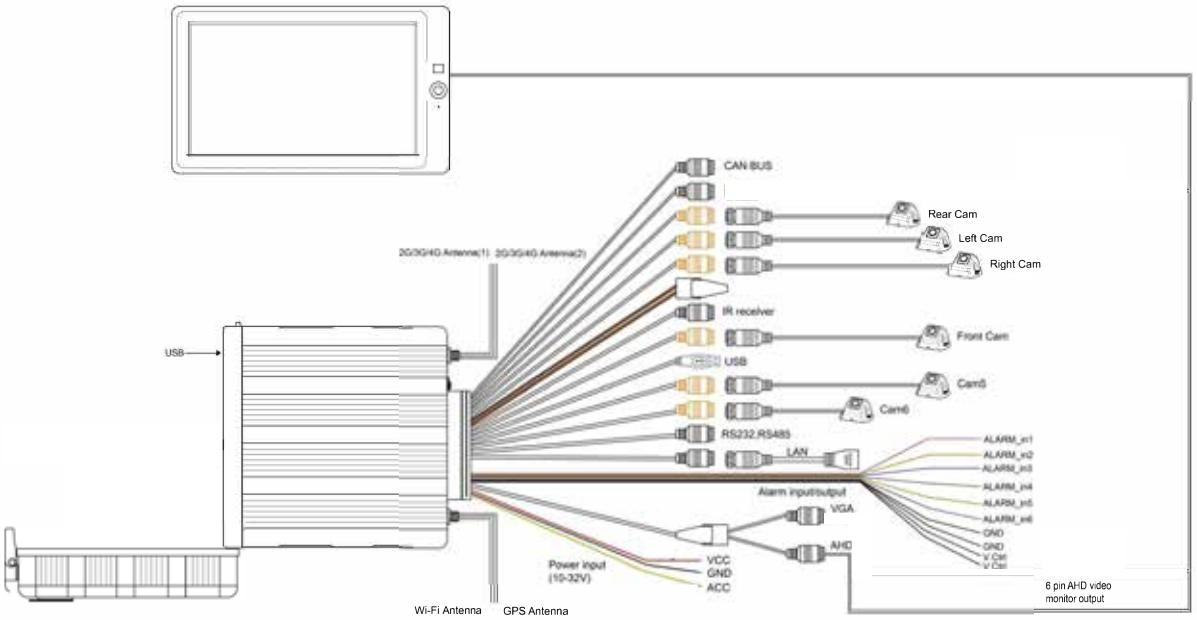
2.3 Features

1) Panoramic image.
2) Blending seamless stitching.
3) 360° no blind spot.
4) Clear Around-view.
5) Auto switch to reversing image when reverse wire is triggered.
6) Auto switch to left/right image when left/right wire is triggered.
7) Installation guide with pictures.
8) Automatic plane correction.
9) Driving Recording.
10) G-sensor or over speed-triggered event recording
11) Adjustable angle of the four overlapping areas
12) Reversing track function added

2.4 Standard Configuration

Item	Configuration	Amount
1	Main ECU box	1
2	FHD eye-fish camera	4
3	34-buttom remote controller	1
4	Main harness	1
5	8M extension cable for HD camera	1
6	12M extension cable for HD camera	2
7	18M extension cable for HD camera	1
8	LAN extension cable	1
9	Wi-Fi antenna	1
10	GPS antenna	1
11	CBL,Trigger Line Flasher,5.5m	1
12	FUSE,5A,Waterproof,PVC 80P Red,INVIEW360	1

3. Connection Diagram



Note:

1) Both the red and yellow lines of the power supply need to be positive
2) Trigger lines labeled V_CTRL,+12V and Alarm Out cannot be connected to external power supplies.
3) Alarm_in1: Left Trigger
   Alarm_in2: Right Trigger
   Alarm_in3: Event button
   Alarm_in4: Reverse Trigger
   Alarm_in5: Out rigger
   Alarm_in6: Driver button

4. Specification

4.1 Main unit box Video parameter

Item	Parameter		Performance Index
Panoramic video parameter	Input video		Max.6CH×1080P25f/1080P30f
	Display style		2D/3D
	High definition output	Resolution	1080P
		refresh rate	25/30/50/60
Recorder parameter	Storage method		Max. 1×128GB SD card +1×2TB SSD card (can be purchased from our company)
	Compressed encoding		Max. 6CH×1080P H.264 encoding
	Video stream		4M/2M

4.2 Main unit box Working environment parameter

Parameter	Parameter Ranges
Working Voltage	8-32V
Working voltage range for external trigger signals	8-32V
working electric current	<2A/12V
Working temperature range	-20°C -70°C
Storage Temperature	–40°C ~85°C
Working humidity	10%-95%

4.3 Camera parameter

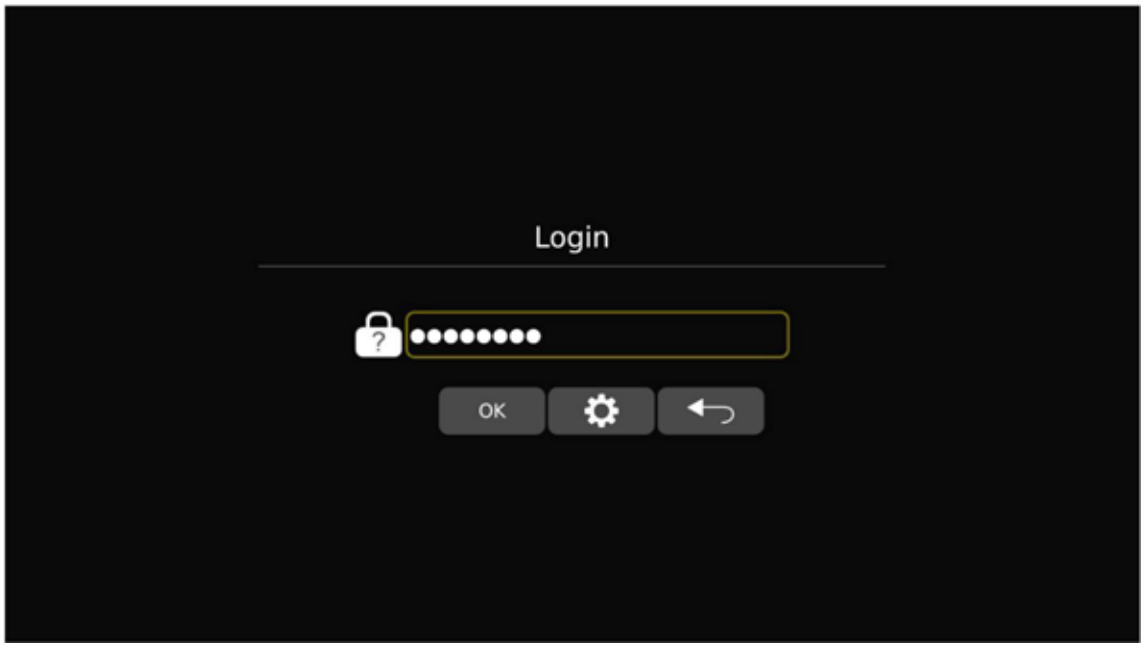
Parameter	Parameter Ranges
Image Device	1/2.9” CMOS
Frame Rate	25/30
Effective Pixels	1920(H) x 1080 (V)
Pixel Size	2.9 μm x 2.9 μm
Resolution	1080P
Video Output	1.0Vp-p, 75Ohm
White Balance	Auto
Viewing Angle	>170(H)
Power Supply	12V
Working temperature range	–20°C ~ 70°C, RH95%MAX.
Storage Temperature	–40°C ~85°C, RH95%MAX.
Waterproof rating	IP69K

5. Remote Controller

- ENTER:Enter main menu or confirm menu selection.
- ESC:Exit main menu interface/return to main menu interface.
- LEFT, RIGHT:Left,Right /Minus, Plus button. Shift image channel to left/right
  view, or operate plus/minus in main menu interface.
- UP, DOWN:Front/Back button. Shift image channel to front/back view.
- SHIFT:Same function as Tab button to shift to quad display or exit from quad display. It's used for switching menu selection in main menu interface.
- POWER:Turn on/off video output.
- Number button 0-9: (0-9)Input numbers.
- CLEAR:Back space button: Delete a character.
- MULTI:Full screen function

6. User Interface

6.1 Log in Interface



Description: Login interface.

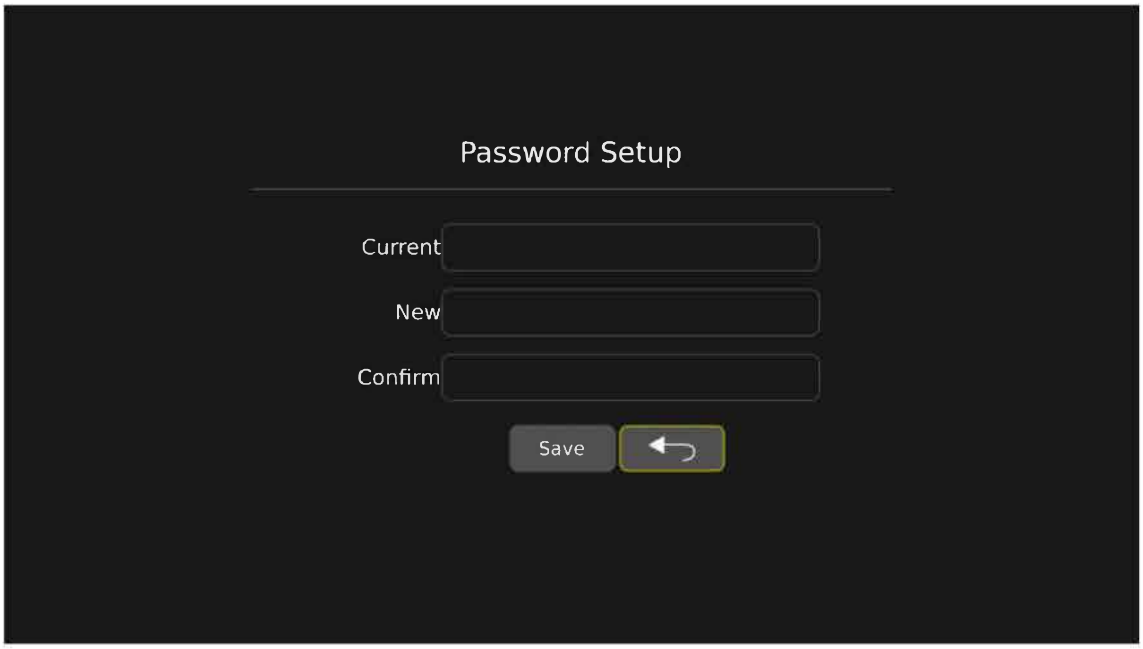
 :Password (factory default is 88888888)

 :confirm to log in

 :reset password

 :exit

6.2 Password Reset



Description:

Enter the current password once, new password twice, click Save button to complete new password setting.

:current password

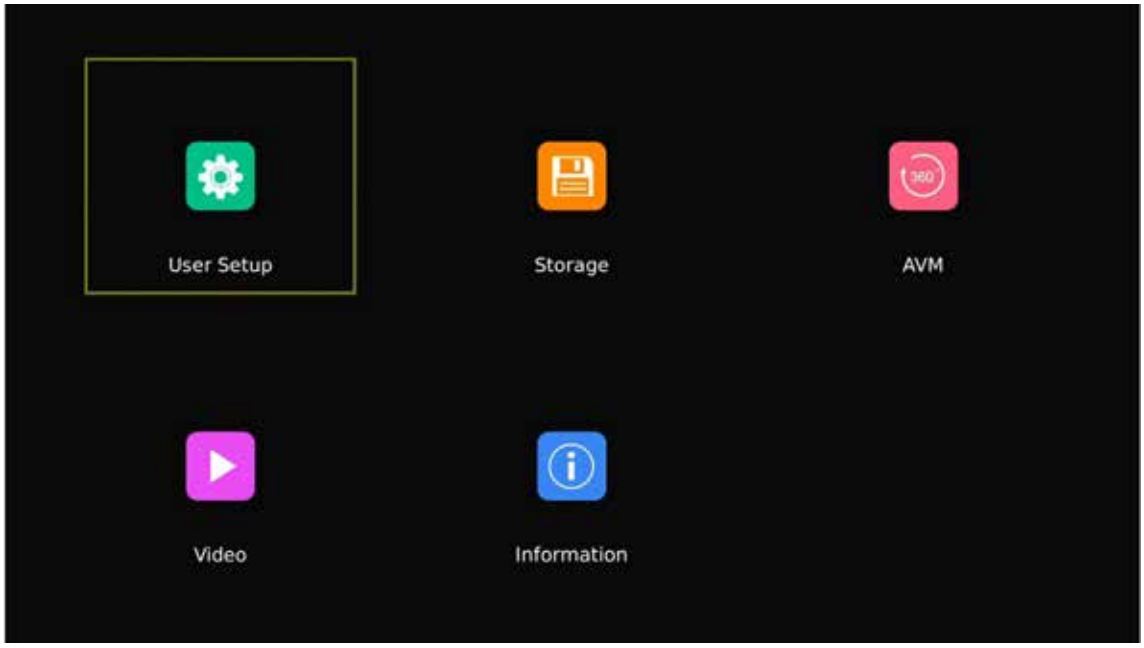
:new password

:confirm password

:save setting


:Exit (cancel changes)

6.3 User main interface



Description:

User Setup: user settings, to set up Basic setup,Time,DVR,Display,Network,Radar,Trigger,Adas Setup

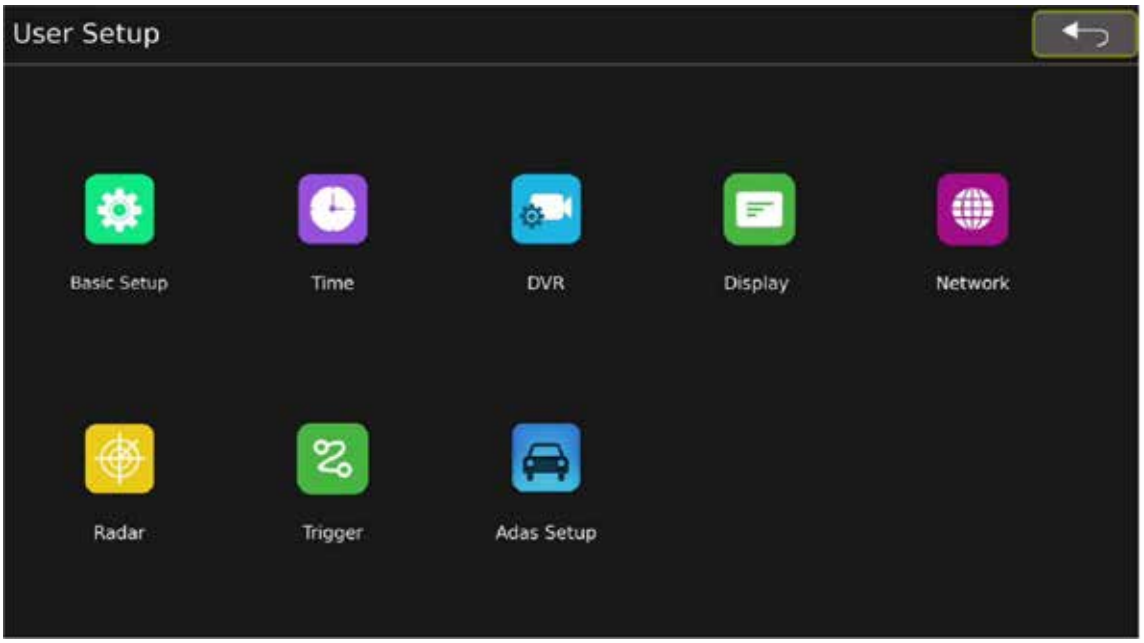
Storage: storage management, can check the SD storage and log file management

AVM: Automatic Calibration,calibration File,vehicle Type,surround view,out Rigger and Parking Line

Video:Video recording management

Information: CPU and MCU version info and upgrading

6.3.1 User settings interface



Description: all user setting functions

Basic Setup:basic settings

Time:time setting

DVR:video Recording settings

Display:display mode settings

Network:network settings

Radar:radar setting

Trigger:trigger setting

Adas Setup:adas setting

1) Basic Setup:basic settings interface, as shown below:

Description:

- Region:Video format selection, NTSC,PAL optional。
- Display Icon:hide display icons on main interface(except direction arrows).
- Monitor Setup:Low speed wake-up switch. When set ON and speed from GPS is lower then the set value, it will trigger standby status.When no GPS signal, will also keep standby delay setting
- Standby Delay:Auto standby time setting, optional setting are 10s, 30s, OFF. After enable and set the automatic standby time, if there is no external trigger and remote control operation, the system will automatically enter the standby state after the set time
- Standby Setting:1=HD VGA,only have HD VGA video output;2=CVBS, only have CVBS video output;3=Both,HD VGA and CVBS video output
- Language:language selection. English, French, Germany, Dutch.

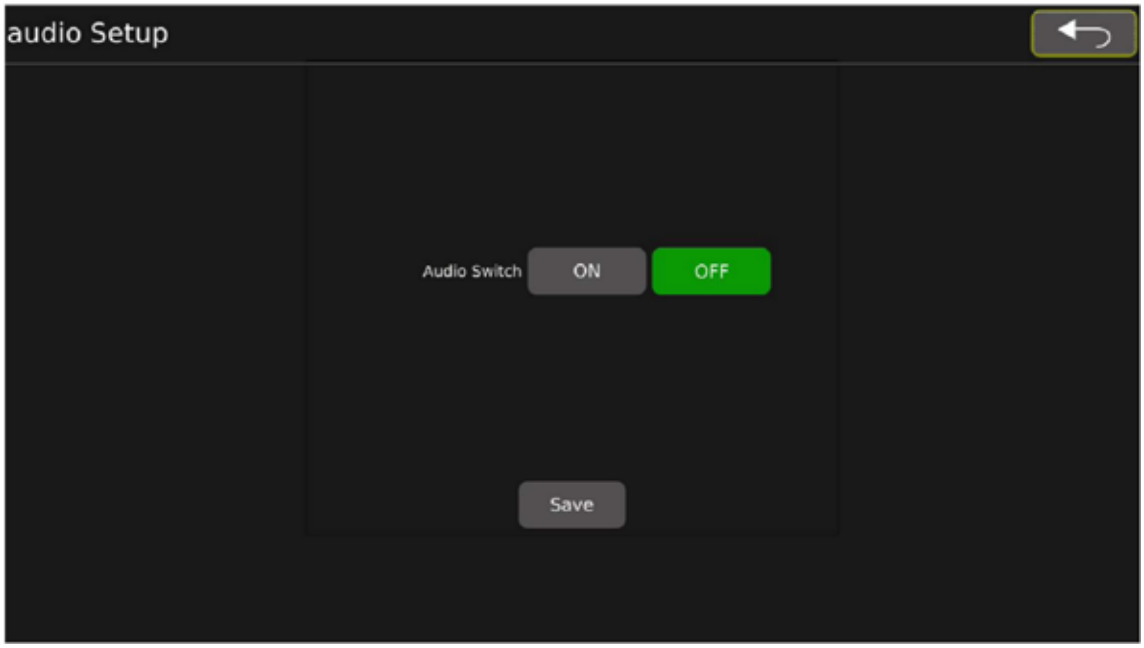
2) System Time Setup:

Description:

- System Time: System time setting,Note;Press“Set Time”to save changes

  GPS Time Synchronization :
- Switch:GPS timing switch setting, the default is OFF. When set to ON, when GPS receives a signal, the system will automatically calibrate to the current time zone according to the time zone configured in UTC after GPS receives signal; when set to OFF, the system will not perform GPS timing.
- UTC:Time zone settings, the default is UTC+0. UTC-1 to UTC-11, UTC+0 to UTC+12, a total of 24 options.

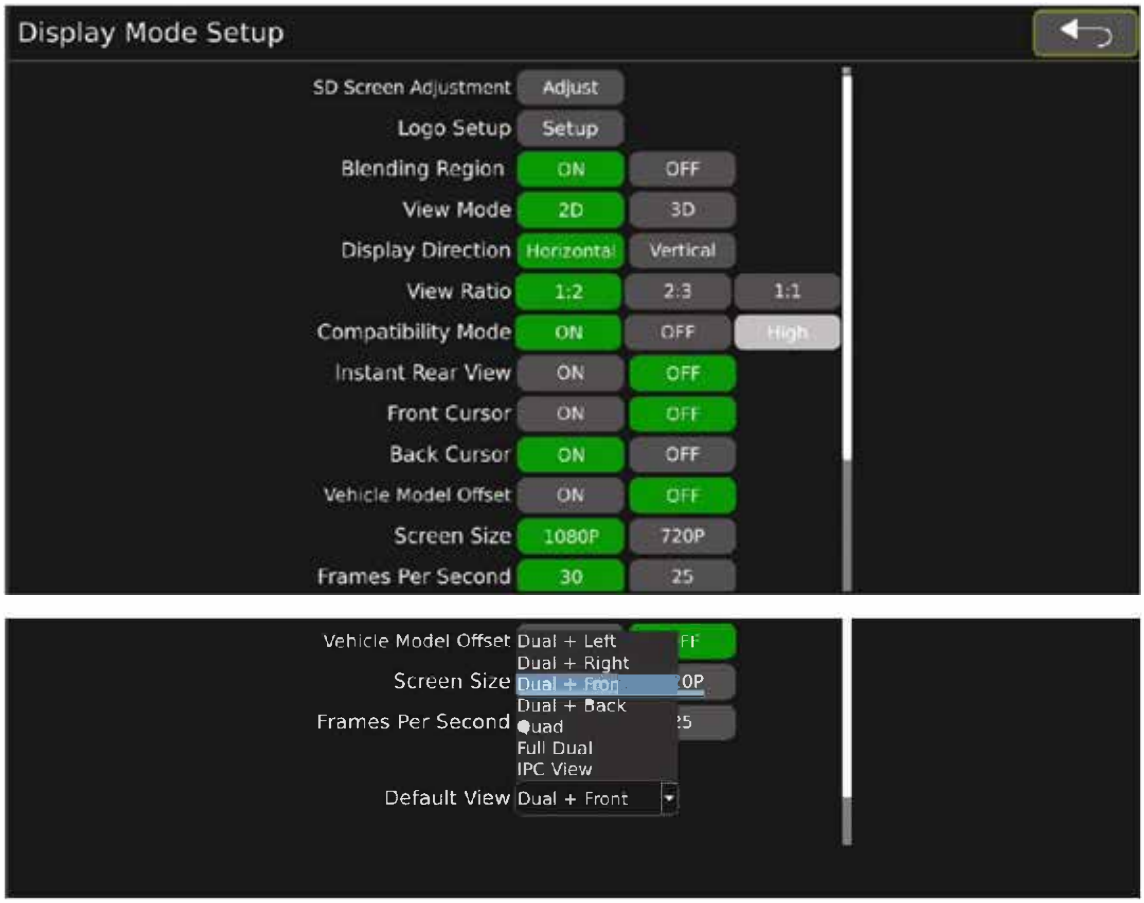
  Daylight Saving Time Setup:
- Switch:The summer time switch setting, the default is OFF. When it is set to ON, and the current time is within the setting interval of [start--End], it is required to be within the normal time + the set Offset value. (For example: Offset is 1.0h, it requires +1 at normal time, and so on). When set to OFF, the daylight saving time function is not turned on.
- Mode:Daylight saving time range configuration mode, the default is Week. When set to week, the configuration mode of the daylight saving time range [start--End] is: month/week/hour/minute. When it is set to Date, the configuration method of the daylight saving time range [start--End] is:the hour and minute of the month and day.
- Offset:Daylight saving time needs to increase the time length configuration. The up and down buttons of the remote control can modify the Offset value, and the step value is 0.5.
- Start:Configuration of the start time of daylight saving time.
- End:Configuration of the ending time of daylight saving time.
- Month:Configuration of months,1-12 month is optional.
- Few:The weekday configuration in the month configuration.
- Weekday:The configuration of the day of the week. Monday to Sunday is optional.
- Time: Configuration content is hour and minute



Description:

- Audio Switch: The default is OFF, this setting is not open for users at present.

7) Display:select display mode, as shown below:

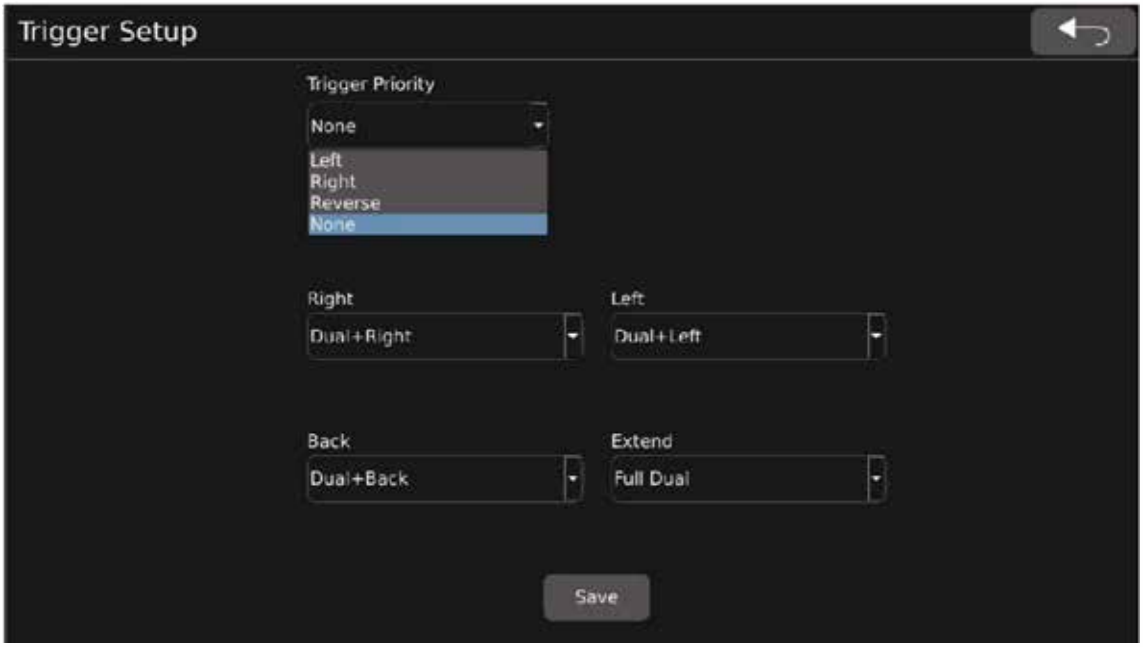


Description:

- SD Screen Adjustment: when CVBS output, can adjust screen display portion(Note:need to reset it if switch between NTSC and PAL)
- Logo Setup: Replacement of the boot logo. Note: Currently, it is supported to import a 24-bit deep 1920x1080 BMP format logo image.
- Blending Region: blending overlapping ON/OFF.
- View Mode: Display mode switching, the default is 2D. 2D mode or 3D mode can be set.When set to 2D, the screen display effect is 2D surround view + single view; when set to 3D, the screen display effect is 2D surround view + 3D ring view.
- Display Direction:Horizontal and vertical screen display switching
- View Ratio: The setting of surround view and single view/3D imgae ratio, the default is 1:2. When set to 1:2, surround view occupies 1/3 of the entire screen, single view/3D occupies 2/3 of the entire screen; set to 2:3, surround view occupies 2/5 of the entire screen, single view/ 3D occupies 3/5 of the entire screen; set to 1:1, surround view occupies 1/2 of the entire screen, and single view/3D occupies 1/2 of the entire screen.
- Compatibility Mode: Compatibility mode settings, the default is ON. When set to ON, the compatibility of all screens is better.(OFF and High mode is temporarily unavailable).
- Instant Rear View: When it is set to ON and the rear camera is connected, the rear view is displayed 3 seconds after the monitor is powered on. When it is set to OFF, the logo is displayed at startup. When it is set to ON, but the rear camera is not connected, the logo is displayed.
- Front Cursor: The front single view cursor switch configuration, the default is OFF. When set to ON, the front single view displays the cursor; when set to OFF, the front single view does not display the cursor.
- Back Cursor: The back single view cursor switch configuration, the default is OFF. When set to ON, the back single view displays the cursor; when set to OFF, the back single view does not display the cursor.
- Vehicle Model Offset: Quick drawing configuration, the default is OFF. When set to ON, the rear single-view screen will be displayed about 3s after power-on; if it is set to OFF, the boot logo will be displayed about 3s after power-on.
- Screen Size: The default is 1080P. When 720P is selected, AHD output resolution is 720P.
- Frames Per Second: The default frame rate is 30. When frame rate 25 is selected, AHD output frame rate is 25.
- Default View: the default display mode can be Dual +Left,Dual +Right,Dual +Front,Dual +Back,Quad,Full Dual and IPC View(A18 cannot display IPC view).

- Red:Dangerous distance setting.
- Yellow:Warning distance setting.
- Green:Safe distance setting.
- Width:Detect width setting.
- Save:Save the setting parameters.
-  :Exit.
-

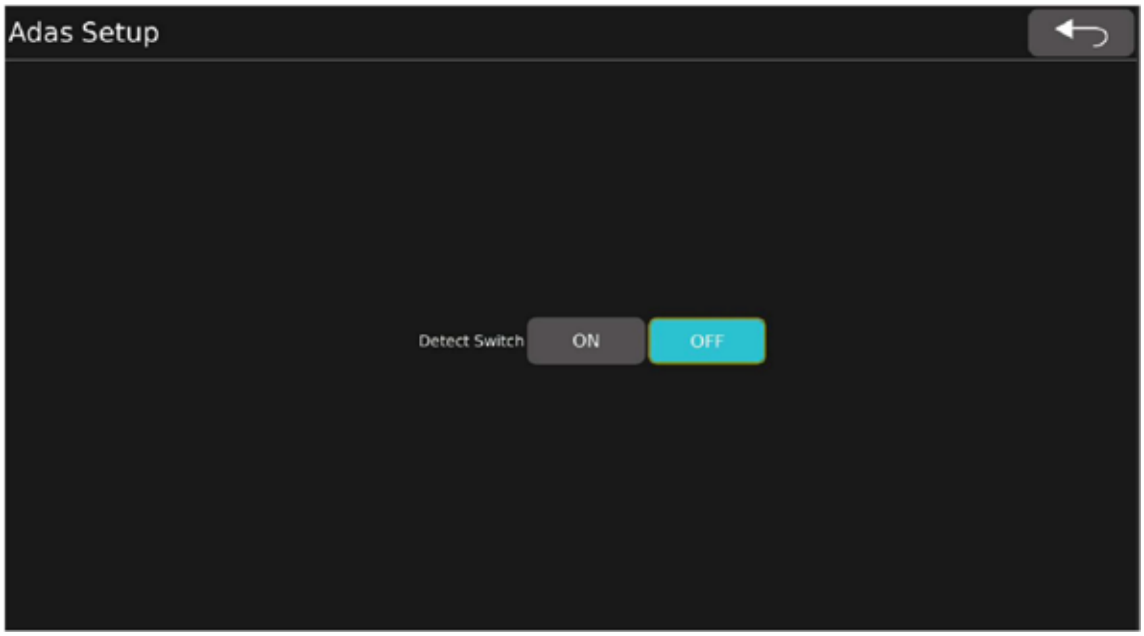
13) Trigger Setup:



Description:

- Trigger Priority: Trigger priority, default value is None. When set to None: Panorama will display the first triggered view. For example, when the rear line is triggered, the rear view camera is displayed in a panoramic view. At this time, if the left road is also triggered, the back road camera is still displayed in the panorama. The left side camera will not be displayed until the back road trigger is completed. When set to Reverse: When the rear trigger line is triggered, the panorama will always display the rear camera view. If the current other road is triggered, the rear camera is also triggered, and the panorama will give priority to displaying the rear camera picture. Set to Left/Right in the same way.
- Right: After the line labeled TRIG_R is triggered, the configuration of the screen display effect is Dual +Right by default.
- Configurable:Dual+Left,Dual+Right,Dual+Front,Dual+Back,Single_Right,Single_Left,Single_Front,Single_Back, Quad, Full Dual, IPC.
- Left: After the line labeled TRIG_L is triggered, the configuration of the screen display effect, the default is Dual +Left. Configurable: Same as above.
- Back: After the line labeled BACK_WARD is triggered, the configuration of the screen display effect, the default is Dual +Back. Configurable: Same as above.
- Extend: After the line labeled TRIG_EXTEND is triggered, the configuration of the screen display effect, the default is Full Dual. Configurable: Same as above.
- Save: Save parameter adjustments.

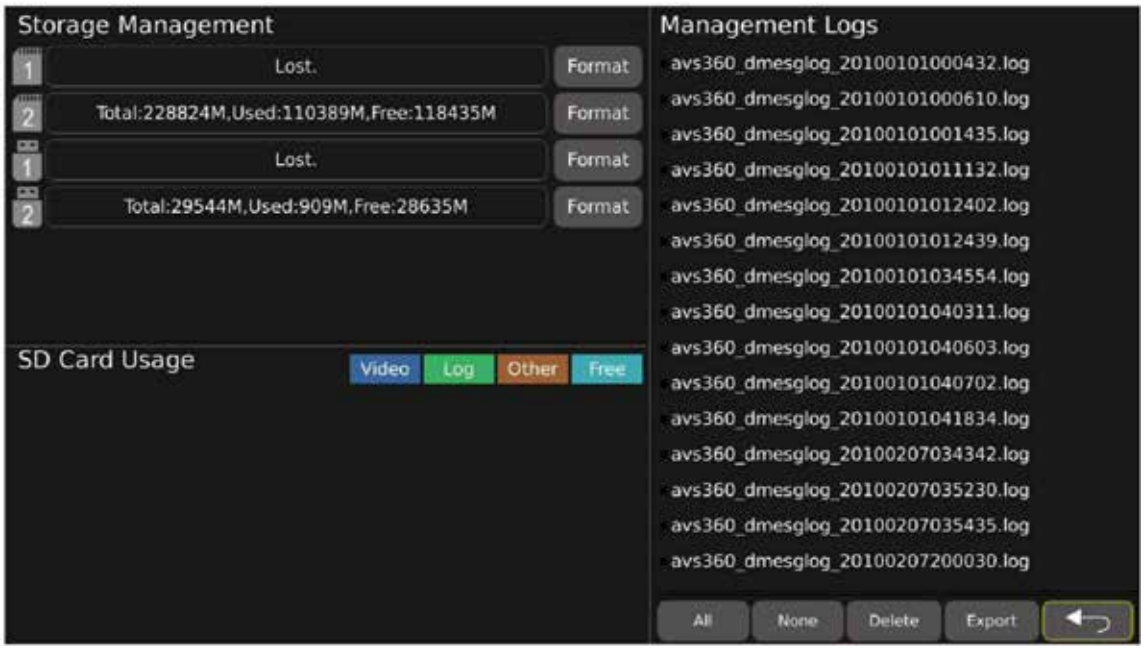
14) Adas Setup



Description:

- Detect Switch: The default is OFF, this setting is not open for users at present.

6.3.2 Storage management, as shown below:

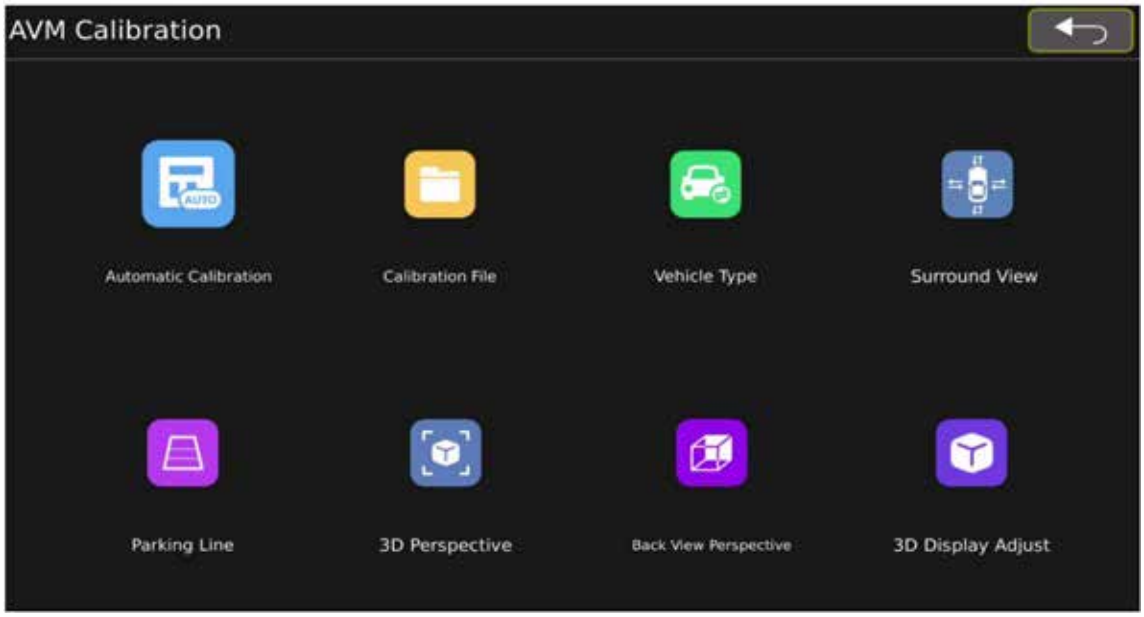


Description:

- Storage management, support up to 1 SSD card 、1SDcard and 2 USB drives, support log files exporting
- Format: format SD cards or USB drive
- SD Card Usage: SD storage management

- Management Logs: log files list
- ALL: select all log files
- None: select none log files
- Delete: delete the selected log files
- Export: export the selected log files

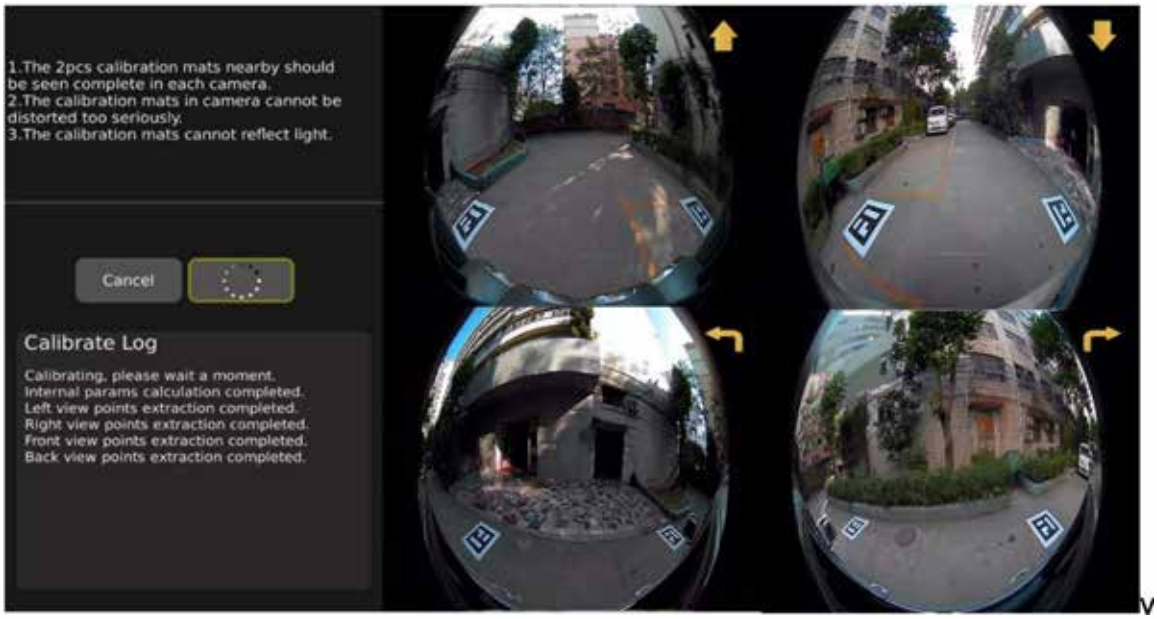
6.3.3 AVM Interface



Description:

- Automatic Calibration: Automatic Calibration.
- Calibration File: Export calibration picture resources and import calibration files.(mainly used when in PC's calibration)
- Vehicle Type: Change the car model type page.
- Surround View: Overlap angle and surrounding visual range setting.
- Parking Line: Reversing cursor adjustment.
- 3D Perspective: 3D perspective view point setting.(This configuration item is displayed only when the view mode is configured as 3D; if the view mode is configured as 2D, the configuration item is in blanking state) .
- Back View Perspective:3D rear view point setting.(This configuration item is displayed only when the view mode is configured as 3D; if the view mode is configured as 2D, the configuration item is in blanking state) .
- 3D Display Adjust:3D display setting.(This configuration item is displayed only when the view mode is configured as 3D; if the view mode is configured as 2D, the configuration item is in blanking state) .

1) Automatic Calibration:



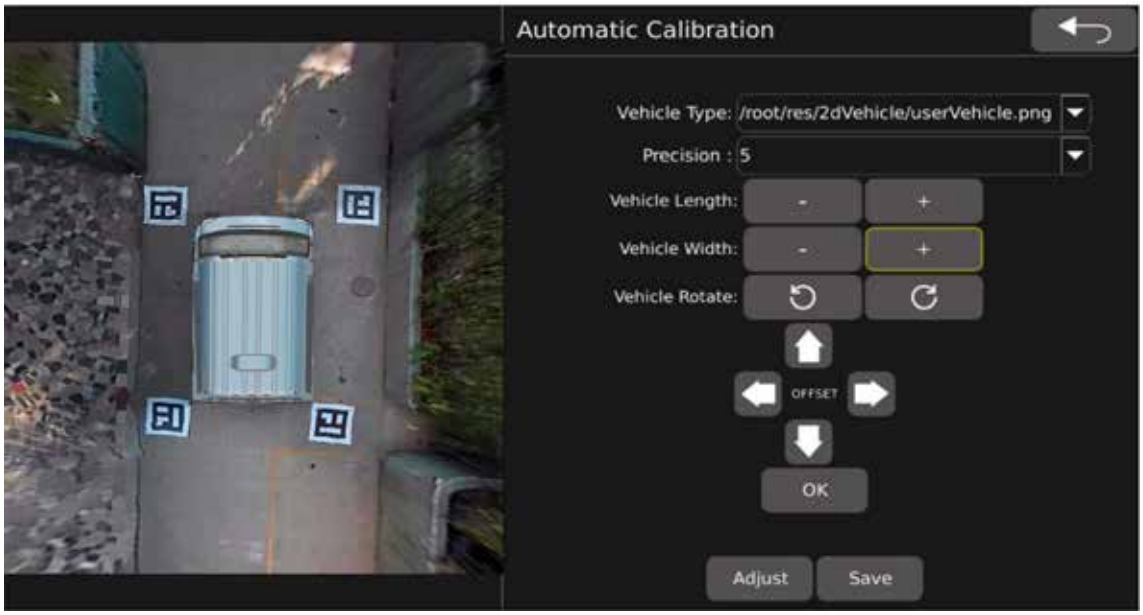
Description:

- Cancel: Cancel button, click this to exit calibration interface.
- Calibrate:Automatic calibration button, click to enter automatically calibration mode.
- Calibrate Log:Display of calibration log.

Precautions:

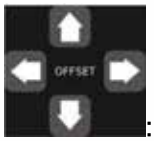
- Each camera should fully see the 2 nearby calibration mats and cannot be blocked by objects.
- The calibration mast in the camera screen cannot be severely distorted.
- The calibration mats should not have serious reflected light.

2) Adjustment Interface



Description:

- Vehicle Type:Used to modify the type of car model (note that the car model here is only for auxiliary calibration reference and does not need to be saved)

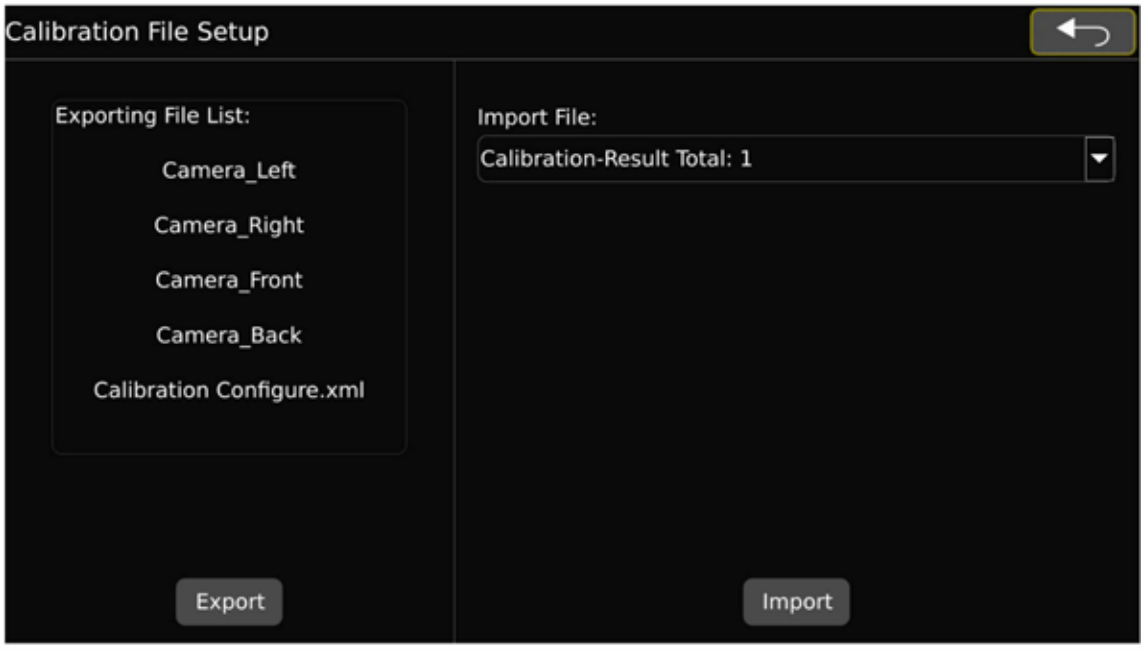
- Precision :Accuracy adjustment of vehicle length, width and model movement,default value is 1. (optional values 1, 5, 10, 15 pixels).
- Vehicle Length:Used for vehicle length adjustment. Click“-”to decrease vehicle length; Click“+”to increase vehicle length
- Vehicle Width:Used for vehicle width adjustment,Click“-”to decrease vehicle width;Click“+”to increase vehicle width
- Vehicle Rotate:Used for car model rotation (turn left or right).
- 

:For car model movement (up/down/left/right).
- 

:Used to update the calibration effect button after adjusting the overall effect.
- Adjust :Used to jump to the calibration internal parameter adjustment interface.
- Save : Save the calibration results.

Kind Reminder:

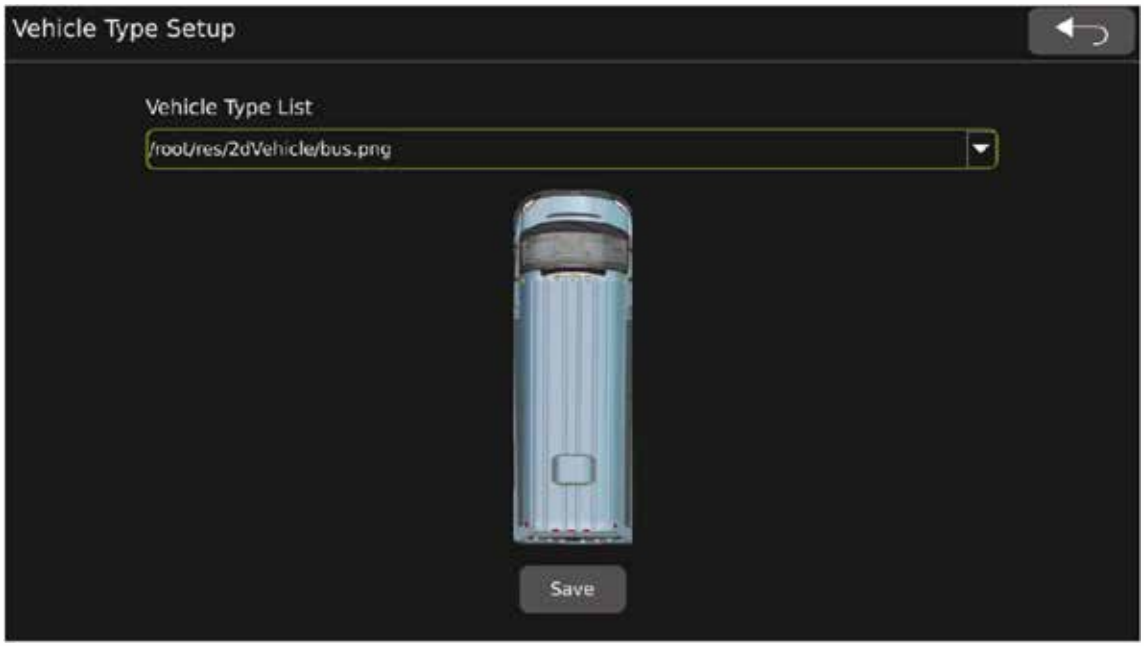
1) It is recommended to use the quad screen of the display screen to monitor the installation effect in real time when the camera is installed. It is required that the car body can still be observed at the center of each screen.
2) When calibrating, it is recommended to stick zebra tape (or other marks) close to the periphery of the vehicle and adjust the parameters of the car model until you can see the zebra tape all around.
3) Calibration File Setup: calibration images export and calibration results import



Description:

- Note: this interface does not refresh USB resources in real time, user must first connect USB before entering this interface.
- Export: export calibration images to USB Drive, including 6channel camera images and XML file
- Import: import the calibrated result to ECU. Make sure that is the correct calibration result

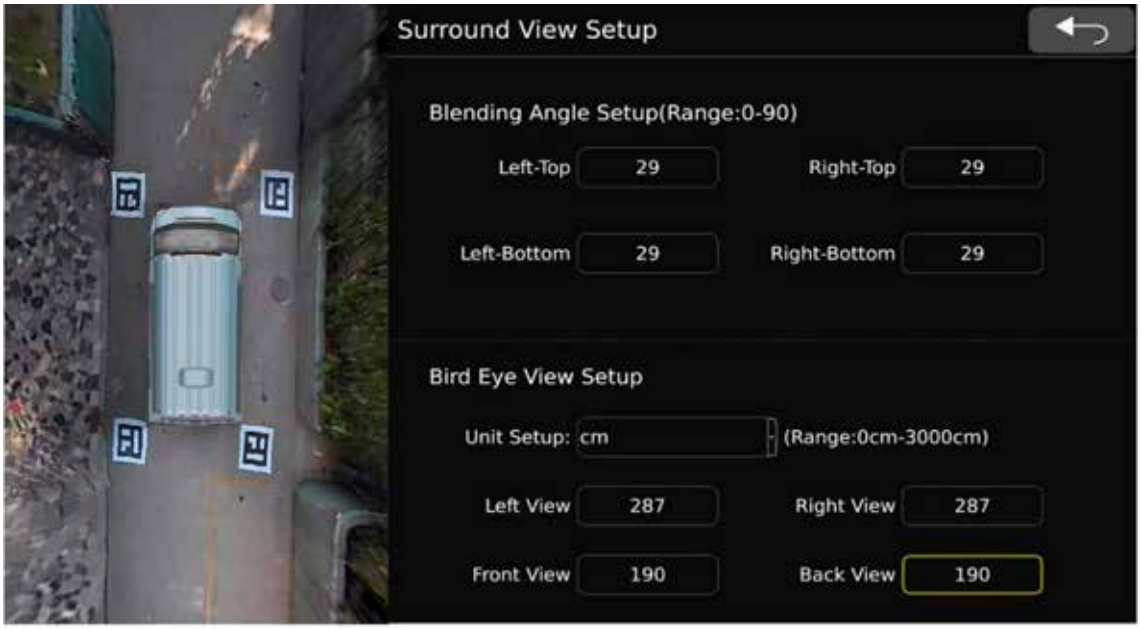
4) Vehicle Type Setup:as shown below,



Description:

- this interface does not refresh USB resources in real time, user must first connect USB before entering this interface.
- There are 8vehicle types by default:Ambulance,Cargo Truck,Fire Truck,Garbage Truck,School,Utility Truck,Van,White Transit Bus .
- Can put the customized vehicle type:copy vehicle type in PNG format to USB drive, and set it in ECU to be the correct vehicle type

5) Surround view:Blending angle and surround view parameter setting

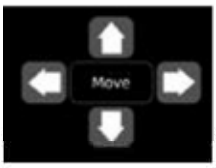


Description:

- Blending angle setting:blending angle of 4 corners can be set separately, range is 0 to 90degree.
- Width setting per channel: width value of 4 channels can be set separately,Unit can be inch/cm

6) Parking Line:adjust backup line

Feature Description:



- Press button ,up, down, left and right move the backup line
- Width Scale: Adjust the width of the reversing cursor.
- Height Scale: Adjust the height of the reversing cursor.

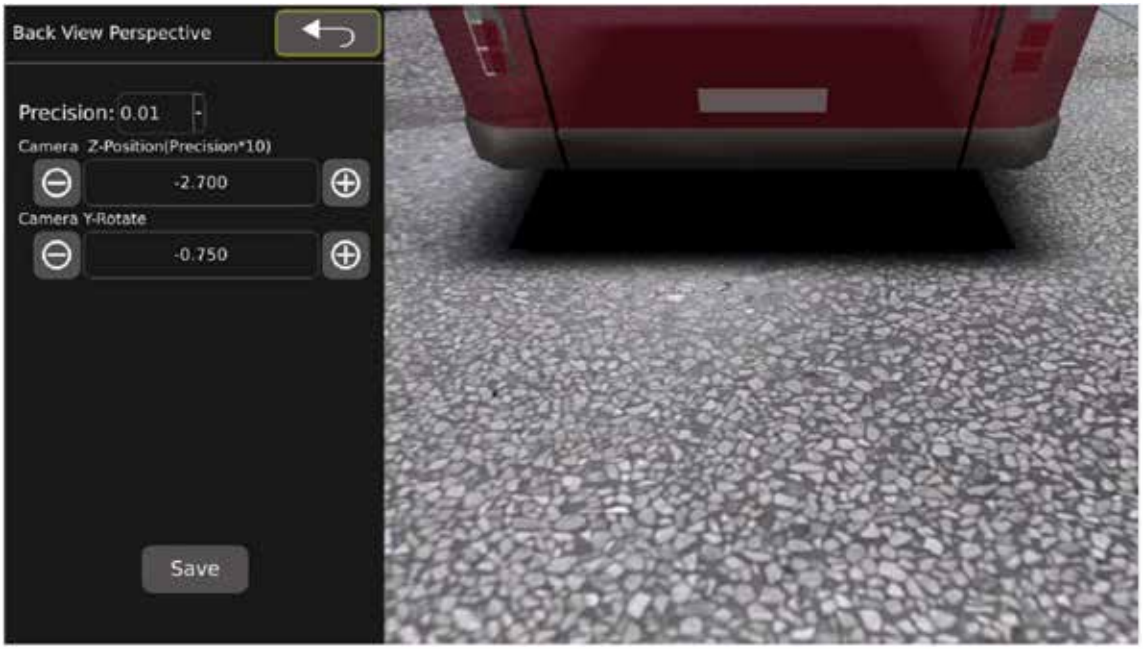
7) 3D Perspective:3D view viewpoint setting page

Feature Description:

- Vehicle Transparency: Car model transparency setting, default value is 0.8 (range: 0.1-1).
- Precision: Precision setting, default value is 0.01 (range: 0.01-0.1).

- Camera Z-Position: 3D view zoom setting. Default value is -3.000
- Camera Y-Position: 3D view up/down rotation setting. Default value is -0.850

8) Back View Perspective:3D rear view point setting page

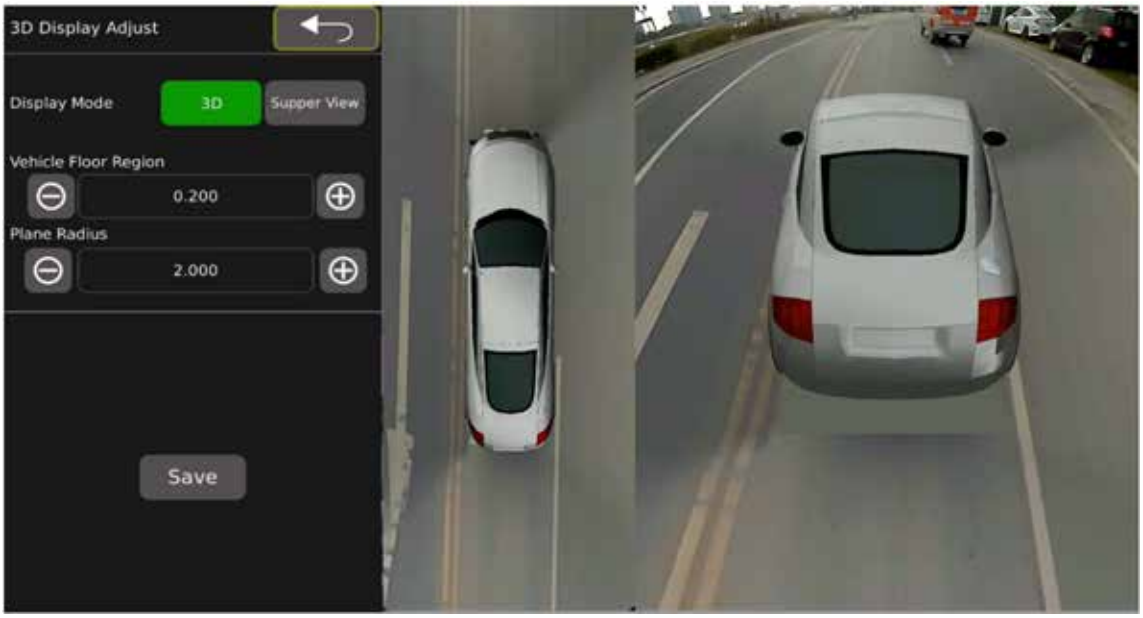


Feature Description:

- Position:Precision setting, default value is 0.01 (range: 0.01-0.1).
- Camera Z-Position:3D view zoom setting.
- Camera Y-Rotate:3D view up/down rotation setting.

9) 3D Display Adjust:3D display setting interface

① When Display Mode is set to 3D mode:



Feature Description:

- Display Mode:3D / Supper View selectable. The default value is 3D.

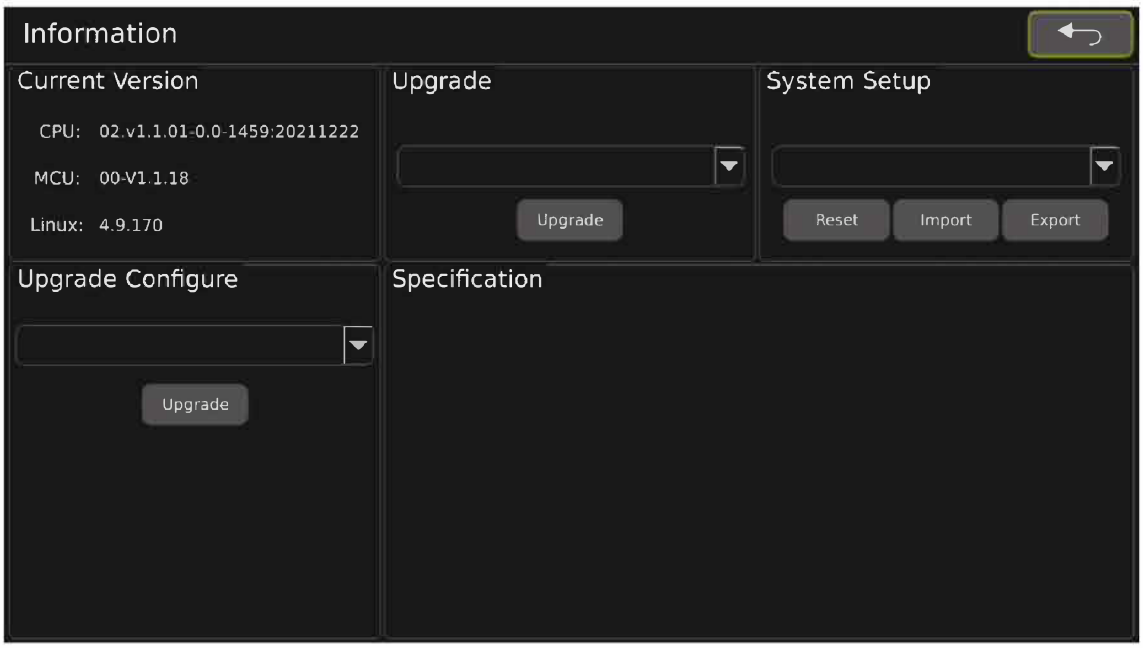
- Vehicle Floor Region: Set the size of the floor region under the vehicle model.The default value is 0.200.
- Plane Radius: Ground radius setting, the larger the radius, the smaller the 3D field of view.Default value is 2.000.

② When Display Mode is set to Supper View mode:

Feature Description:

- Vehicle Floor Region: Set the size of the floor region under the vehicle model.The default value is 0.200.
- Plane Radius: Ground radius setting, the larger the radius, the smaller the 3D field of view.Default value is1.500.
- Stereoscopic Effect: Object 3D effect settings, default is 10.000.
- Distortion correction Y-axis: The Y direction offset setting of the virtual projection camera.Default value is 0.000.
- Distortion correction Z-axis: The height offset setting of the virtual projection camera. Default value is 1.000.

6.3.5 Information :as shown below:



Description:

- Current Version:

CPU:current CPU version

MCU:current MCU verion info

Linux:system info

- Upgrade

Upgrade: CPU upgrading; make sure that the right firmware package is chosen to be updated

- System Setup

Reset :restore factory setting

Import :export configuration file

Export :import configuration file

- Upgrade Configure

Upgrade :Upgrade configuration file