

Operating Instructions



FHD 360° Vision System

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

V1.0

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1. Precautions

● Storage and Keeping

- 1) Do not expose the System to excessive heat or cold. The storage temperature of this device is $-30^{\circ}\text{C} \sim +80^{\circ}\text{C}$, and the operating temperature is $-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$. 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.

● 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.

● 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	
<p>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.</p>		



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

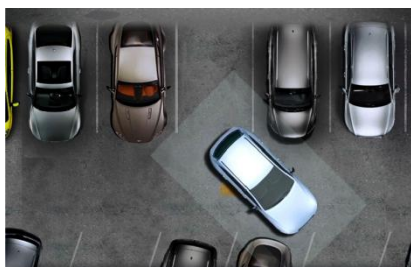
You are cautioned that any changes or modifications not expressly approved in this manual could void your warranty and necessitate expensive repairs.

2. Product Features

2.1 Basic Features

- 1) Support 4 pcs 190° FHD 1080P wide-angle fisheye cameras inputs, horizontal view angle $> 170^\circ$, maximum support 4CH+1CH IPC input
- 2) Techniques of quad-core ARM Cortex-A9 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 2 pcs x 128GB SD cards for storage.
- 4) Low-cost calibration tools, simplified calibration procedures.
- 5) Maximum 5CH 1080P video recording.
- 6) High definition 1080P video output and multiple formats of video signal output.
- 7) Camera internal and peripheral parameters are calibrated in one step without binding the camera to the host.

2.2 Applications



Reverse Parking



Side Parking



Narrow Road



Congested Road



Blind Area



Driving Assistance



Steep Slope



Road Trap



Driving Record

2.3 Features

- 1) Panoramic image.
- 2) Blending seamless stitching.
- 3) 360° view.
- 4) Auto switch to reversing image when reverse wire is triggered.
- 5) Auto switch to left / right image when left / right wire is triggered.
- 6) Installation guide with pictures.
- 7) Automatic plane correction.
- 8) Support drive recording.

3 Standard Configuration

Item	Configuration	Quantity
1	Control Box	1
2	FHD Fish-eye Camera	4
3	34-button remote control	1
4	Infrared extension cable	1
5	Main wiring harness 1	1
6	Main wiring harness 2	1
7	Power cable	1
8	20M extension cable	4
9	4P video output cable	1
10	Wi-Fi Extension Cable	1

4 Specification

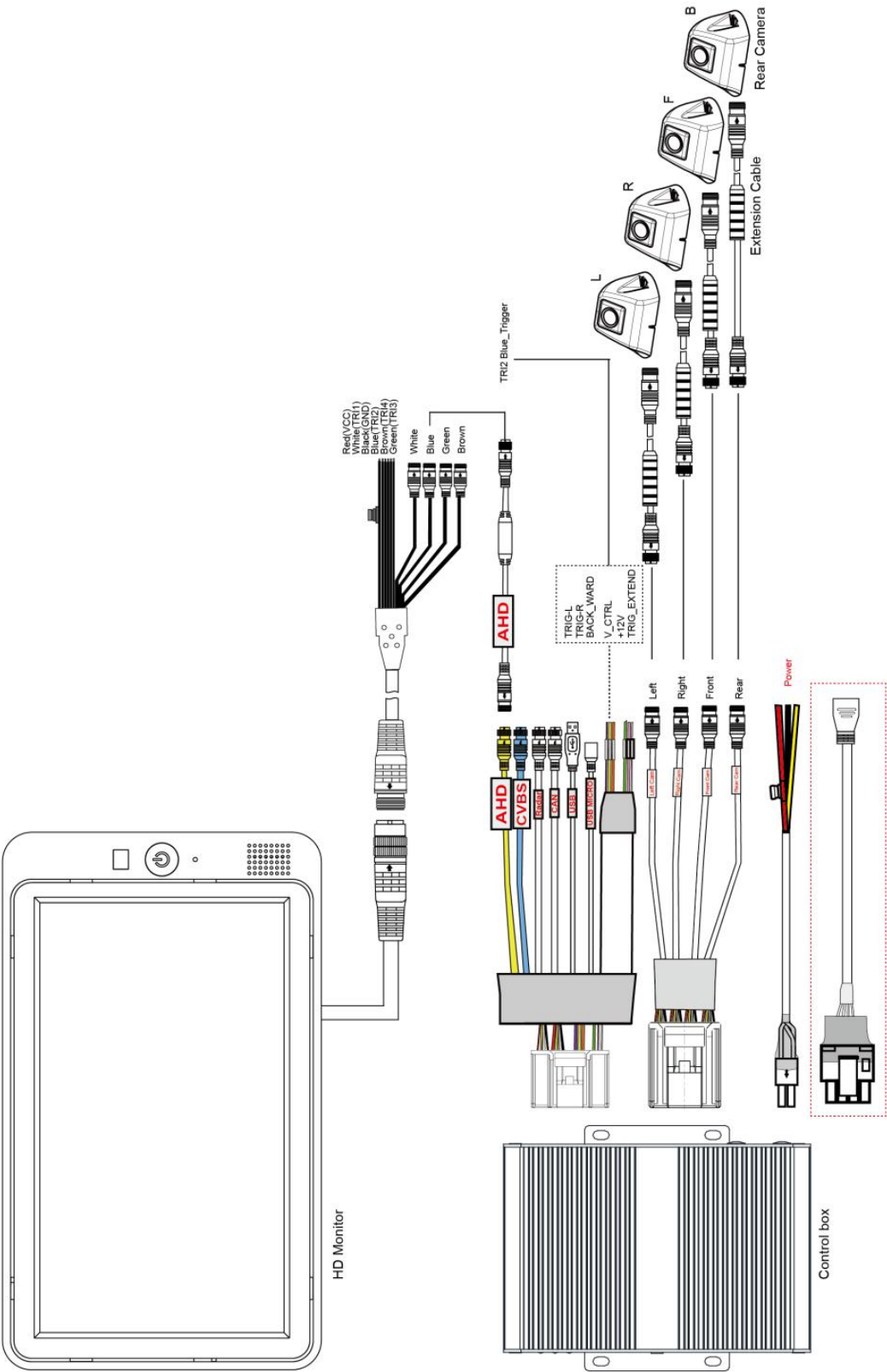
1. Main Control Parameters

Panoramic Video Parameter	Input Video		Max 4CH×1080P25f/30f +1CH IPC
	Display Mode		2D/3D
	HD Output	Resolution	1080P
		Refresh Rate	30f
	SD Output	Resolution	D1
		Refresh Rate	25 f / 30f
Recorder Parameter	Storage		Max 2×512G SD card
	Compressed Encoding		Max 4CH×1080P H.264 encode
	Decompression and decoding		Max 4CH×1080P H.264 decode
	Video Stream		1M/ 2M / 4M
Working Voltage			10-32V
Working Voltage Range for External Trigger Signals			10-32V
Working Electric Current			<2A/12V
Working Temperature Range			-20℃ ~ 70℃
Storage Temperature			−40℃ ~ 85℃
Working Humidity			10%-95%

2. Camera Parameter

Image Device	1/2.9" 2Mega CMOS
Frame Rate	25 / 30
Resolution	1920 (H) x 1080 (V)
Pixel Size	2.8 μm x 2.8 μm
Compression	1080P
Video Output	1.0Vp-p, 75Ohm
White Balance	Auto
Viewing Angle	>170(H)
Power Supply	12V
Working Temperature Range	-20℃ ~ 70℃, RH95%MAX.
Storage Temperature	-30℃ ~ 80℃, RH95%MAX.
Waterproof Rating	IP69K

5.Wiring Diagram



6.Operation Instruction of Remote Control

- ENTER: Enter into main menu or confirm menu selection.
- ESC: Exit main menu interface / return to main menu interface.
- ◀ ▶:

Left and right keys are used to switch the left and right single view in the main interface; it is used to add and subtract settings in the menu page.

- ▲ ▼:

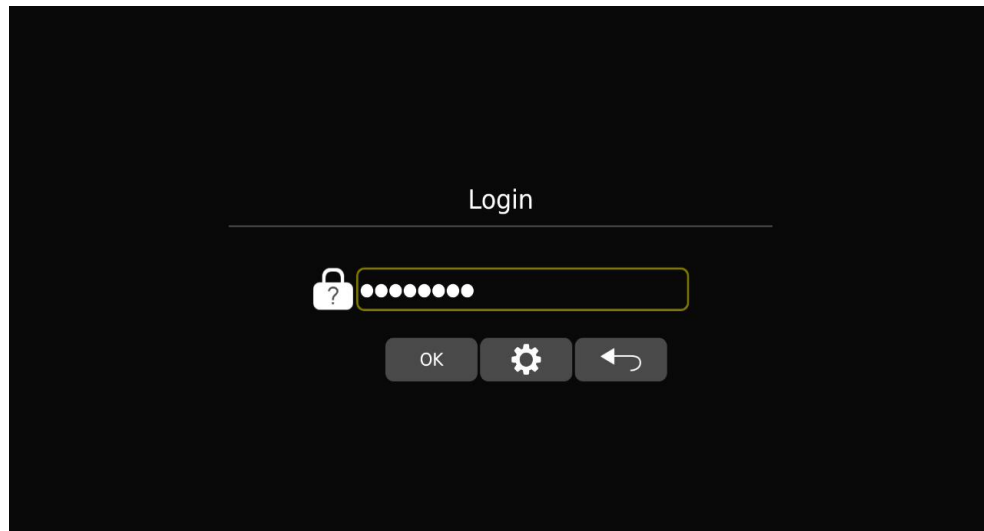
Up and down keys, shift image channel to front/back view in the main interface; in the menu page, it is used to switch left and right options.

- SHIFT: Shift current display mode to quad-view in main menu interface; It' s used for switching menu selection in menu interface.
- POWER: Turn on / off video display.
- Number button 0-9: Input box number input key / main interface view switch key.
- CLEAR: Delete button, delete a character each time.
- MULTI: Switch to full screen surround view in the main interface.
- PTZ: Enter decimal point



7 Operation Instruction Of Main Menu Interface

7.1 User Administration Login



Feature Description:



: Input password (default password is 88888888)



: Login confirmation.



: Modify password.

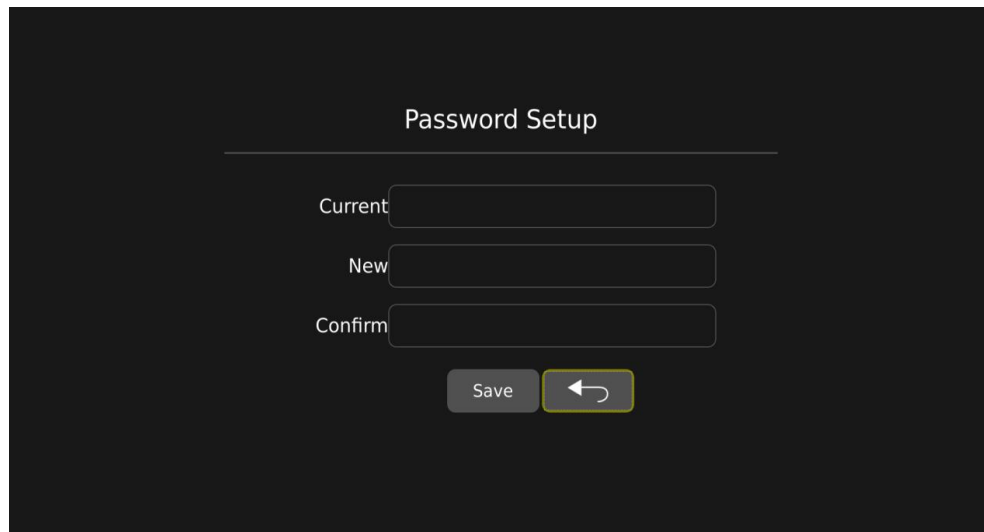


: ESC key, return to the last menu.

Notice:

- 1) Initial password: 88888888. The password is composed of numbers and letters, and the password length supports up to 16 characters. If you forget the password, please contact the manufacturer to apply for the key, and you can do the initialization operation.
- 2) After the password is logged in, there is no need to re-enter the password within 10 minutes; once the timeout or restart of the device or wake up from sleep, the password must be entered again.

- Modify Password



Password modification instructions:

Input old password one time, then input new password twice, click "save" button to save password.

Current : Input old password.

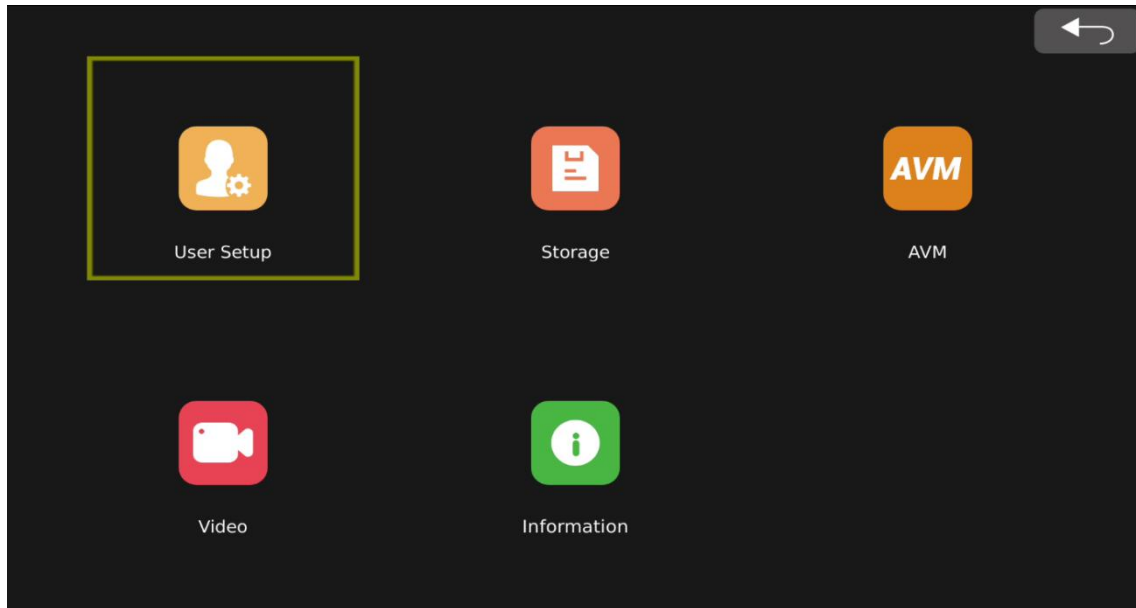
New : Input new password.

Confirm : New password confirmed.

: Save password

: ESC key (Click this to discard password changes)

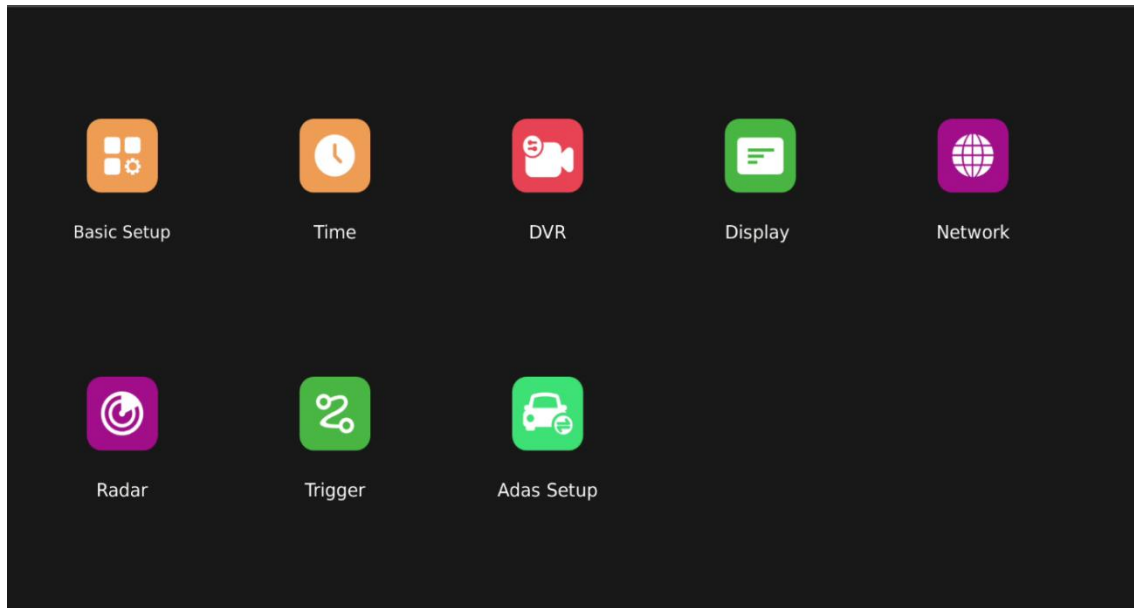
7.2 Main Menu Interface



Feature Description:

- User Setup: User setup including basic function setting , DVR setting, display setting, network setting.
- Storage management, you can view the SD card/U disk usage and format operations
- AVM: Including calibration, calibration file import and export, vehicle model switching, view settings and other functions.
- Video: Record management, to check and export videos locally.
- Information: Information data, to check and upgrade the version of CPU、 MCU.

7.3 User setup interface



Feature Description:

- Basic Setup: Basic setup interface
- Time: Time setup interface
- DVR: Basic recording setting and recording event setting interface.
- Display: Display mode setting.
- Network: Network setting interface.
- Radar: Radar setting interface.
- Trigger: Trigger Line Setting interface (only available in 3D mode).
- Adas setup: Intelligence assistance setting.

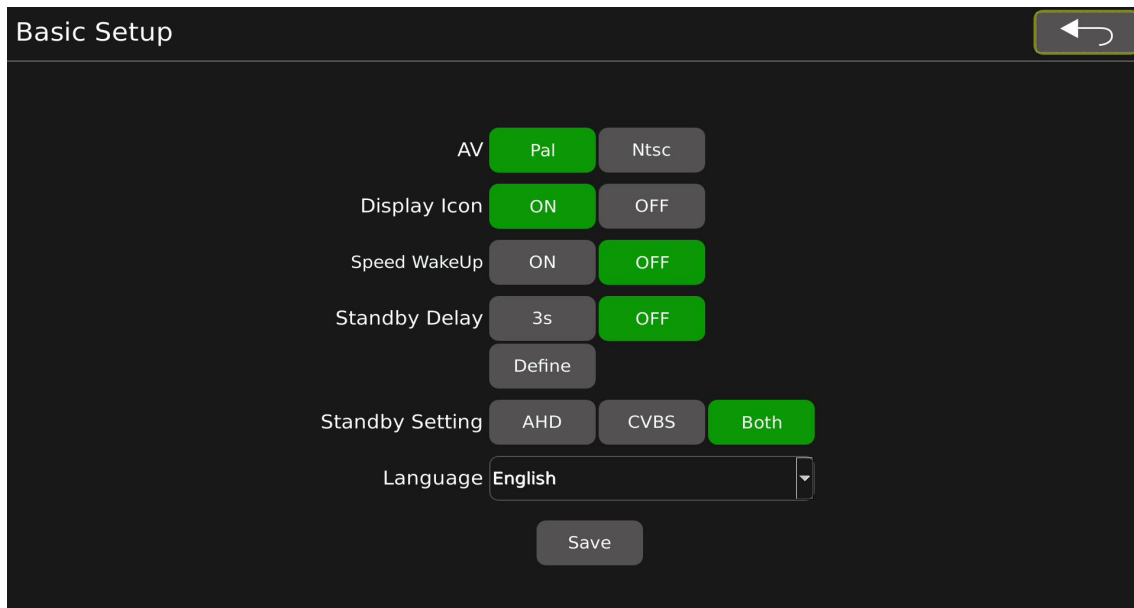
Remote control operation instructions:

- 1) SHIFT: Switch configuration item button.
- 2) Left / right: Modify the parameters of the current configuration item.
- 3) ESC: Exit the shortcut key and return to the main menu.

Notice:

- 1) It is normal for this system automatically restart after saving some modified configurations.

7.3.1 Basic Setup: Basic setup interface



Feature Description:

- AV: The default of standard configuration is PAL. The PAL/NTSC optional configuration of this configuration item is only for CVBS output.
- Display Icon: icon hidden function is default to be ON. when set to ON, the main interface icon is displayed, when it is set to OFF, the main interface icon is hidden (excluding the direction icon).
- Speed WakeUp: Speed wake-up function, the default is OFF. When set to ON, if the current vehicle speed is lower than the set speed value, the system will automatically wake up the display screen; if the current vehicle speed is higher than the set speed value, the system will automatically standby the display screen. Set to OFF, the speed wake-up function is turned off.
- Standby Delay: Automatic standby function, the default is OFF. When set to 3s, the system will automatically enter the standby state after 3s if there is no operation on the system; set to OFF, the system will always be on without any operation; set to Define to customize the configuration Standby time, the configuration range is 3-30s.
- Standby setting: Screen standby control function, the default is Both. When set to AHD, when in standby, only AHD output will enter the standby state; set to CVBS, when in standby, only CVBS output will enter the standby state; set to Both, when in standby, both AHD and CVBS outputs will enter the standby state.
- Language: Temporarily only English is available.

7.3.2 Time: Time setting interface

- Time: Time setting, caution; after modifying the time, you need to press the "Set Time" button to save the time.

GPS Time Synchronization :

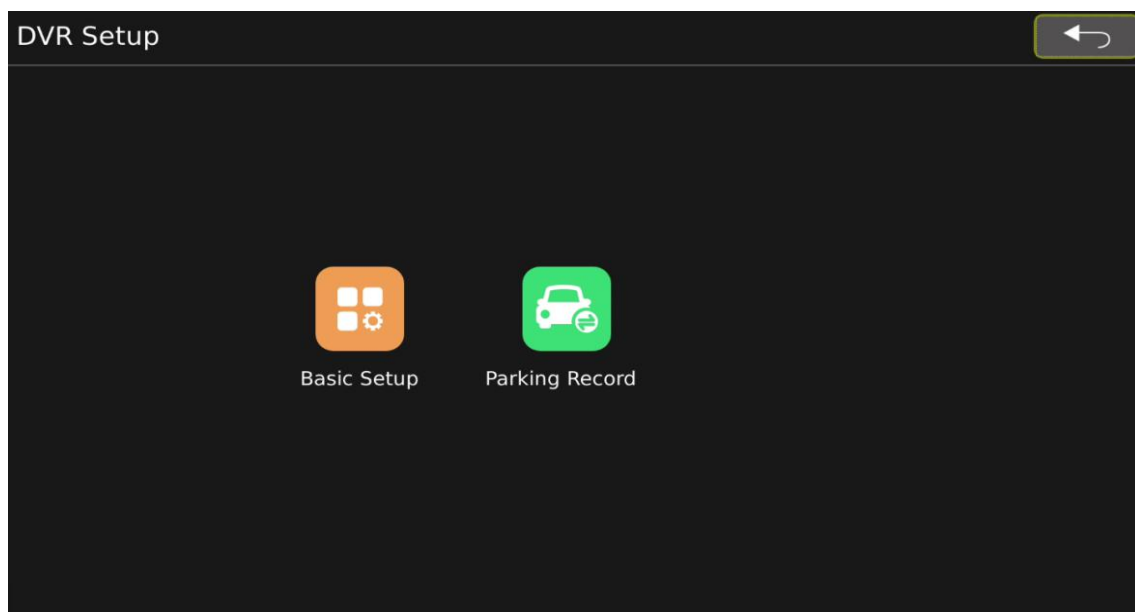
- Switch: GPS timing switch setting, the default is OFF. When set to ON, when GPS receives a signal, the system will automatically calibrate to the current time zone according to the time zone configured in UTC after GPS receives signal; when set to OFF, the system will not perform GPS timing.
- UTC: 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.

7.3.3 DVR Setup: DVR Basic Setup



Function Description:

- Basic Setup: recording setup basic configuration.
- Parking Record: parking recording basic configuration.

1) **Basic Setup:** recording setup basic configuration

DVR Basic Setup

Vehicle ID 88888888

Compression 4Mbps 2Mbps 1Mbps

Auto Record ON OFF

Duration 3Min 5Min 10Min

Define

Record Type Single Full

Record Format AVI MSV

Record Osd ON OFF

IPC Switch ON OFF

Record Alarm ON OFF

Save

Function Description:

- Vehicle ID: License plate number setting, default is 88888888, up to 10 characters can be set.
- Compression: Video compression setting, the default is 4Mbps. 4Mbps(high compression) and 2Mbps (normal compression) and 1 Mbps (low compression) can be set.
- Auto Record: Automatic recording switch, the default is ON. Set to ON, the video will start automatically after booting; set to OFF, the video will not start under any circumstances after booting.
- Duration: Video duration setting, default minute is 3. 3Min, 5Min, 10Min and user-defined video duration can be set (setting range 3-30min).
- Record Type: The default record type is Single. The system will record four single channel's image when set to be Single; it will only record one full screen when set to be FULL.
- Record Format: Default format is AVI. The video format can be set to AVI format or MSV format.
- Record Osd: Video screen information setting, the default is OFF. When set to ON, the recording will have time and channel name information; if set to OFF, the recording will have no time and channel name information.
- IPC Switch: IPC recording settings, the default value is OFF. Set to ON, IPC+four-channel single view will be recorded during recording; set to OFF, IPC will not be recorded during recording.
- Record Alarm: Recording abnormal alarm setting, the default is OFF. When set to On, if the recording stops abnormally, the main interface will display an alarm prompt; if set to OFF, when the

recording stops abnormally, the main interface will not display the alarm prompt.

Notice:

- 1) When the recording type is set to Full, the recording quality will not be controlled by the Compression configuration, but will be controlled by the RTSP configuration. If the RTSP is set to 1080P, the recording quality is 8M; if the RTSP is set to D1, 720P, the recording quality is 2M.
- 2) It is normal phenomenon for the system will restart after modify some configuration items.
- 3) If any parameter is modified, it must be saved before exiting, otherwise the modification will be invalid.
- 4) When the video quality is set to 4mbps, the video will be overwritten in a short period of time.

2) Parking Record: Parking Record Configuration

DVR Parking Record Setup

Swtich

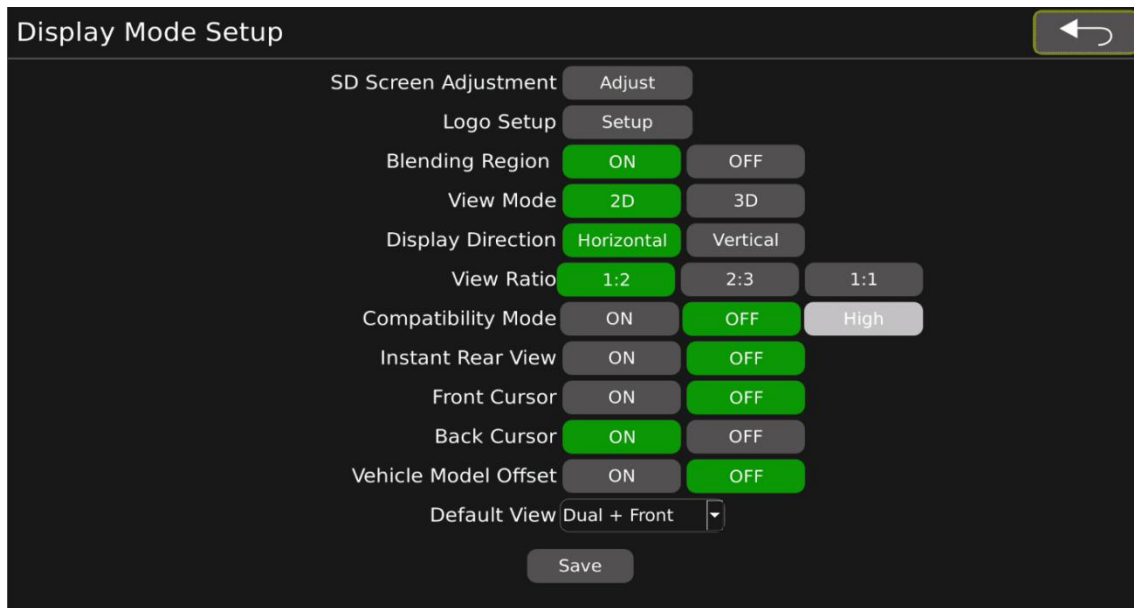
Voltage (9-24V)

Delay shutdown 1-90min

Function Description:

- Switch: parking video recording switch, the default is OFF. When it is set to ON and when you park the car, it will enter the shutdown state after the time in Delay shutdown configuration expire ; when it is set to OFF, it will enter the shutdown state immediately after parking.
- Voltage: Voltage configuration, the default is 11.4V. When the Switch is configured to be ON: it will immediately enter the standby state if the current voltage is lower than the configured voltage after stopping; if the current voltage is higher than the configured voltage, it will enter the shutdown state after the time in delay shutdown configuration expired. 9-24V is optional.
- Delay shutdown: parking recording time configuration, the default is 30min. 1-90min range can be set.

7.3.4 Display: Display mode setup



- SD Screen Adjustment : CVBS output screen parameter adjustment. (Note: re-adjustment is required after switching 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 : Switch for whether the loop view overlap area is overlapped or not, the default is ON. Set to ON, the overlapping area overlaps; set to OFF, the overlapping area does not overlap.
- 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 screens switching, the default is Horizontal. When set to Horizontal, the screen is rendered in a horizontal screen effect; when set to Vertical, the screen is rendered in a vertical screen effect.
- View Ratio : The setting of surround view and single view/3D image 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; when set to OFF, the screen display effect is better. (High mode is temporarily unavailable).

- 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.
- Default View: Default value is Dual +Front. Dual+Left, Dual +Right, Dual +Front, Dual +Back, Quad, Full Dual, IPC View is optional .

Notice: 1. It is normal phenomenon for the system will restart after modify some configuration items.

7.3.5 Network: Network Setup Configuration Setup

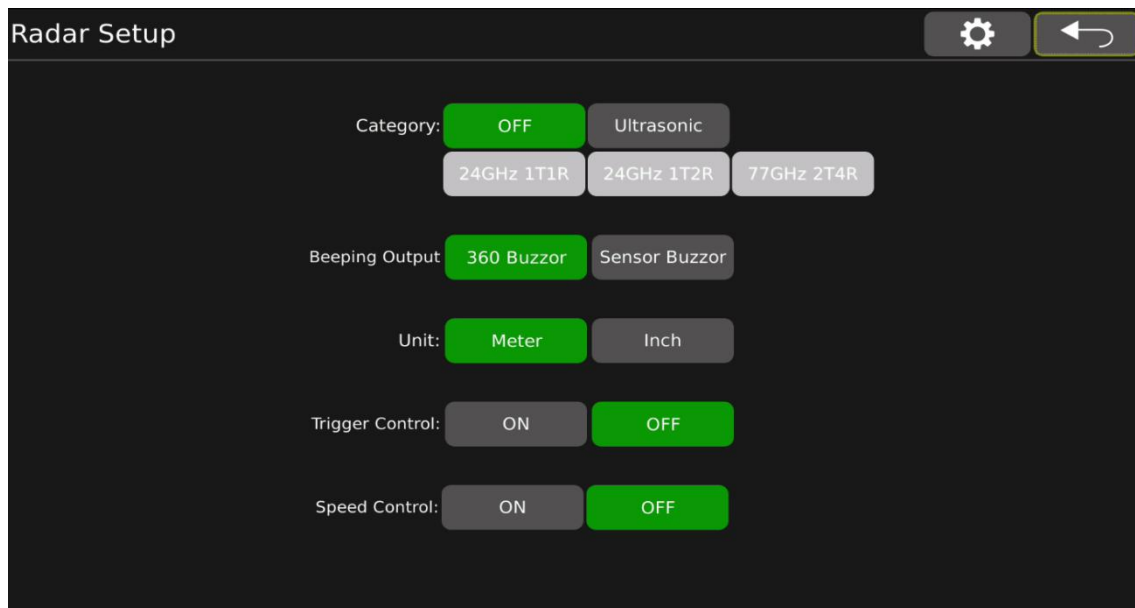
- IP Address: IP Address Setting. Default value is 192.168.117.117.
- RTSP Type: Network playback video stream resolution setting, default value is 720P. D1 / 720P / 1080P selectable.
- Wifi switch: Default configuration is ON, When the Wi-Fi switch is set to ON, it can connect to Wi-Fi normally; when it is set to OFF, the Wi-Fi function is turned off and cannot be connected.
- Wifi Name: The Wi-Fi name setting can be up to 16 characters, the default value is FHD360_T5.

- Wifi password: Default password is 88888888. Wi-Fi password setting, set a minimum of 8 characters and a maximum of 16 characters.

Notice:

1. When the RTSP Type is set to 1080P, the Compatibility Mode (compatibility mode) needs to be set to OFF, otherwise it is prone to display defects such as blurred screens and horizontal stripes.

7.3.6 Radar: Radar setup interface



- Category: Radar configuration. When set to OFF, the radar is not available; when set to Ultrasonic, it can work with our company' s BSA09 radar. (Note: 24GHz 1T1R, 24GHz 1T2R, 77GHz 2T4R are currently unavailable)
- Beeping Output: Buzzer settings, 360 Buzzor / Sensor Buzzor selectable.
- Unit: Default value of unit parameter setting is Meter. Meter / Inch selectable.
- Trigger Control : Trigger control setting, the default is OFF. When it is set to ON, the radar will respond when triggered; when it is set to OFF, the radar will not respond.
- Speed Control: Speed control setting, the default is OFF. When set to ON, if the current vehicle speed is lower than the configured speed value, the radar responds; if the current vehicle speed is higher than the configured speed value, the radar does not respond. When set to OFF, the radar function is not controlled by vehicle speed.
- Ultrasonic radar priority setting : Priority configuration. When multiple channels of radar respond at the same time, a certain channel is displayed first. When set to 1st, the priority is the highest, and

so on, 1st> 2nd> 3rd> 4th. (Note: This configuration item is only displayed when the radar is set to Ultrasonic, otherwise it is blanked.)




: Exit button.



: Enter radar sensor setup interface.

Ultrasonic Radar Sensor Setup



Location	Sensor ID	Danger		Warning
L1	OFF	1.50	2.50	
L2	OFF	1.50	2.50	
L3	OFF	1.50	2.50	
L4	OFF	1.50	2.50	
R1	OFF	1.50	2.50	
R2	OFF	1.50	2.50	
R3	OFF	1.50	2.50	
R4	OFF	1.50	2.50	
F1	OFF	1.50	2.50	
F2	OFF	1.50	2.50	
F3	OFF	1.50	2.50	
F4	OFF	1.50	2.50	
B1	OFF	1.50	2.50	
B2	OFF	1.50	2.50	
B3	OFF	1.50	2.50	
B4	OFF	1.50	2.50	

L1


OFF

1.50

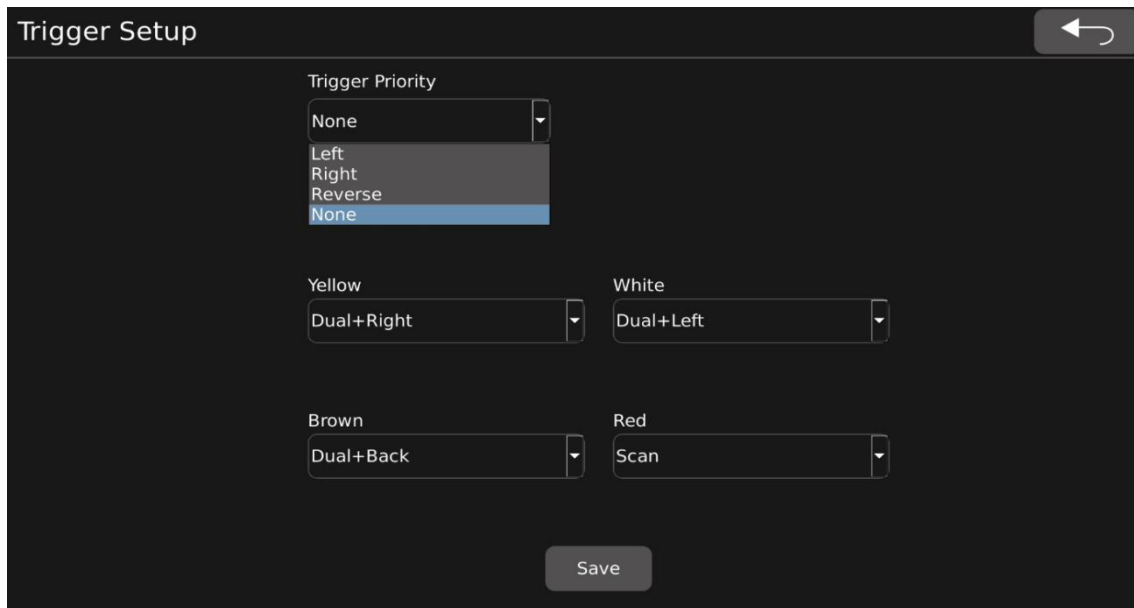
2.50

Setup


Reset

- Location : the installation position configuration of radar sensor, user can select sensors L1-L4, R1-R4, F1-F4 and B1-B4
- Sensor ID: Sensor ID setting, OFF / 1-12 selectable.
- Danger: Dangerous distance setting.
- Warning: Warning distance setting.
- Setup: Save the setting parameters.(Notice: Click setup button to save the update each time after finished parameters of each sensor).
- Reset: Reset radar parameters.
-  : Exit.

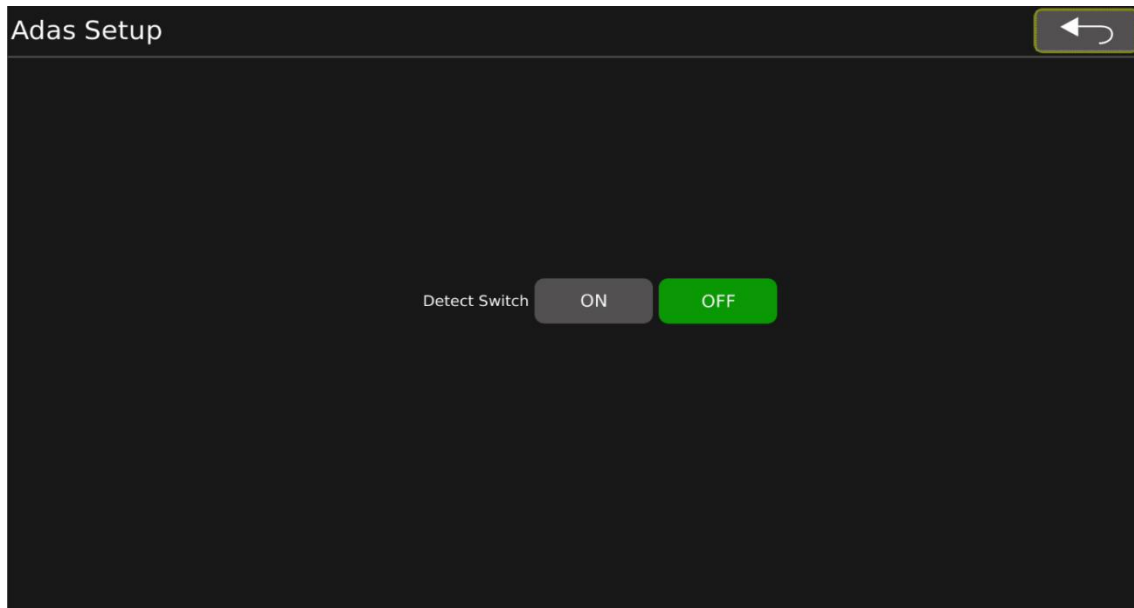
7.3.7Trigger: The trigger line setting interface



Function description: (The configuration item is only available when the view mode is configured as 3D; if the view mode is configured as 2D, the configuration item is in blanking state)

- 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.
- Yellow: After the yellow line is triggered, the configuration of the screen display effect is Dual+Right by default. Configurable: Dual+Left, Dual +Right, Dual +Front, Dual +Back, Scan, Dual +3D Left, Dual +3D Right, Quad, Full Dual, IPC.
- White: After the white line is triggered, the configuration of the screen display effect, the default is Dual+Left. Configurable: Same as above.
- Brown: After the brown line is triggered, the configuration of the screen display effect, the default is Dual+Back. Configurable: Same as above.
- Red : After the red line is triggered, the configuration of the screen display effect, the default is Scan. Configurable: Same as above.
- Save: Save parameter adjustments.
-  : Exit

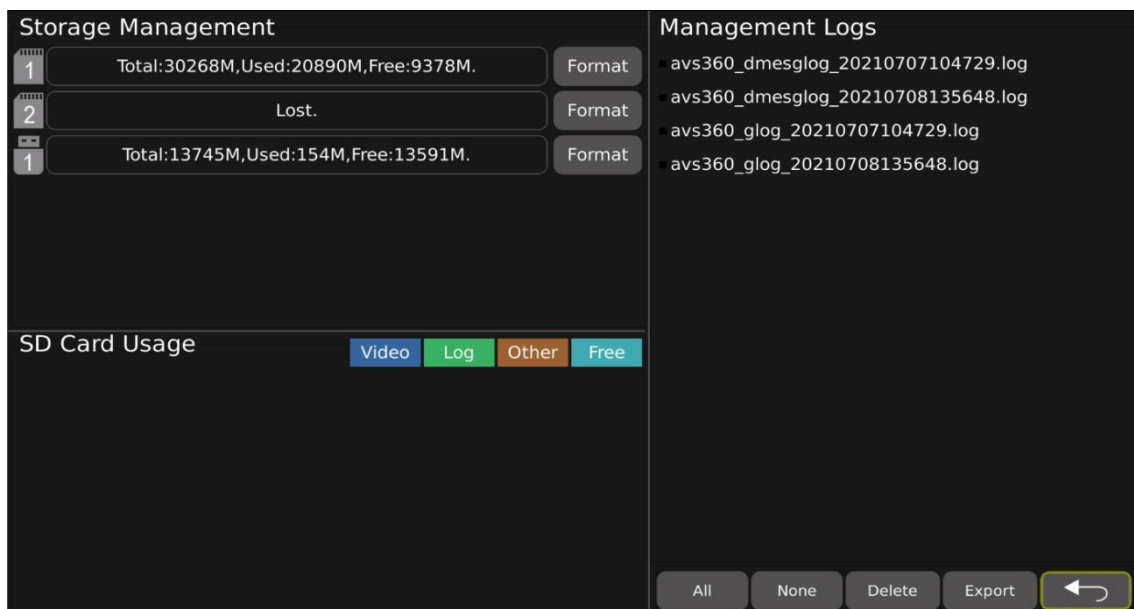
7.3.8 Adas Setup: Adas assistance Setup



Function Description:

- Detect Switch: ON and OFF setup.

7.4 Storage management: Storage management interface



- Feature Description : recording function supports 2 SD cards, and the U disk is only used for program upgrades or file import/export.


Storage Management:

- Total: Total capacity of SD card/U disk.
- Used: the used capacity of the SD card/U disk.

- Free: The remaining capacity of the SD card/U disk.
- Format: format SD card or U disk.

SD Card Usage: Currently unavailable

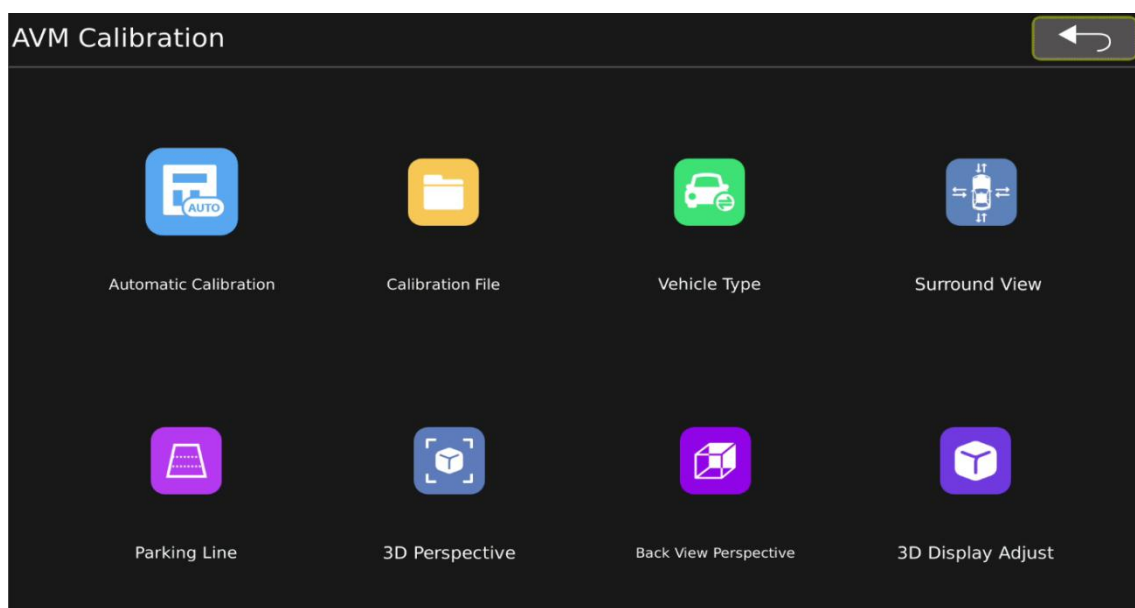
Management Logs:

- ALL: Select all logs.The selected log is displayed in blue.
- None: Unselect logs.The unselected log is displayed in white
- Delete: Delete the selected log.
- Export: Export selected logs.
- : Exit and return key.

Notice:

- 1) When the U disk and SD card work abnormally, there will be different icon prompts on the panoramic main interface and the storage menu interface.
- 2) Do not remove the USB flash drive when formatting, exporting system logs, and exporting splicing results.
- 3) When performing write operations related to the SD card, for example, do not remove the SD card without stopping recording, formatting the SD card or clearing the system log.
- 4) Support loop recording. When the available space of all SD cards in the system is less than 1024M, the earliest created 10 video files will be deleted for normal recording.

7. 5 AVM Interface

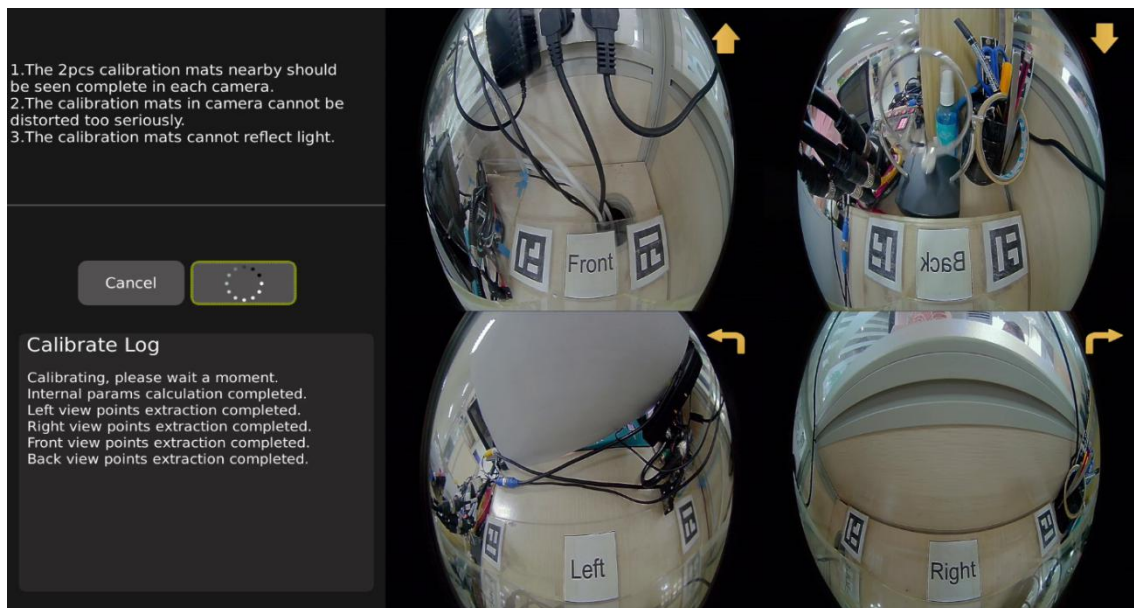


Feature Description :

- 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 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)

7.5.1 Automatic Calibration: Automatic Calibration.

1) calibration interface



Feature Description :

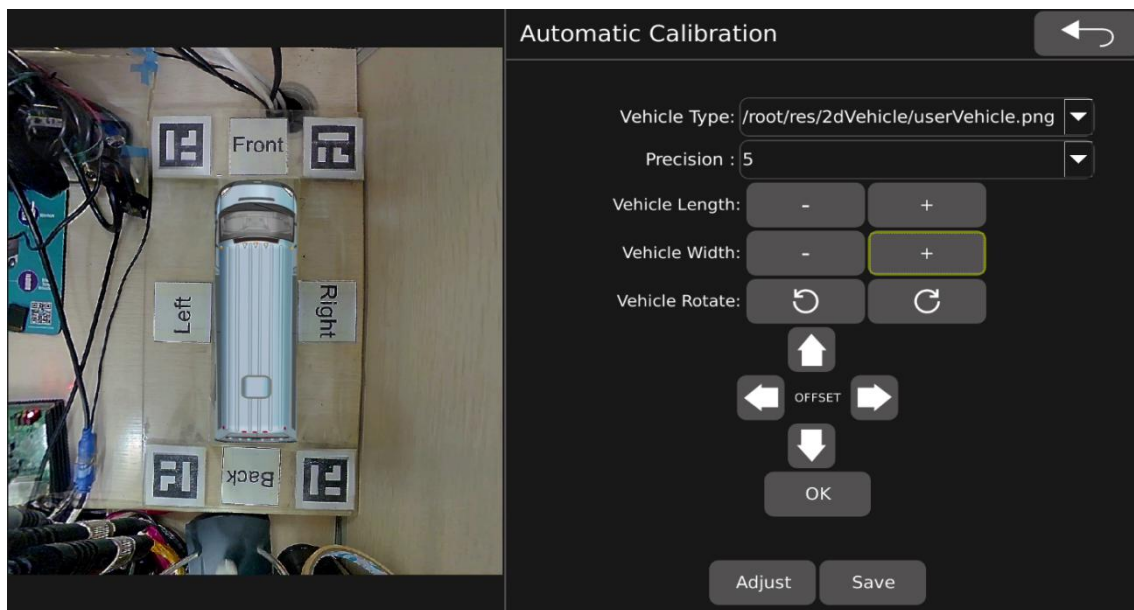
- Cancel: Cancel button, click this to exit calibration interface.

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

Precautions:

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

2) Adjustment Interface



Feature 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).

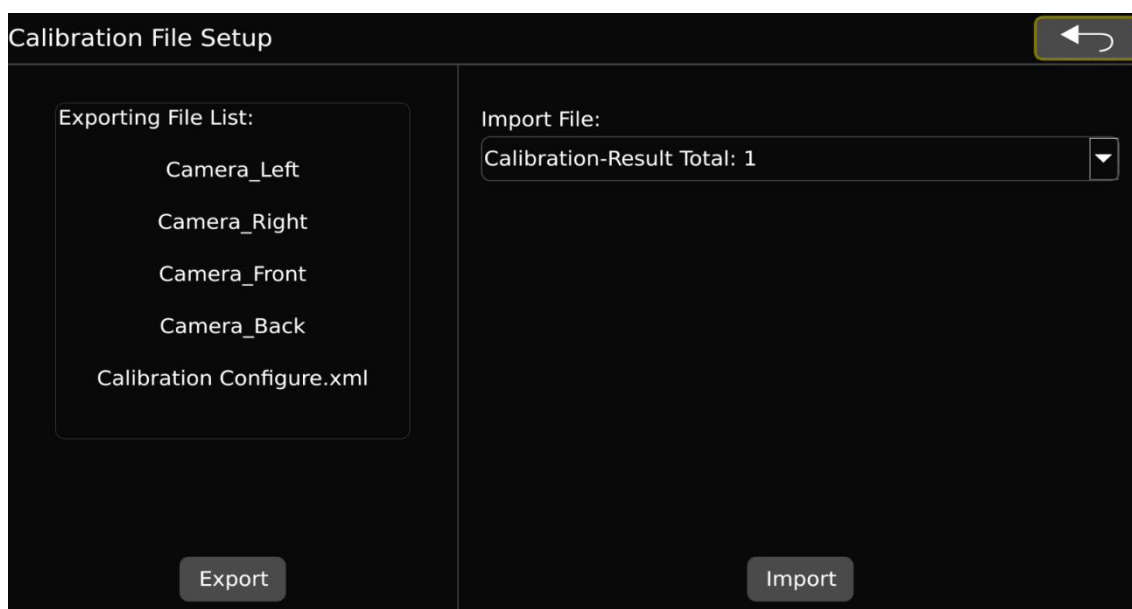


- :Used to update the calibration effect button after adjusting the overall effect.
- Adjust :Used to jump to the calibration internal parameter adjustment interface.
- Save : Save the calibration results.


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.

7.5.2 Calibration File: Calibration File



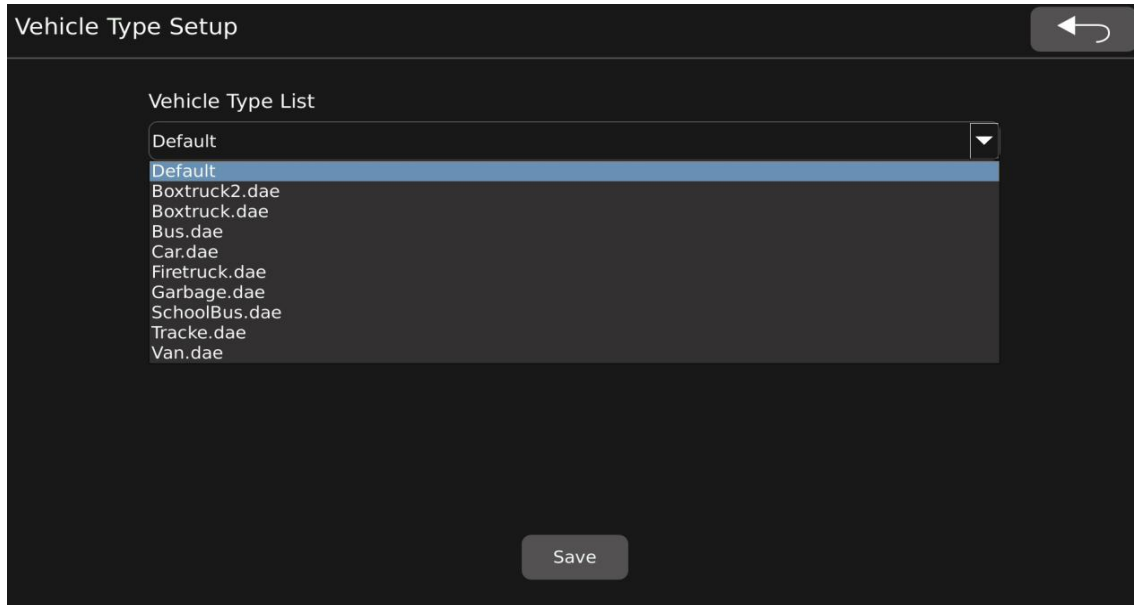
Feature Description: Used for export calibration picture and import calibration file.(mainly used in PC)

- Export: Export the calibration picture file to USB, the resources include: 4-channel image (The resources will also include xml file if you already finished the calibration)
- Import File : List of calibration files. Click to expand the list, all calibration files in the U disk will be displayed in the list, and you can select the file to be imported.
- Import : Import selected calibration files.
- : Exit.



Notice:

1. As files can only be imported into USB, User must first access the USB before entering this page.
2. It is normal phenomenon for this system to restart after the confirm of import calibration files.

7.5.3 Vehicle Type Setup: Change the car model type page



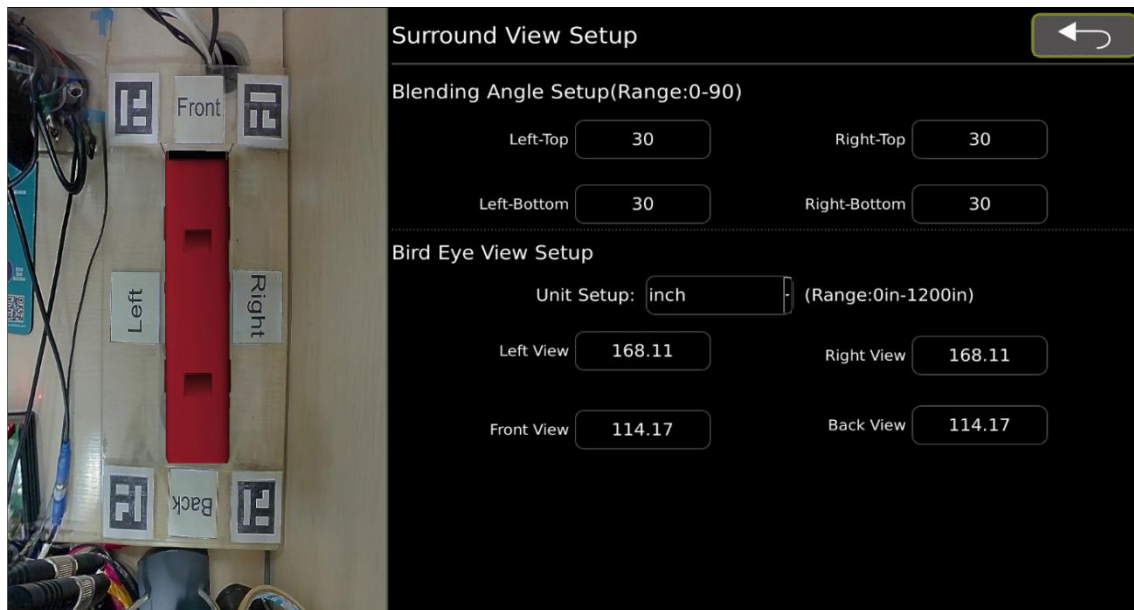
Feature Description:

- Vehicle Type List: car model list
- In 2D mode: The system comes with 3 car models. (Support importing custom car models)
- In 3D mode: The system comes with 9 3D car models. (Currently, the import of custom 3D car models is not supported, but custom 3D car models are supported.)
- : Save button.
- : Exit button.

Precautions for importing custom car models:

1. The car model picture must be a 32-bit deep, png format picture, otherwise there will be phenomena such as failure to import or bad car model pictures. The car model pictures need to be placed in the top directory of the U disk, otherwise the system will not be able to read the car model pictures.
2. User must first access the USB before entering this page, otherwise system can't read car model pictures.

7.5.4 Surround view: Setting page for overlap angle and surround view range



Feature Description :

Blending Angle Setup :

- **Left-Top:** Setting of left-top overlap angle, the default value is 30, and the value can be set in the range of 0-90.
- **Left-Bottom:** Setting of left-bottom overlap angle, the default value is 30, and the value can be set in the range of 0-90.
- **Right-Top:** Setting of right-top overlap angle, the default value is 30, and the value can be set in the range of 0-90.
- **Right-Bottom:** Setting of right-bottom overlap angle, the default value is 30, and the value can be set in the range of 0-90.

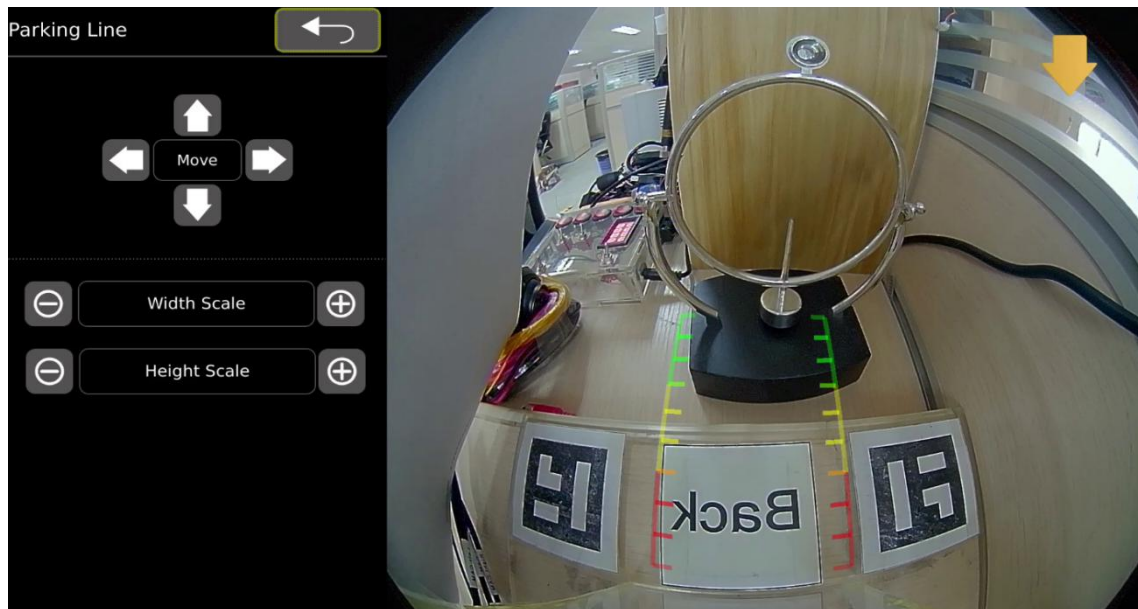
Bird Eye View Setup :

- **Unit Setup:** Unit configuration, the default is inch. Can be set: inch/cm (the unit is switched to CM, only for conversion display, not for permanent storage. After completely returning to the main interface, the unit will change back to the default value of inch)
- **Left View:** Set the visible width on the left side of the surround view.
- **Right View:** Set the visible width on the right side of the surround view.
- **Front View:** Set the visible width on the front side of the surround view.
- **Back View:** Set the visible width on the rear side of the surround view.

Notice:

1. The parameters on this page will be reset after importing a new calibration file, If there are custom parameters, they need to be reconfigured.

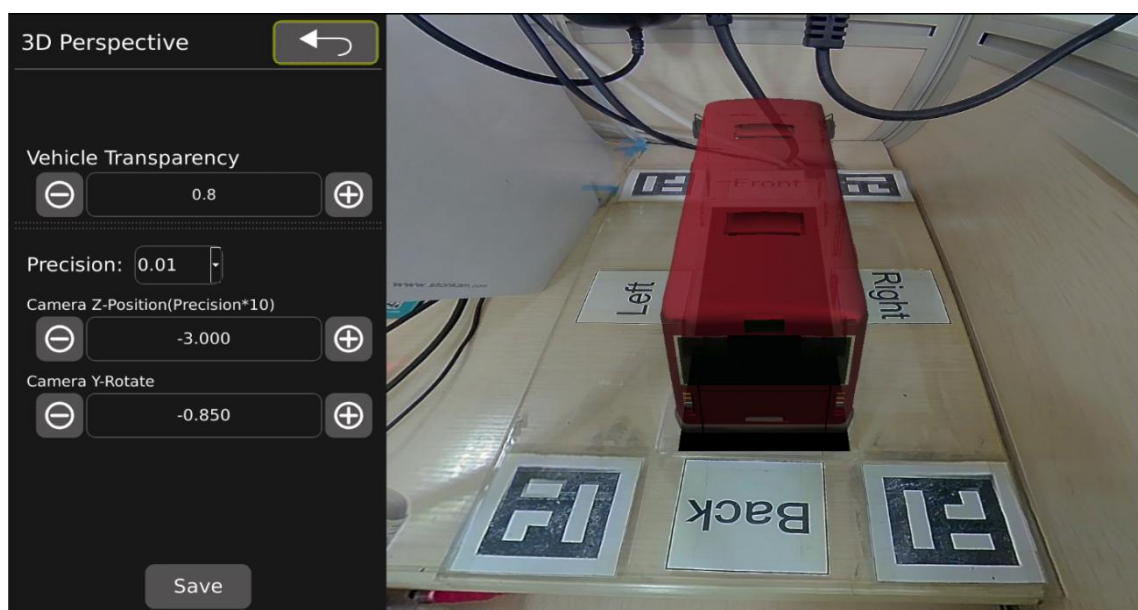
7.5.5 Parking Line: Reversing cursor adjustment interface



Feature Description:

- Move: The reversing cursor moves up, down, left and right..
- Width Scale: Adjust the width of the reversing cursor.
- Height Scale: Adjust the height of the reversing cursor.

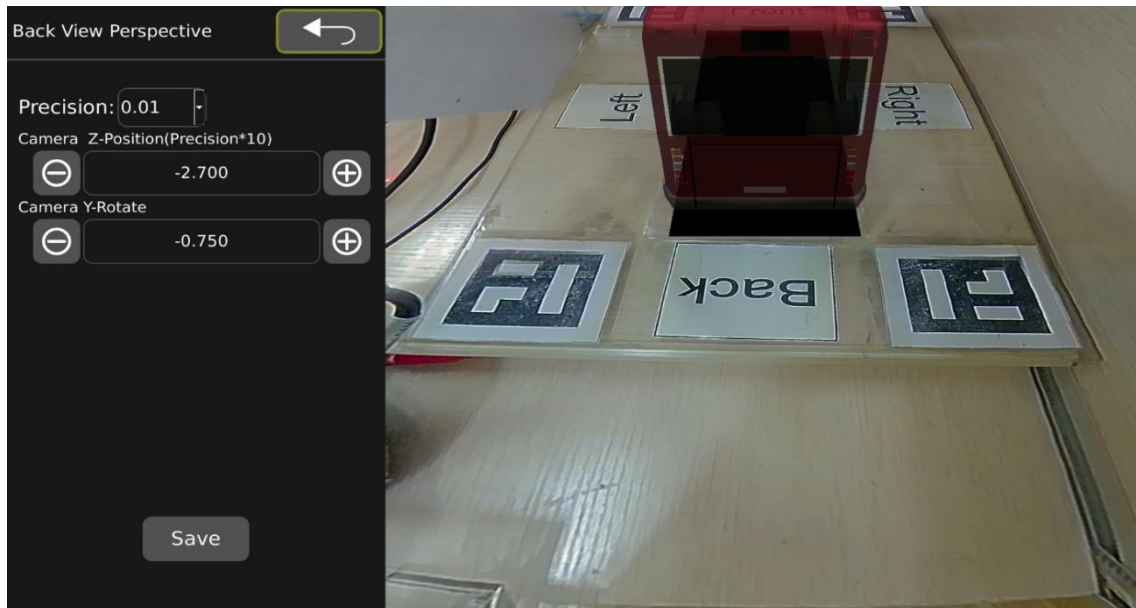
7.5.6 3D Perspective: 3D view viewpoint setting page



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

7.5.7 Back View Perspective: 3D rear view view point setting page

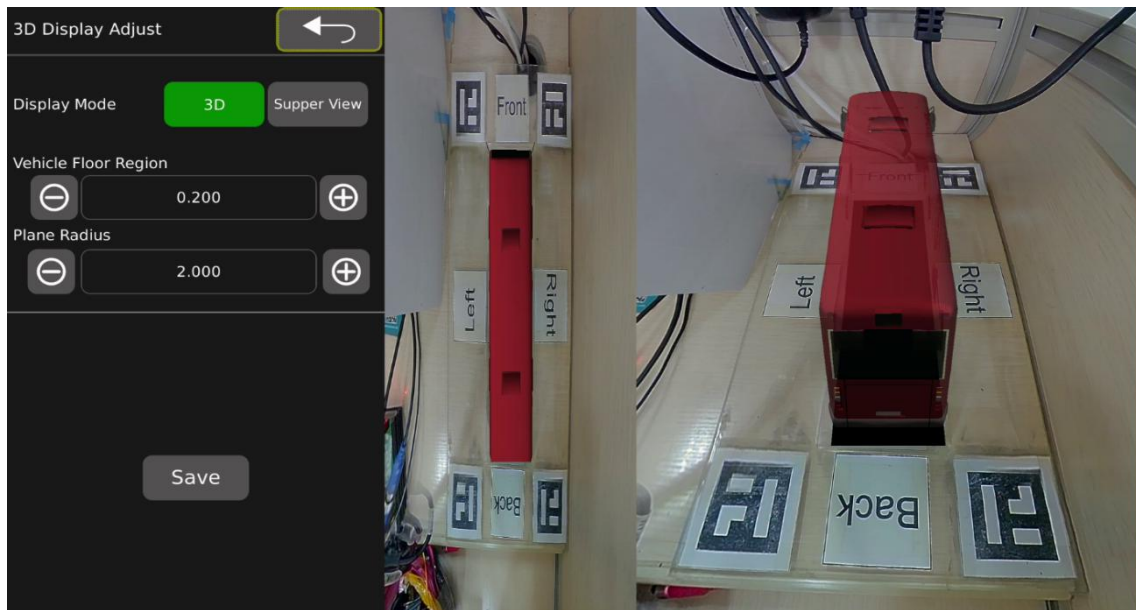


Feature Description:

- 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.

7.5.8 3D Display Adjust: 3D display setting interface

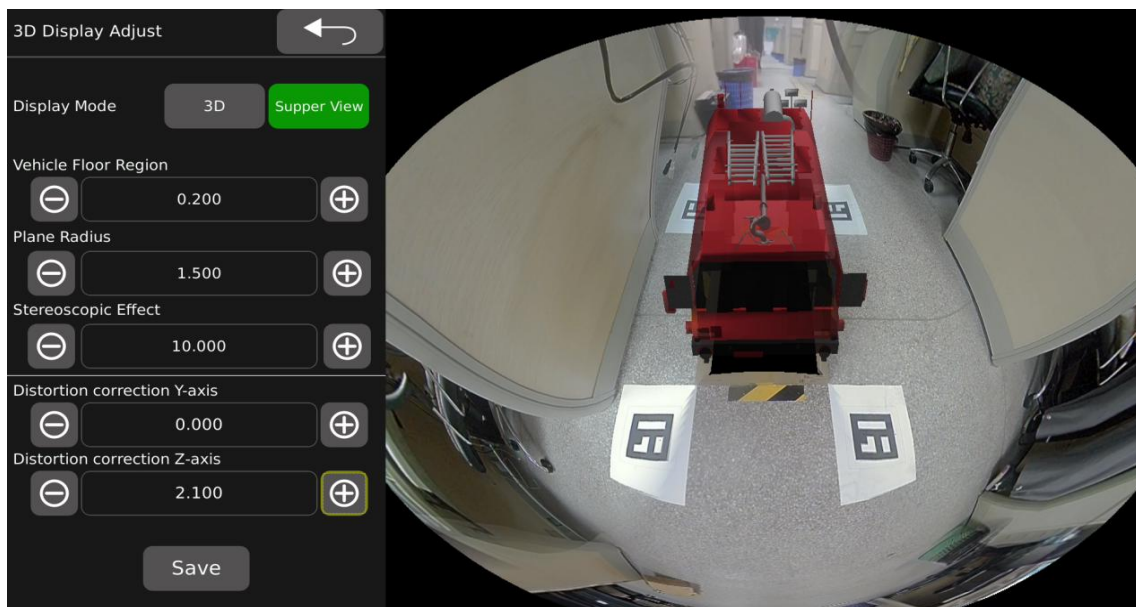
1) When Display Mode is set to 3D mode:



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:

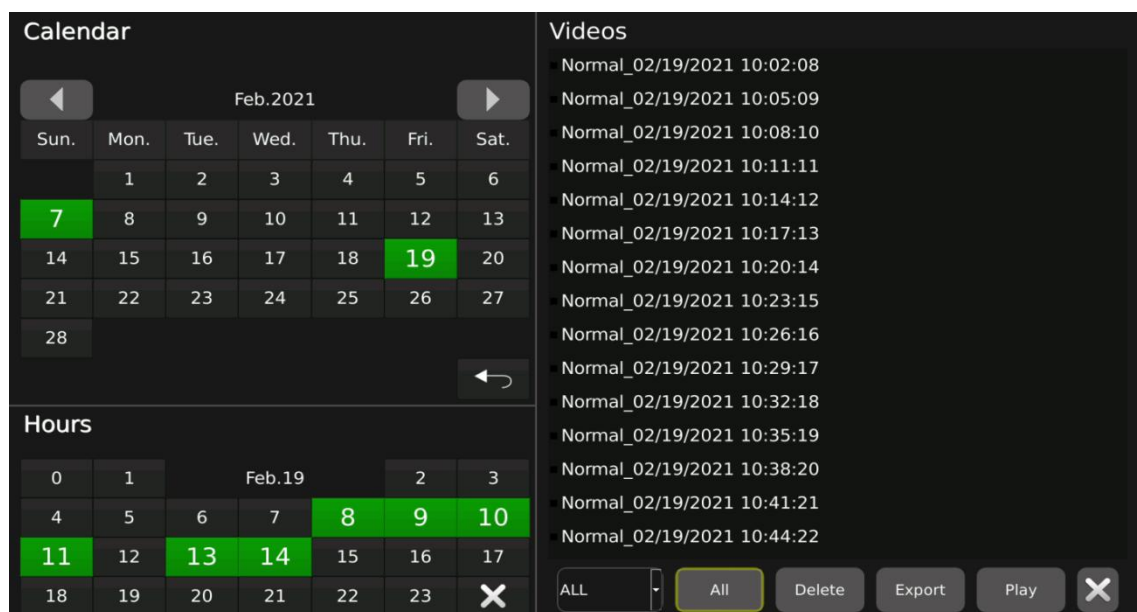


Feature Description:

- 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 is 1.500.
- 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.

8.Video management interface



Feature Description:

- If there is the date or time period when the video file was recorded, the color will be displayed in green, otherwise the color will be displayed in grey.



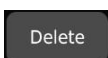
: Toggle month button. Video management can only process videos that last for three months, which are this month and one month before and after.



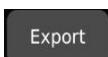
: Exit and return key.




: Select all/unselect all.




: Delete selected video.



: Export selected video.

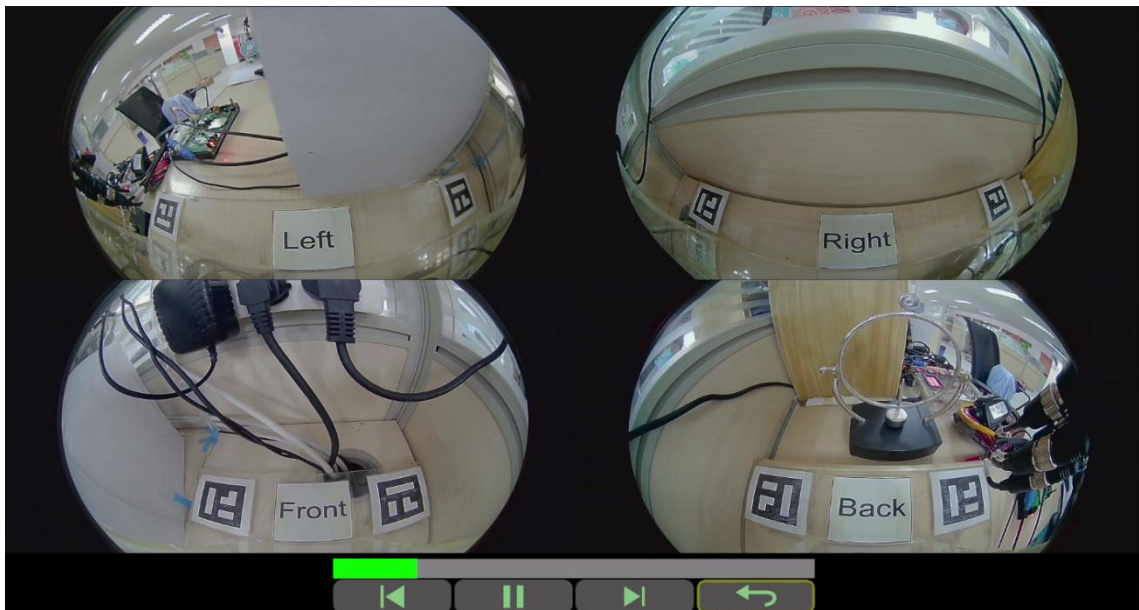
 : Replay the selected video locally.

 : Return to the last menu.


Notice:


1) Please do not remove SD card during the export and playing of recording video.


- Play interface:




Feature Description:

 : Click to play the previous video.

 : Pause the current video.

 : Click to play the next video.

 : Exit and return key.

Notice: Click the CLEAR button of the remote control to hide the entire progress bar.

9.Information: Information data management page

Information

Current Version

CPU: 00.v1.1.01-0.0-839:20210702

MCU: 00-V1.1.09

Linux: 4.9.170

Upgrade

BVA16-UPDATE-00.v1.1.01.tar.gz

Upgrade

System Setup

Reset Import Export

Upgrade Configure

Upgrade

Specification

Feature Description:

Current Version:

- CPU: Current CPU flash version information.
- MCU: Current MCU version information.
- Linux: Current Linux system version information.

Upgrade:

- Version upgrade, select the version that needs to be upgraded and click  button.

System Setup:

- Reset: Resume to default setting.
- import: Import the configuration file.
- Export: Export the configuration file. (currently the configuration file does not include AVM configuration parameters)

Upgrade Configure:

- Upgrade configuration file

Notice:

1. Do not remove the SD card or U disk during the upgrade process.
2. Do not power-off system during the upgrade.

10. Installation of system hardware

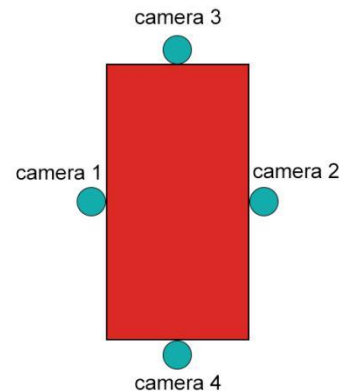
Step 1: Cable connection in vehicle body

1. Please pay attention to the definition of the camera extension cord connector, do not connect in reverse.

2. The connection between the camera and the main box should be centralized.

Step 2_1: Camera Installation

1. HD410 camera installation position



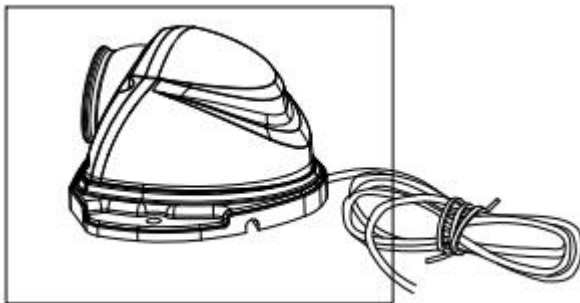
2. Accessories

1) Regular accessories



a) Phillips pan head combination screw ST4*20

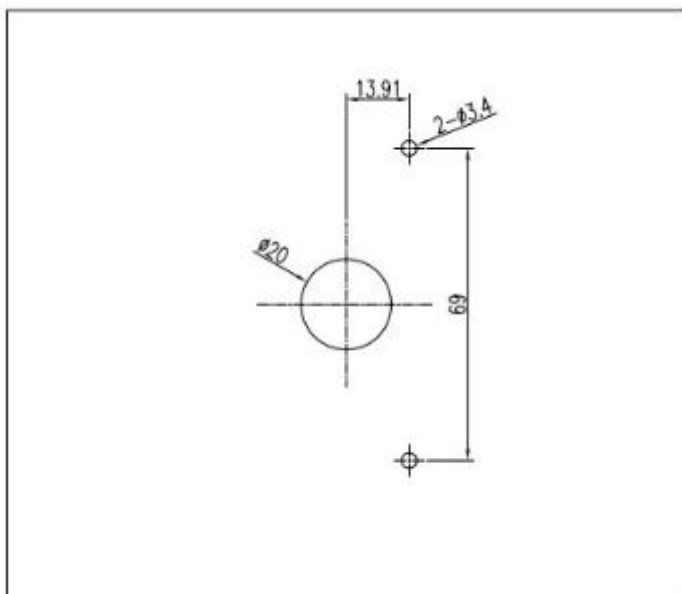
2) Cameras



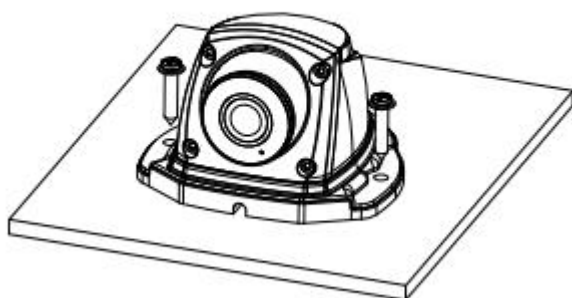
3. Installation

1) Choose appropriate angles to install cameras.

2) Drill suitable drill holes for regular accessories as shown above.



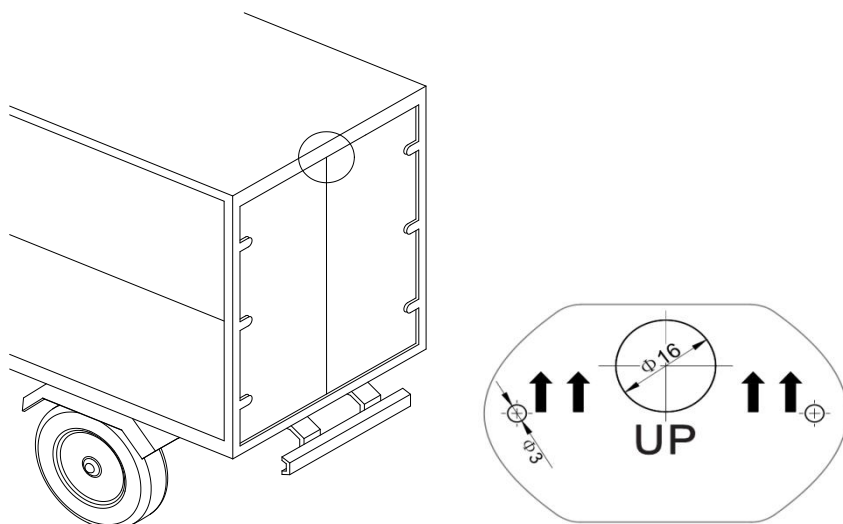
3) Install cameras



Step 2_2: Install cameras

1. **HD808** cameras installation introduction (Use rear view cameras as examples)

1) Paste the hole map on a suitable position on the car, and drill holes according to the size marked in the picture (Picture 1)



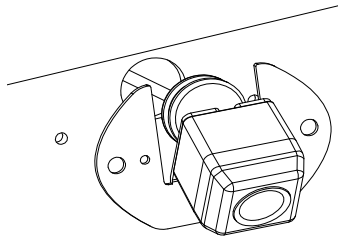
(Picture 1)

Hole Map

Notice: 1 The higher the installation, the better.

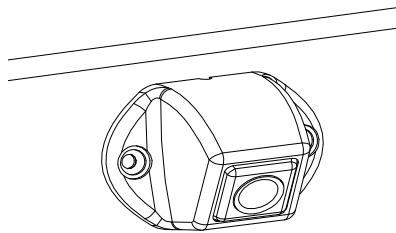
2 The installation of equal height is better than unequal height

2)Adjust the base so that the hole position is consistent with the hole position on the car. When the hole position is consistent with the hole position on the car, stick the camera on the car (Picture 2)



(Picture 2)

3)Put the shell on the base and ensure the cameras are fixed on the car with screws.



(Picture 3)

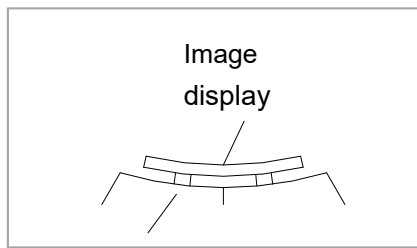
Step 3: Main Box

1. The main box is generally placed behind the control room or tool box.
2. Connect the main box, please refer to "5. Connection diagram" for details.
3. Power on and test the wiring.
4. Perform basic functional tests. For details, please refer to "6. Remote control operating instructions" and "7. Main menu function operating instructions".

Step 4: **Adjustments of camera viewing angles of HD410**

- 1.Adjust the camera angle to ensure that the normal image mark (white dot on the camera) is correctly placed outside.

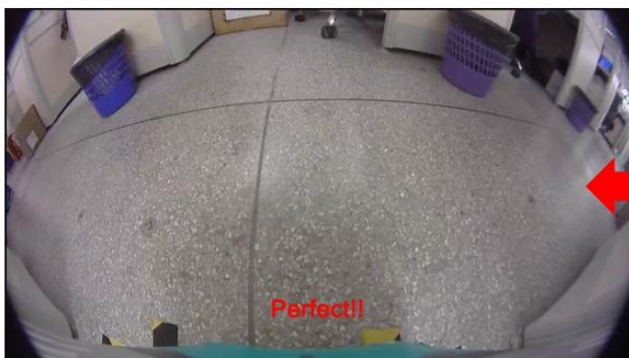
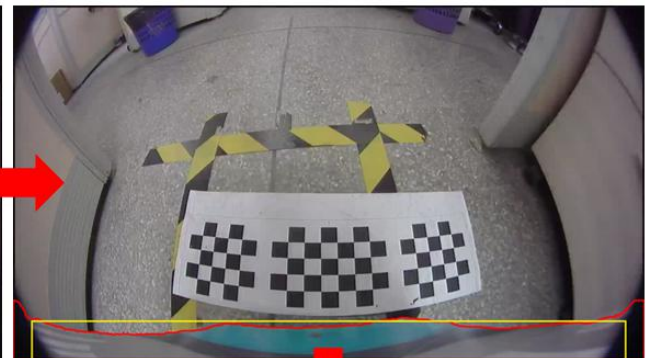




Best

Vehicle Region

Adjustment example:



2. Cameras installation.

Step 5: Set up image stitching

1. Please refer to "step 2" to adjust the viewing angle of cameras used for calibration.
2. Please refer to "7.5 AVM interface" for more detailed information.

Step 6: Fasten cameras and cable.

1. Fix the main box and cable to make the camera installation stable.