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360° VEHICLE MONITORING SYSTEM

Installation and Programming Manual

SMF-1040/360H & SMF-0740/360H

Version1 08/2024 .

360° Vehicle Monitoring System

Installation and Programming Manual

Disclaimer

Stortech Electronics does its best to ensure the integrity and accuracy of the contents in this document and cannot guarantee this. The outcome of using this document shall be entirely the user's own responsibility. Stortech Electronics reserves the right to change the contents of this document without prior notice.

- Design and specifications are subject to change without prior notice.
- The default login password is 88888888, for the first time. It is important that a new password is then created.
- It is the responsibility of the user to ensure the security and management of the password.

Important Safety Instructions

1. Read, keep, and follow these instructions.
2. Only use the power supplies that are recommended in the manual, failure to do so could cause damage to the product.
3. Before cleaning, remove all cable connections from the control box.
4. When cleaning the product's surface, use a soft, dry cloth or a damp cloth. Do not use detergent or products that contain alcohol, solvents or surfactants or oil constituents. They may damage the product. Especially the viewing bubble/window)
5. Do not use excessive force when installing the product, the camera may be damaged and fail to work. If the warranty seal is damaged, the warrantee will become void.
6. Install or uninstall the product as described in the manual, failure to do so may damage the product, affect the functions and performance that could invalidate the warrantee.
7. Install the product by referring to "Installation & connection" in the user manual.
8. This product is designed to be installed by trained professionals, incorrect installation may cause the product not to perform as expected or to malfunction.

Contents

Overview

Basic Features

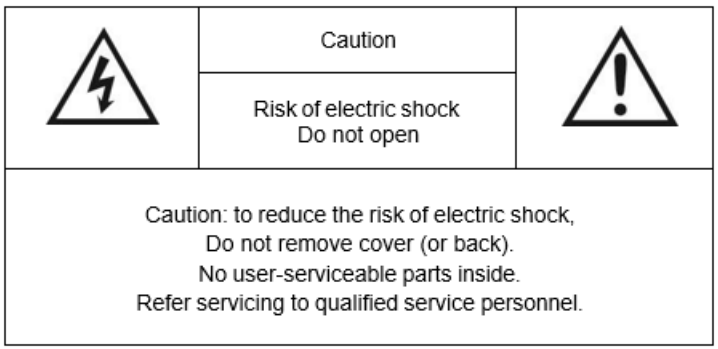
- 7” & 10” 1024 x 600 HD Monitor options
- Integrates 360AVM Algorithm for panoramic Images.
- Automatic calibration < 1Minute
- 4 x 2 MP (1920 x 1080) resolution cameras
- 1.45mm 200° with fisheye lenses
- Max. 25ips/PAL (MP4/H.264)
- Built-in Michrophone

Features

- Panoramic image
- Seamless image stitching
- 360° with no blind spots / Clear all-around view
- Auto-switch to reversing image when triggered – left/right when triggered.
- Automatic plan correction
- Revering track function
- Sensor or GPS Optional

Packaging List

- Monitor x 1
- FHD fisheye cameras x 4
- Remote control 1 (2 x AAA batteries required)
- Main harness x 1



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.

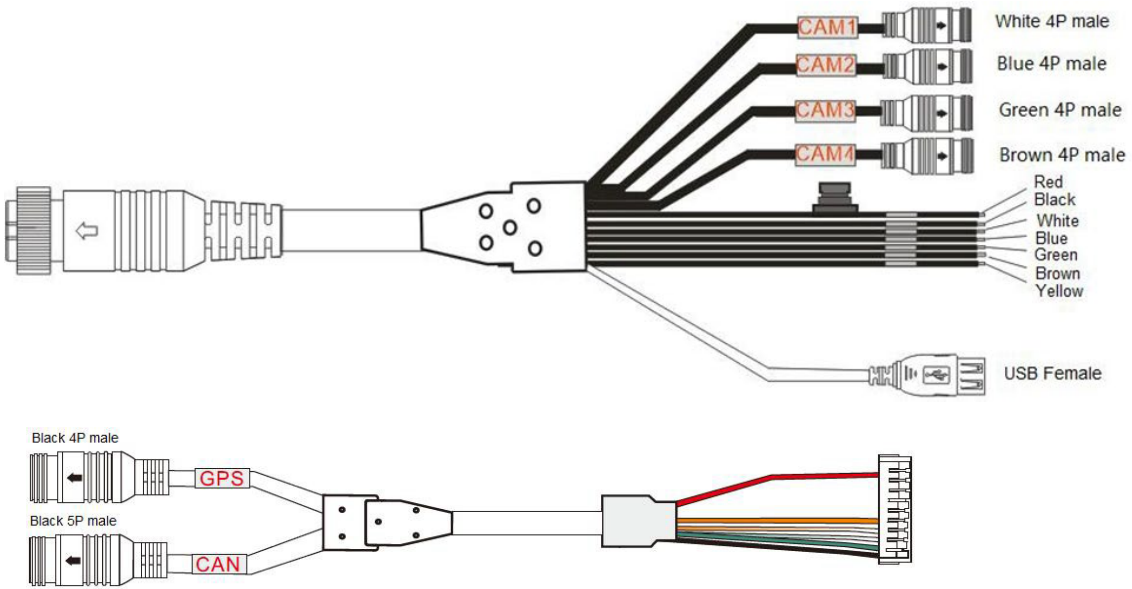
This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

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

CAUTION

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

Connection Diagram



1. White 4P male for Camera 1.
2. Blue 4P male for Camera 2.
3. Green 4P male for Camera 3.
4. Brown 4P male for Camera 4.
5. Single red wire to power wire of DC: 10-32V.
6. Single black wire to GND.
7. Single white wire to positive power wire of Camera 1.
8. Single blue wire to positive power wire of Camera 2.
9. Single green wire to positive power wire of Camera 3.
10. Single brown wire to positive power wire of Camera 4.
11. Single yellow wire for reservation.
12. USB Female for USB flash disk.
13. Black 4P male for GPS.
14. Black 5P male for CAN (like 77G radar).

Operation Instruction

No index entries found.

REMOTE CONTROLLER

1. **ENTER:** To enter main menu or confirm menu selection.
2. **ESC:** Exit main menu interface/return to main menu interface.
3. **LEFT/RIGHT:** Left, Right /Minu, Plus button. Shift image channel left or right view or operate plus/minus in main menu interface.
4. **UP/DOWN:** Front/Back button. Shift image channel to front/back view.
5. **SHIFT:** Same function as Tab button to shift to quad display or exit from quad display. Used for switching menu selection in main menu interface.
6. **POWER:** Turn on/off video output.
7. **Number button 0 ~ 9:** input numbers
8. **CLEAR:** Back space button, Delete a character
9. **MULTI:** Full screen function

USER INTERFACE

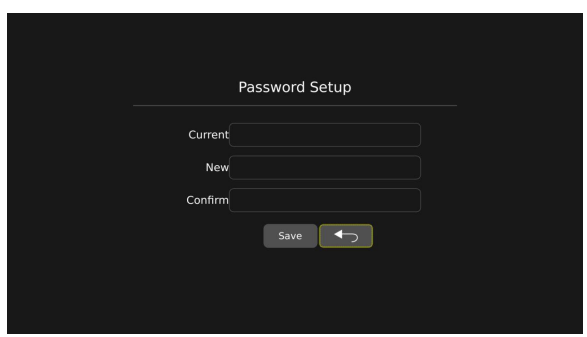
Log in Interface

 : Password (Factory default is 88888888)

 : Confirm login

 : Reset Password

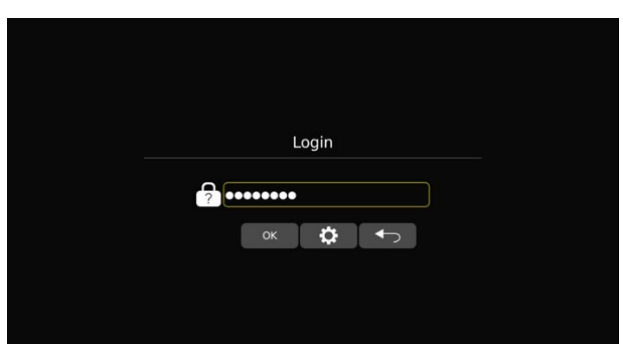
 : Exit



Log in Interface

Enter the current password once, then enter the new password twice.
Click the “Save” button to complete the password reset.

- **Current:** Current Password
- **New:** new password
- **Confirm:** Confirm password
- **Save:** Save setting
-  Exit (Cancel changes)

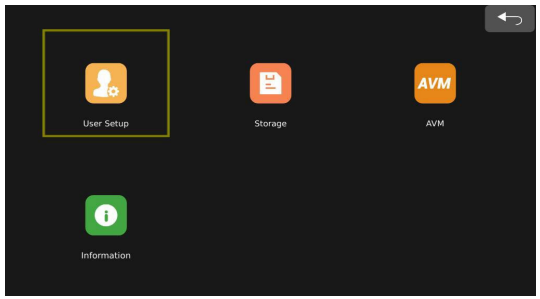


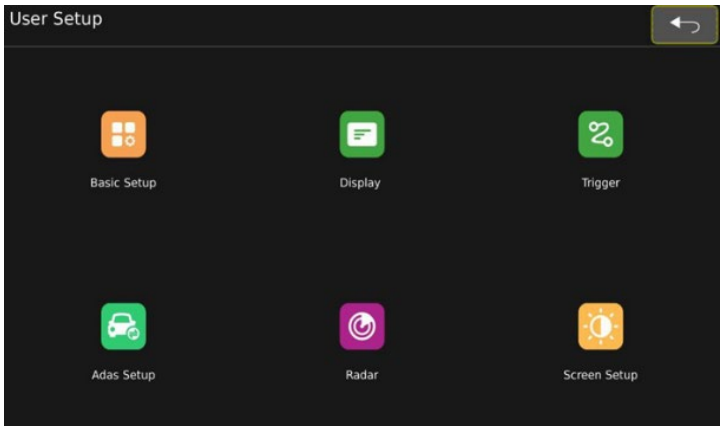
USER MAIN INTERFACE

User Setup:

User settings to set up, Basic setup/ Display / Triger / Setup / Radar / Screen Setup

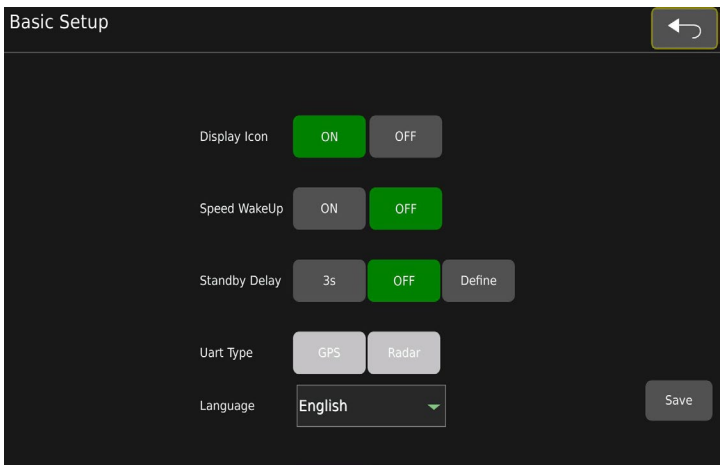
- **Storage:** Storage management can check the SD storage and log file management. (Only for customers needing to format SD Card through USB).
- **AVM:** Calibration File / Vehicle type / Surround view and trigger output.
- **Information:** Software version information and upgrading.





BASIC SETUP

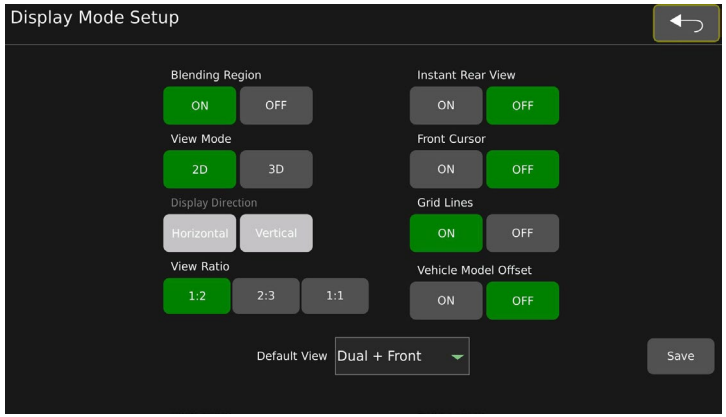
- **Display Icon:** On/Off (Hides display icons on main interface, (except directional arrows)
- **Speed Wakeup:** On/Off. When set to ON and the GPS connection speed is lower than the set value, the monitor will go into standby mode. A low wakeup speed with increase the time before entering standby mode.
- **Standby Delay:** The auto standby mode is 3sec, the optional (Define) settings 10sec, 30 sec or Off. Once enabled the system will automatically go into standby mode if there is no external trigger of action from the remote control.
- **Uart Type:** When GPS is selected, there will be a GPS signal if a GPS module is connected. When Radar is selected, ultrasonic sensors/Radra will work once they are connected. (Currently not open).
- **Language:** English only



DISPLAY

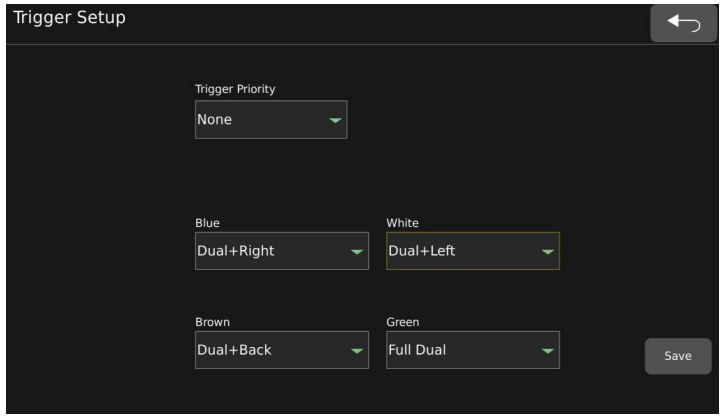
Display Setup

- **Blending Region:** Overlapping On/Off
- **Instant Rear View:** Default setting is ON. When set to Off, there will be a “splash” screen display before the panoramic view is shown. When set to On, a single view picture will be displayed in 3 sec before the panoramic view is shown. The signal view of the vehicle’s rear should be a mirrored image.
- **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 a 2D surround view + a single view. When set to 3D the screen display effect is 2D surround view + a 3D ring view.
- **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.
- **Display Direction:** Horizontal and vertical screen display switching (reserved, not currently open).
- **Grid Lines:** 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.
- **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. When set to 2:3 surround view occupies 2/5 of the entire screen and the single view/3D occupies ½ of the entire screen.
- **Vehicle Model Offset:** Quick drawing configuration. The default is Off. When set to On, the rear single-view screen will be displayed about 3 sec after power-on. If set to Off, the boot logo will be displayed for about 3 sec after power-on.
- **Default View:** The default display mode can be Dual + Left / Dual + Right / Dual + Front / Dual+ Back / Quad and Full Dual.



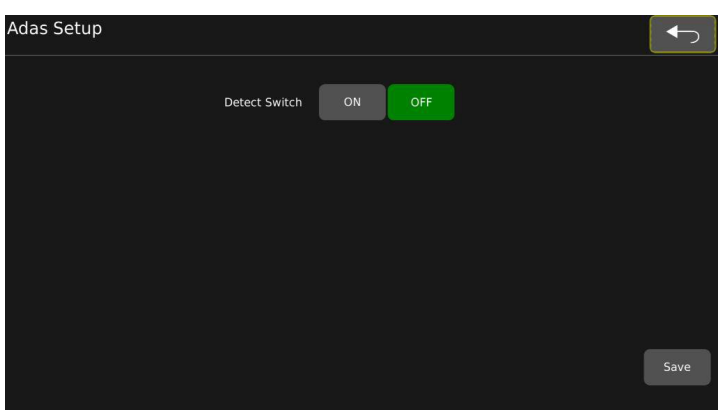
TRIGGER

Trigger Setup



- **Trigger Priority:** Trigger priority default value is None. When set to None; Panorama will display the first triggered view. E.G., when the rear (brown) wire is triggered, the rear-view camera is displayed in a panoramic view. At this point if the left road (white) wire is also triggered, the rear road camera is still displayed in panorama. The left side camera will not be displayed until the rear road trigger is completed. If a Trigger priority of one of the coloured wires is selected that camera will be displayed even if two wires are triggered simultaneously.
- **Blue:** After the Blue line is triggered, the configuration of the screen display effect displays. (Default Dual + Right) Configurable options include Dual + Left, Dual + Front, Dual + Back, Single Left, Single Right, Single Front, Single Back, Quad, and Full Dual.
- **White:** After the white wire line is triggered, the configuration of the screen displays (Default Dual + Left)
- **Brown:** After the brown wire is triggered, the configuration of the screen displays. (Default Dual + Back)
- **Green:** After the green wire is triggered, the configuration of the screen displays. (Default Full Dual)

Note: The trigger delay is 3 sec. When the trigger is disconnected, it will return to the default interface after 3 sec.



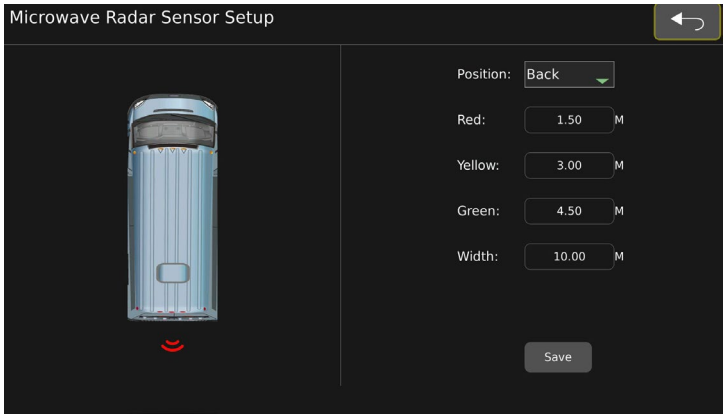
ADAS Setup

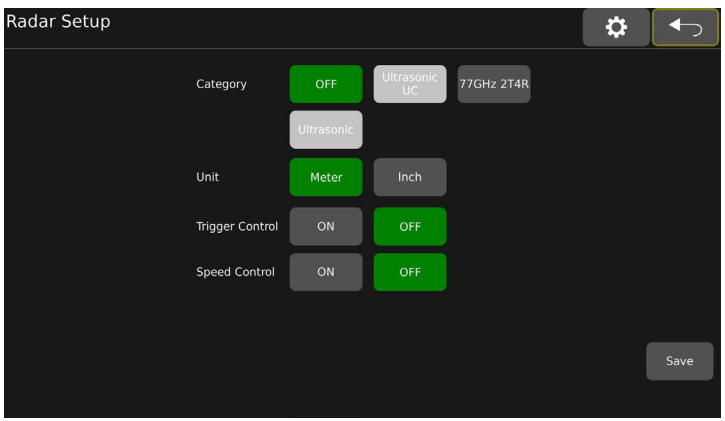
ADAS assistance setup

- Detect Switch: On and Off

RADAR

Radar setup interface



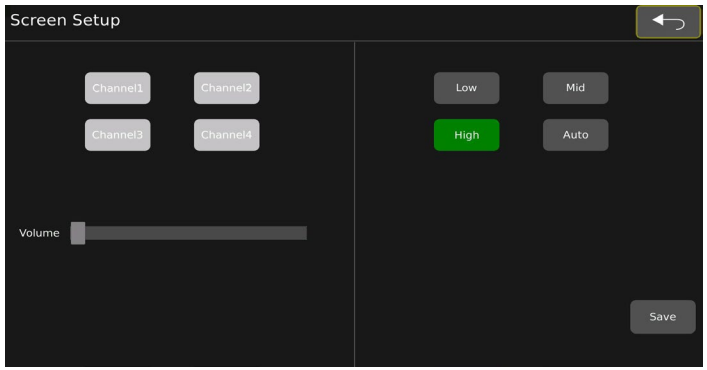


- **Category:** Radar configuration. Radar not available when set to Off. (N.B. Ultrasonic sensors are currently unavailable).
- **Unit:** Default unit value is Meter. Meter / Inch selectable.
- **Trigger Control:** Trigger control setting. Default is On. When set to On, the sensor will respond only when the “back” wire is triggered. When set to Off, the radar will respond regardless of there being a trigger or not.
- **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 the vehicle speed.
- **Exit button.**
- **Enter radar sensor setup interface.**
  - When an object within 0.5m is detected, the display keeps beeping.
  - The display sound will be different when the radar icon shows red and yellow.
- **Position:** The installation position configuration of the radar sensor. User can select Left / Right / Front / Rear.
- **Red:** Dangerous distance setting
- **Yellow:** Warning distance setting
- **Green:** Safe distance setting
- **Width:** Detect width setting
- **Save:** Save the setting parameters.

SCREEN SETUP

Screen Parameter Setup

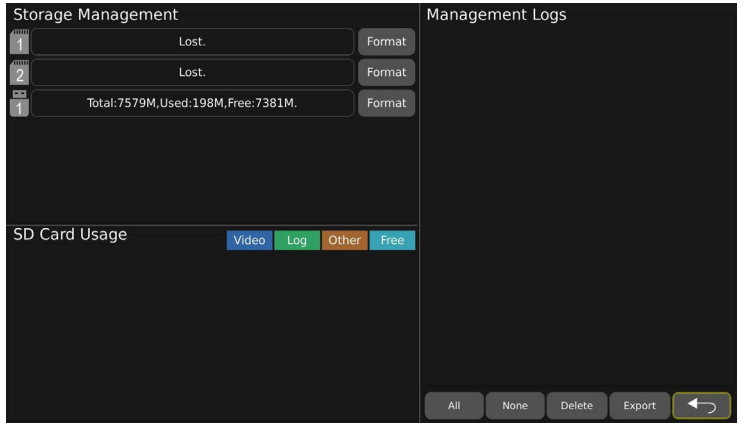
- **Volume:** Set screen volume (Not currently available)
- **Dimmer setup:** Set screen brightness, users can select between Low, Middle, High and Auto. When set to Auto, the monitor auto backlite function will mean the monitor will turn bright in bright environments (Day mode) and darker in dim environments (Night mode).



STORAGE MANAGEMENT

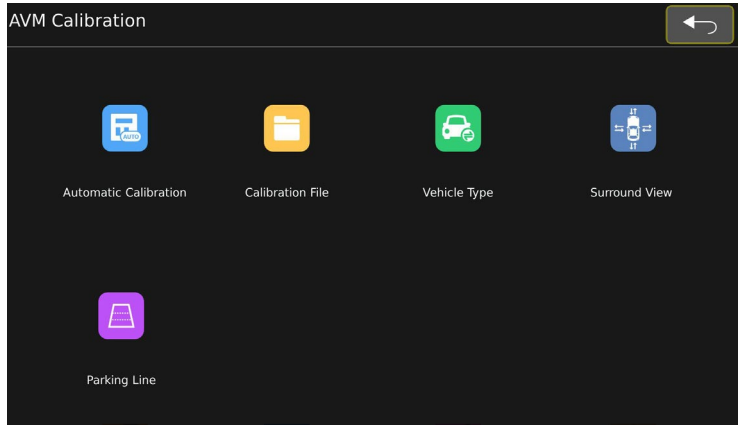
Storage management currently only supports 1 USB dive, does support log file exporting.

- **Format:** Format USB drive
- **SD Card Usage:** SD Storage management
- **Management Logs:** Log files list
- **All:** Select all log files
- **None:** Deselect all log files.
- **Delete: Delete the selected log files**
- **Export:** Exprt the selected log files

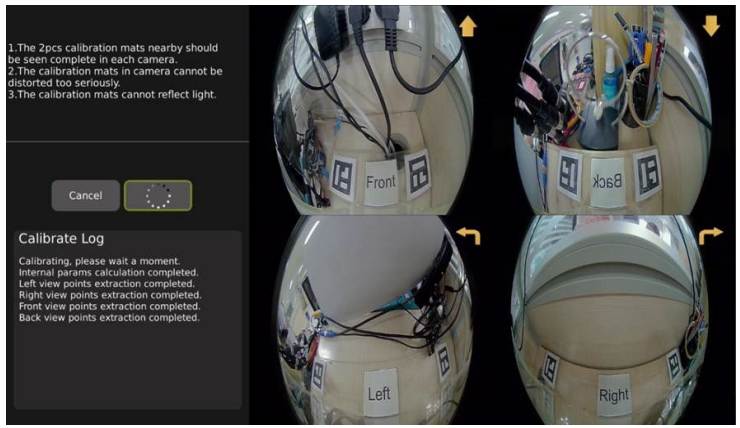


AVM INTERFACE

- **Automatic Calibration:** Automatic Calibration
- **Calibration File:** Calibration images export and calibration results import.
- **Vehicle Type:** Vehicle type replacement
- **Surround View:** Blending angle and surround view parameter setting.
- **Parking Line:** Reversing cursor adjustment.



Automatic Calibration

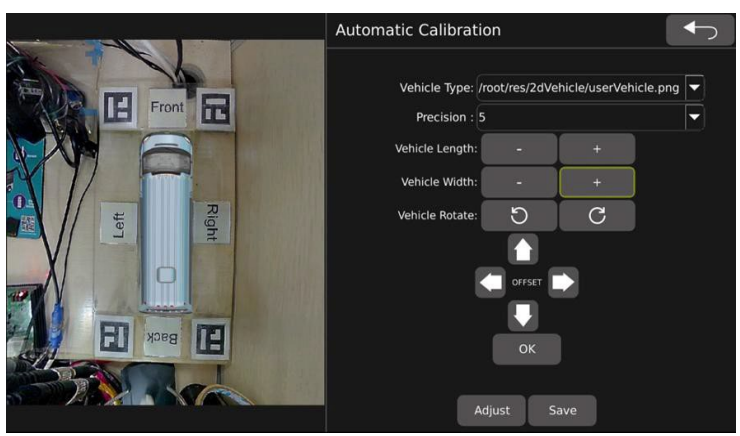


- **Cancel:** Cancel button, click this to exit calibration interface
- **Calibrate:** Automatic calibration button, click to enter automatic calibration mode.
- **Calibration Log:** Displays calibration log.

Precautions

- Each camera should fully view the 2 nearby calibration mats and their view must not be blocked by any objects.
- The calibration mast in the camera screen cannot be severely distorted.
- The calibration mats should not have a large amount of reflection of light.

Adjustment Interface



- **Vehicle Type:** Used to change the type of vehicle model. (Note that the car model shown is for auxiliary calibration reference and does not need to be saved).
- **Precision:** Accuracy change of vehicle's length, width, and model movement. Default value is 1 (Optimum values 1, 5 10, 15 pixels)
- **Vehicle Length:** Used for vehicle length change. Click "-"to decrease vehicle length. Click "+" to increase vehicle length.
- **Vehicle Width:** Used for vehicle width change. Click "-"to decrease vehicle width. Click "+" to increase vehicle width.
- **Vehicle Rotate:** Used for vehicle model rotation (turn left or right)
- "↑↓←→"**:** For car model movement (up / down / left / right)
- **"OK":** 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.

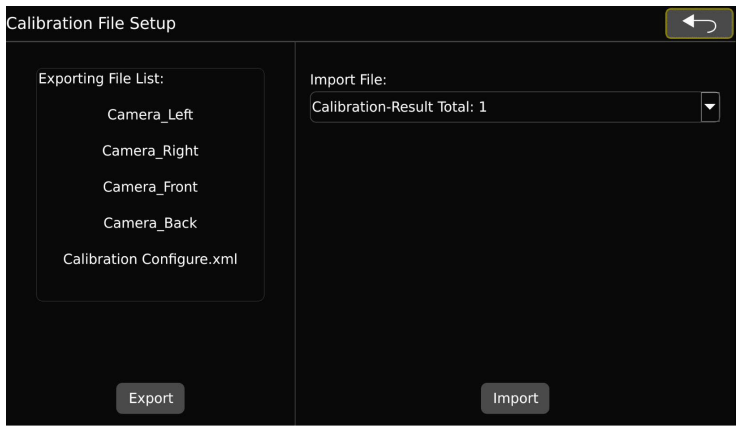
Reminder

- It is recommended to use the quad display screen to monitor the installation effect in real-time when the cameras are installed. It is required that the vehicle's body can still be observed at the centre of each screen.
- 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 vehicle model until you can see the zebra tape all around.

Calibration File Setup

Calibration image export and results import.

- **Note:** This interface does not refresh USB resources in real-time. Users must first connect to the USB before entering this interface.
- **Export:** Export calibration images to the USB Drive, including 6- channel camera images and XML file.
- **Import:** Import the calibration results to ECU. Make sure it is the correct calibration results.

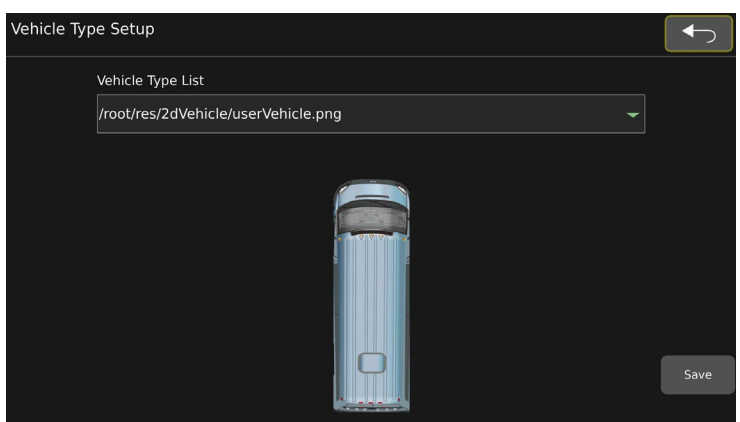


Vehicle Type

This interface does not refresh the USB resources in real-time. Connect the USB before entering this interface. There are 10 vehicle types by default:

- Bus
- Transit Bus
- Car
- Fire Truck
- Cargo Truck
- School Bus
- Van
- Garbage Truck
- Ambulance
- Utility Truck

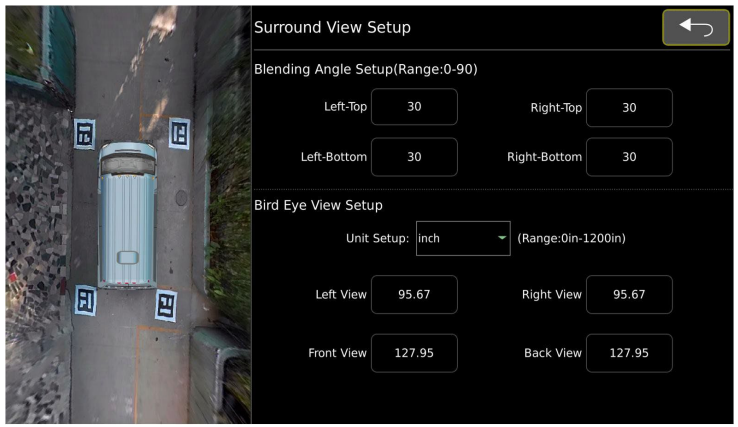
Customised vehicle types can be copied. Add a PNG format file to the USB drive and set it in the ECU.



Surround View

Blending angle and surround view parameters setting

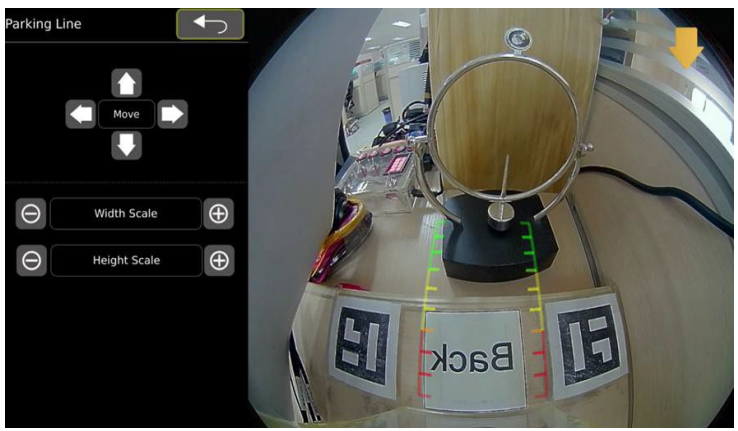
- **Blending Angle Setting:** Blending angle of 4 corners can be set separately, range 0° ~ 90°.
- **Width Setting per Channel:** Width value of 4 channels can be set separately. Unit can be inch / cm.



Parking Line

Reversing cursor adjustment interface.

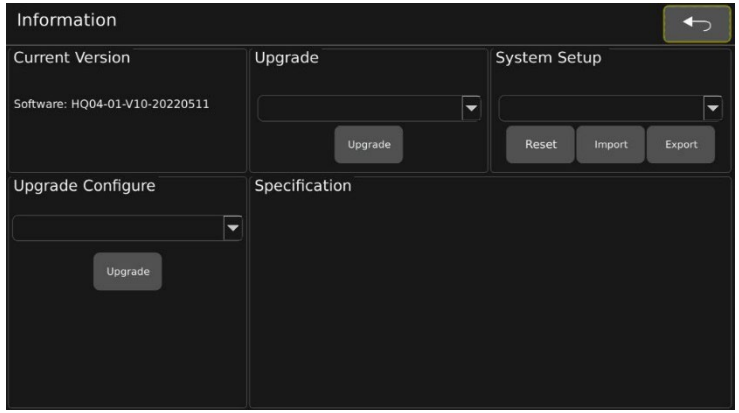
- **Move:** The reversing cursor moves up, down, left & right.
- **Width Scale:** Adjust the width of the reversing cursor.
- **Height Scale:** Adjust the height of the reversing cursor.



Information

- **Current Version:** Current Software version
- **Upgrade Configure: Configuration file upgrade.**
- **Upgrade:** Version upgrade, select the version that needs to be upgraded and click the “upgrade” button.
- **System Setup:**
    - **Reset:** Reload default settings
    - **Import:** Import the configuration file
    - **Export:** Export the configuration file. (Currently, the configuration file does not include AVM configuration parameters).

Notice: Do not power-off system during the upgrade



Specifications

MONITOR	
LCD Size	10”
Resolution	1,024(H) X 600(V) 3(RGB)
Contrast	600:1
Maximum Brightness	600cd/m^2
Response Time	10 - 15ms
Start-up Time	2 sec
Viewing Angle	Hor. L (85) R (85) Ver. UP (85) Down (85)
Video Synchronisation	Yes
Video Compatibility	PAL / NTSC auto-switching
Video Input	4-Channel Supporting
Video Compatibility	4 x 1080P @ 25ips
Video Compression	H.264 quad core ARM Cotex-A53 SOC
Video Display	Split Screen/ Full Screen - 3D/2D switchable views
Aspect Ratio	16:9
Remote Control	Full-functional
360° View	Integrated 360AVM algorithm for panoramic images
SD Card	Supported 512GB max – up to 133 hrs video recording
Number of Speakers	1 x built-in
Audio Inputs	4 x One-way inputs
Speaker output	1W / 8Ω
Volume Control	± Power On/Off
Alarm Triggers	5 separate triggers
Video Connections	RCA / 4pin connector (Optional)
ENVIRONMENTAL	
Operating Temp	-30°C - +70°C, RH90%
Storage Temp	-40°C - +80°C, RH90%
Anti-Vibration	2.1G
ELECTRICAL	
Power input	10 – 32V DC
MECHANICAL	
Materials	Plastic & With Black Rubber Painted
Mounting Bracket	Yes, U-shaped made of metal
Weight	0.4Kg
Dimensions	267 x 159 x 30mm
CAMERA	
Imaging Device	1/2.9” CMOS Sensor
Resolution	1080P
Min. Illumination	Colour: 0.01Lux @ F1.2
Frame Rate	25fps
Video Output	1 V pk-pk 75Ω
Video Format / Coding	MP4 / H.264
S/N Ratio	>52dB
Gamma	0.45
Back Light Compensation	Auto
White Balance	Auto
AGC	Auto
Electronic Shutter	1/25 ~ 1/50,000 Sec
Microphone	Built-in
LENS	
Focal Length	1.45mm
Field of View (H)	200°(H) x 130°(V)
Lens / Mount Type	Fixed Iris / Mega pixel Board-in type
ENVIRONMENTAL	
Operating Temp/ Hum	-20°C ~ +70°C /70% RH
Storage Temperature	-30°C - +80°C, RH70%
Ingress Protection / Vandal Resistance	IP69K / IK10 (not antenna)
Anti-vibration	ISO 16750-3 (Max 5.9G)
ELECTRICAL	
Power	10 - 32V DC 25W
Power interface	RCA / 4pin connector
MECHANICAL	
Colour / Material	Black, Metal
Dimensions (W x H)	110*86.5*64 mm
Weight	200g
CERTIFICATION	
	CE/UKCA IP69K

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