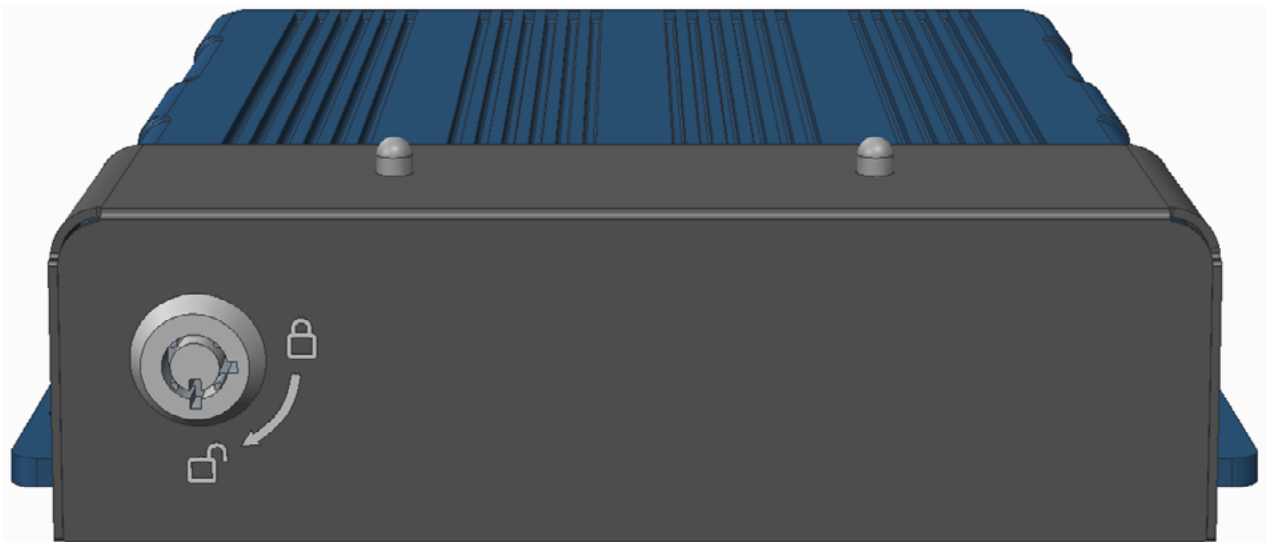


inView
360 HD™ AVM

Around Vehicle Monitoring System



Operation Guide

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

Precautions

Storage and Environment

1. Do not expose the system to excessive heat or cold. The storage temperature of this device is -40°C ~ +85°C (-40°F ~ +185°F), and the operating temperature is -20°C ~ +70°C (-4°F ~ +158°F). 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 excessive environmental conditions.
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. When the system is not being used, turn off the power on the ECU, and disconnect cable connections while servicing the system.



WARNING!

1. The case should only be opened by professionals.
2. Do not watch the video during higher speed driving, unless the operator needs to quickly monitor the 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


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. The magnitude of this voltage may be sufficient to constitute risk of electric shock.

 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: any changes or modifications not expressly approved in this manual could void your warranty and necessitate expensive repairs.

Product Features

Basic Features

1. (6) six 190° FHD 1080P wide-angle fisheye cameras, horizontal view angle>170° inputs.
2. Engineered with a dual-core ARM Cotex-A7, and the SOC development has a built-in high-performance H.264 video encoding/decoding engineer core, which allows this system efficiently create a composite of highly accurate, seamless images.
3. Supports (4) four 128G/256G SD cards (for a total of 1TB) as video media storage.
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 is built-in, and any 360 HD camera can be used with the ECU.

Application



Reverse Parking



Side Parking



Narrow Road



Congested Road



Blind Area



Diversion Assistance



Steep Slope



Road Trap



Driving Record

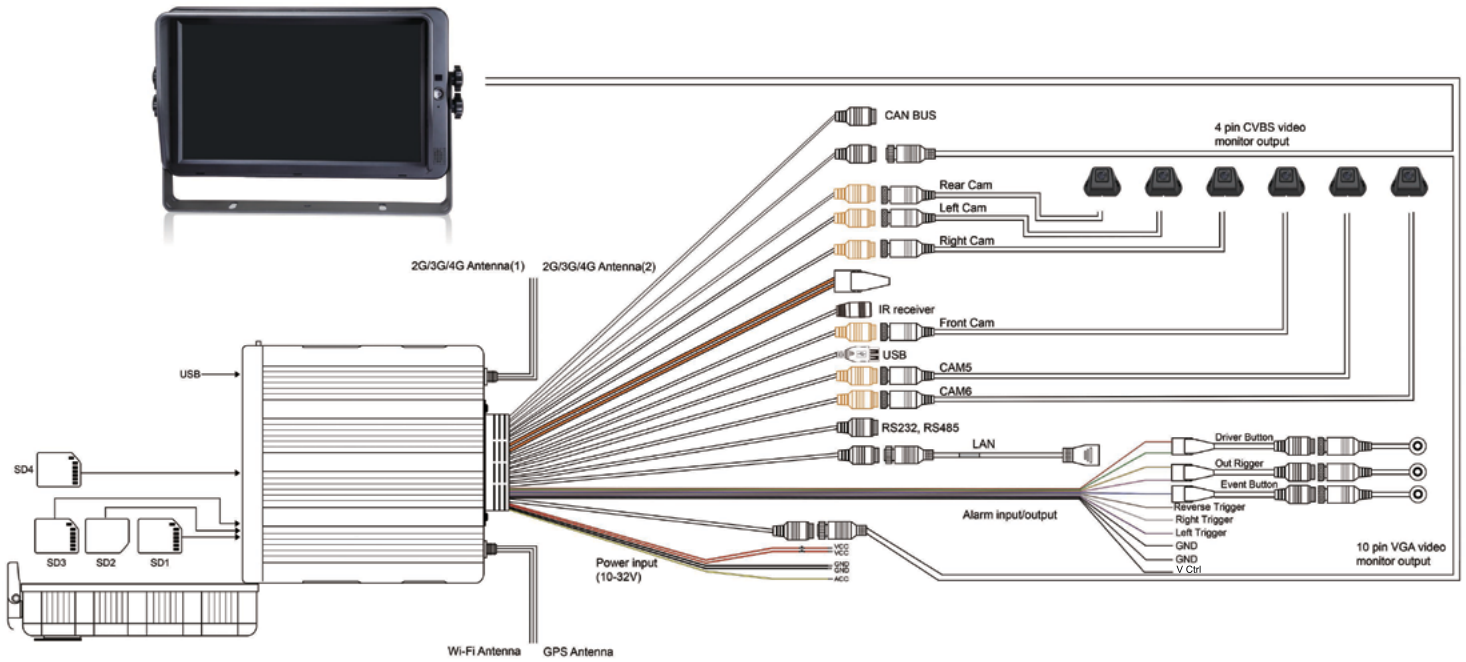
Features

1. Panoramic image
2. Blending seamless stitching
3. 360° no blind spots
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

Standard Configuration

| Item | Configuration | Quantity |
|------|---|----------|
| 1 | Main ECU box | 1 |
| 2 | FHD fisheye camera | 4 |
| 3 | 34-button remote controller | 1 |
| 4 | Main harness | 1 |
| 5 | 8M (26.25 ft.) extension cable for HD camera | 1 |
| 6 | 12M (39.4 ft.) extension cable for HD camera | 2 |
| 7 | 18M (59 ft.) extension cable for HD camera | 1 |
| 8 | CAN BUS extension cable | 1 |
| 9 | CVBS video output extension cable | 1 |
| 10 | LAN extension cable | 1 |
| 11 | Wi-Fi antenna | 1 |
| 12 | GPS antenna | 1 |
| 13 | VGA video output extension cable | 1 |
| 14 | Push button | 3 |
| 15 | HRNS, Extension, Outrigger, 6m (19.7 ft.) | 1 |
| 16 | HRNS, Extension, Driver View, 6m (19.7 ft.) | 1 |
| 17 | HRNS, Extension, Event, 6m (19.7 ft.) | 1 |
| 18 | CBL, V CTRL, Extension, 5.5m (18 ft.) | 1 |
| 19 | CBL, Trigger Line Flasher, 5.5m (18 ft.) | 1 |
| 20 | HRNS, Video, 4 Pin to RCA | 2 |
| 21 | HRNS, Video Y Cable Adapter | 1 |
| 22 | CBL, Power Line, Extension, 4.5m (14.8 ft.) | 1 |
| 23 | Fuse, 5A, Waterproof, PVC 80P Red, inView 360 HD | 1 |
| 24 | Pad, 5 Degree Wedge, Rubber, Black, inView 360 HD | 12 |
| 25 | PLT, Mounting Plate, Button, inView 360 HD | 1 |

Connection Diagram



Specifications

Main Unit Box Video Parameters

| Item | Parameters | | Performance Index |
|----------------------------|------------------------|--------------|----------------------------------|
| Panoramic Video Parameters | Input Video | | Max.6CH×1080P@25/1080P@30 |
| | Display Style | | 2D |
| | High Definition Output | Resolution | 1080P |
| | | Refresh Rate | 50/60 |
| Recording Parameters | Storage method | | 4 × 128G (or 256G Max.) SD Cards |
| | Compressed Encoding | | Max. 6CH × 1080P H.264 Encoding |
| | Video Stream | | 4M/2M |

Main Unit Box Working Environment Parameters

| Parameters | 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 (-4°F ~ 158°F) |
| Storage Temperature | -40°C ~ 85°C (-40°F ~ 185°F) |
| Working Humidity | 10%-95% |

Camera Parameters

| Parameters | 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, 75 Ω (Ohm) |
| White Balance | Auto |
| Viewing Angle | >170(H) |
| Power Supply | 12V |
| Working temperature range | -20°C ~ 70°C (-4°F ~ 158°F) |
| Storage Temperature | -40°C ~ 85°C (-40°F ~ 185°F) |
| Waterproof rating | IP69K |

Operation Instructions

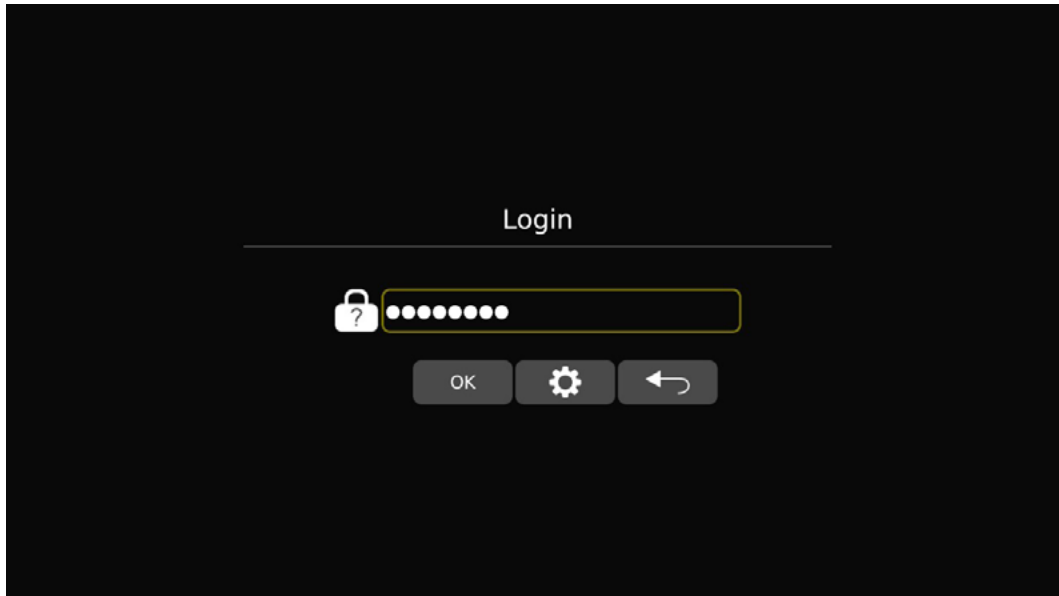
Remote Controller

- ▶ 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 the menu selection in the 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



User Interface

Log in Interface



Description: Login interface.



: Password (factory default is 88888888)



: confirm to log in

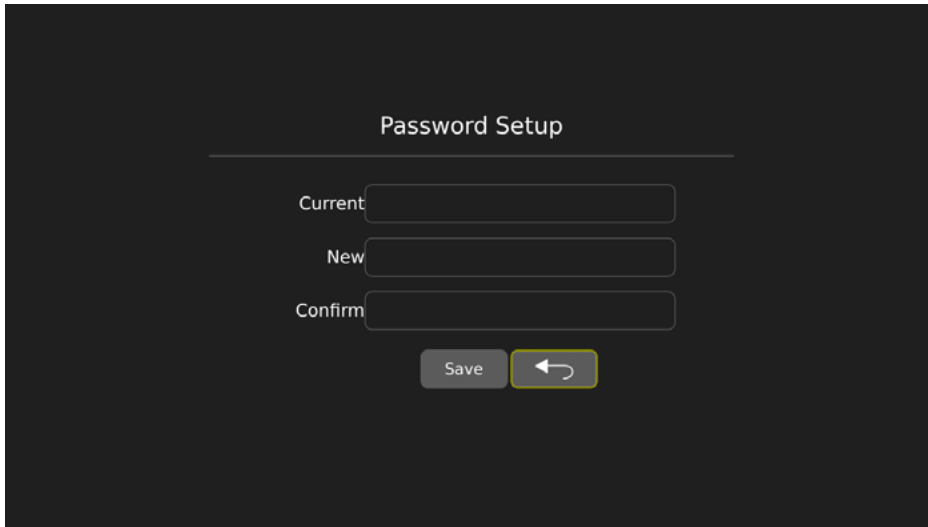


: reset password



: exit

Password Reset



Description:


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

 : current password

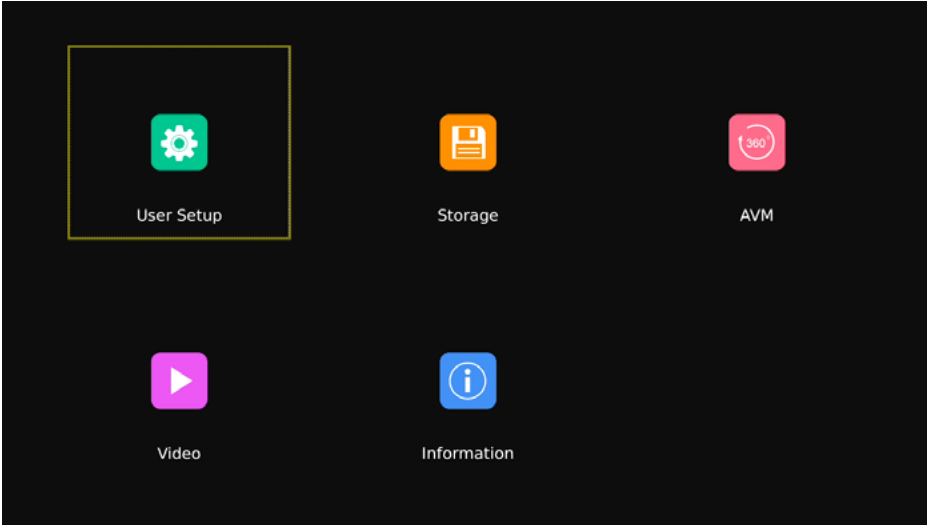
 : new password

 : confirm password

 : save setting

 : Exit (cancel changes)

User Main Interface



Description:

User Setup: user settings, to set up Basic setup\DVR\Display\Network

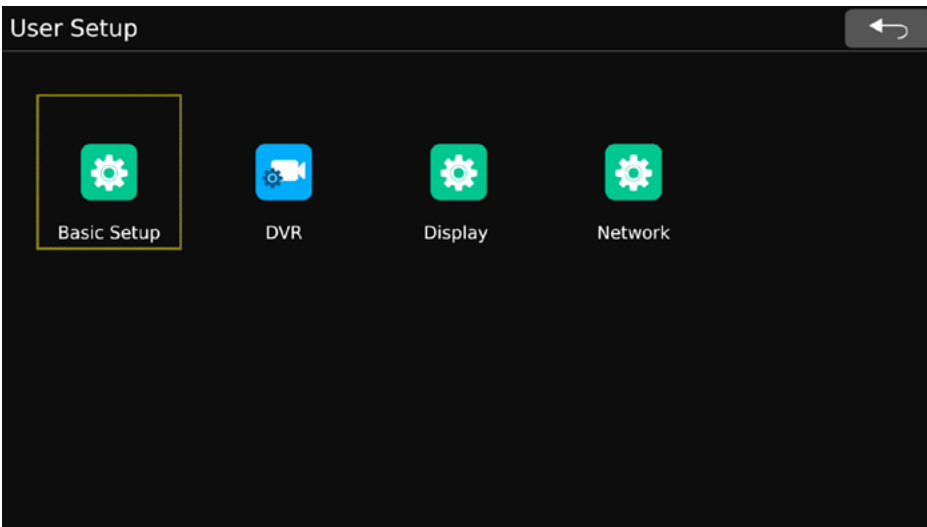
Storage: storage management, can check the SD storage and log file management

AVM: calibration File\vehicle Type\surround view and out Rigger

Video: Video recording management

Information: CPU and MCU version info and upgrading

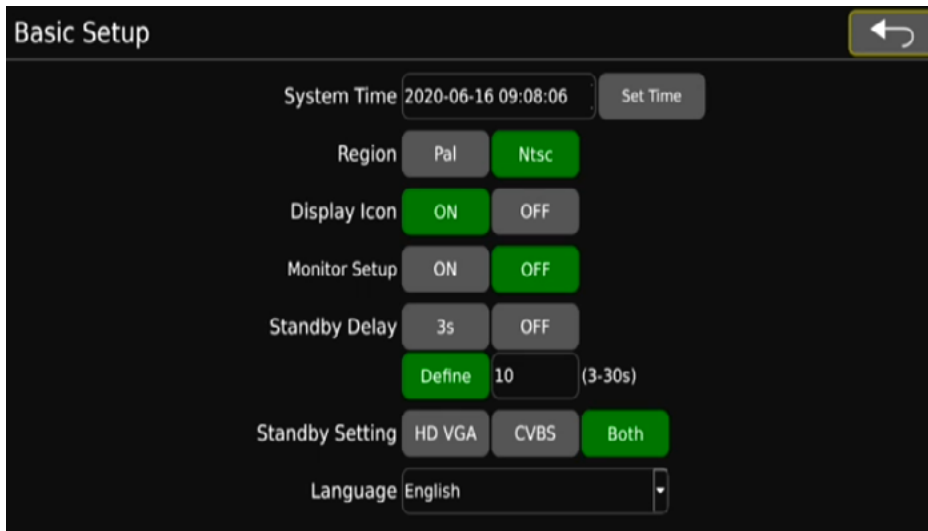
User Settings Interface



- Description: all user setting functions
- Basic Setup: basic settings
- DVR: video Recording settings
- Display: display mode settings
- Network: network settings

1) Basic Setup:

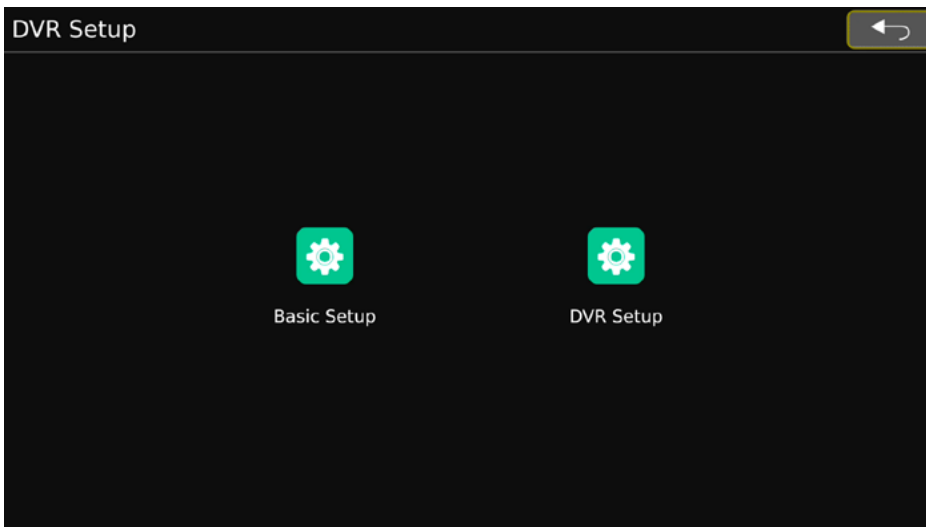
Basic settings interface, as shown below:



- ▶ System Time: To set the system time, Press “*Set Time*” to save changes.
- ▶ Region: Video format selection, NTSC\PAL optional
- ▶ Display Icon: hide display icons on main interface (except direction arrows)
- ▶ Monitor Setup: Low speed wake-up setting. When this setting is ON and speed from GPS is lower then the set value, it will trigger standby mode. When there is no GPS signal, will also remain in standby mode.
- ▶ Standby Delay: Auto standby time setting—optional settings are 10s, 30s, or OFF. After this setting is enabled and automatic standby time has been set, if there is no external trigger and/or remote control operation, the system will automatically enter standby mode after the set time interval has elapsed.
- ▶ Standby Setting: 1=HD VGA, only has HD VGA video output; 2=CVBS, only has CVBS video output; 3=Both HD VGA and CVBS video output.
- ▶ Language: language selection—English, French, German, and Dutch.

2) DVR Setup:

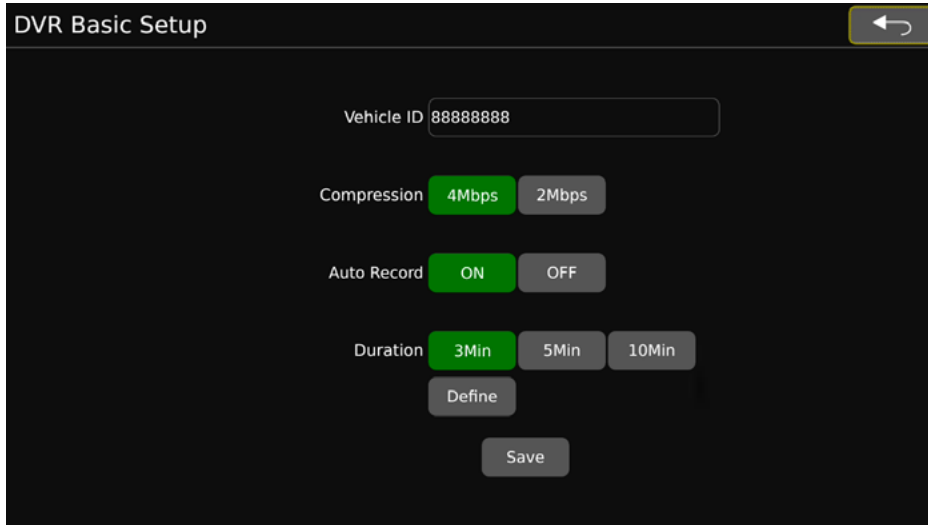
Recording and event recording settings, as shown below:



Description:

- ▶ Basic Setup: setup recording, duration and resolution, etc.
- ▶ DVR Setup: set G-Sensor ON/OFF–sensitivity.

DVR Basic Setup Shown Below:



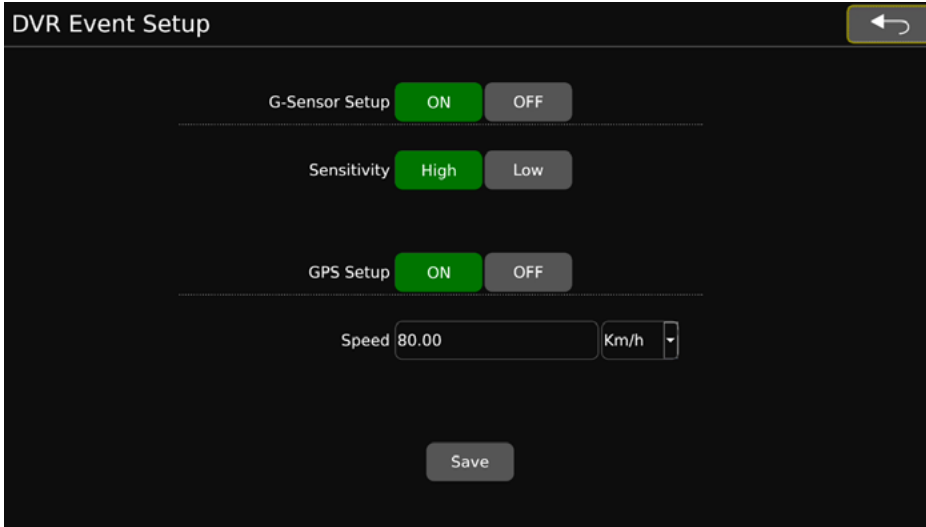
- ▶ Vehicle ID: license plate number setting, max length is 10bits
- ▶ Compression: recording quality selection, optional setting is 4Mbps High and 2Mbps Low.
- ▶ Auto Record: automatic recording switch: ON/OFF. When ON, recording automatically starts upon boot up. When OFF, recording will not start under any circumstances (including if there is a triggering event).
- ▶ Duration: The time length of the saved video recording file can be set at the default values: either 3 minutes, 5 minutes or 10 minutes. This value also can be customized as a length of time between 3 minutes and 30 minutes. Select the "Define" option to customize the duration of the video file. The longer the time duration, the more space that will be used up more quickly.

SD Card Compression Table

| Compression Modes | Video Clip File Size Guidelines | Recording Length (hrs) | |
|-------------------|---------------------------------|------------------------|----------|
| | | 128 GB | 256 GB |
| 2 Mbps | 4.3 GB / 4 Cameras / hr | 30 hours | 60 hours |
| 4 Mbps | 8.5 GB / 4 Cameras / hr | 15 hours | 30 hours |

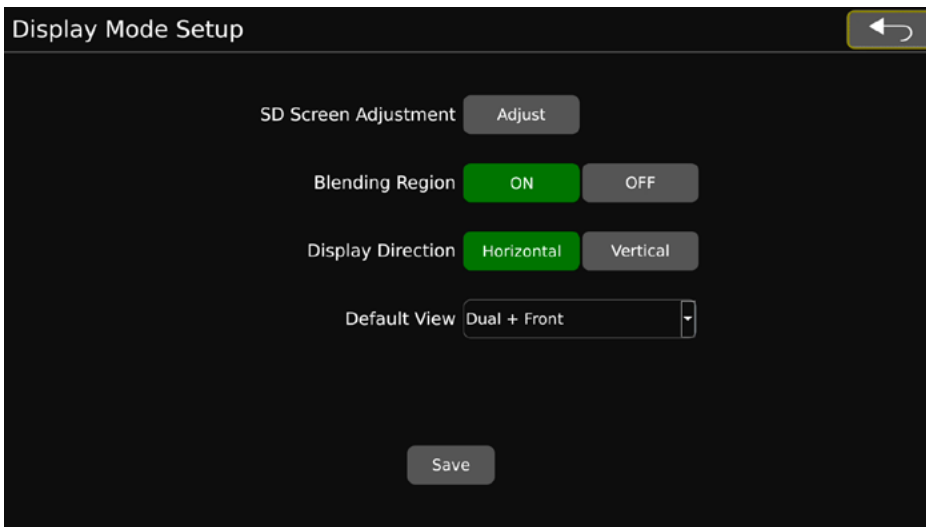
These guidelines are subject to compression variations. Data can be extrapolated for other SD sizes.

DVR Event Setup, as shown below:



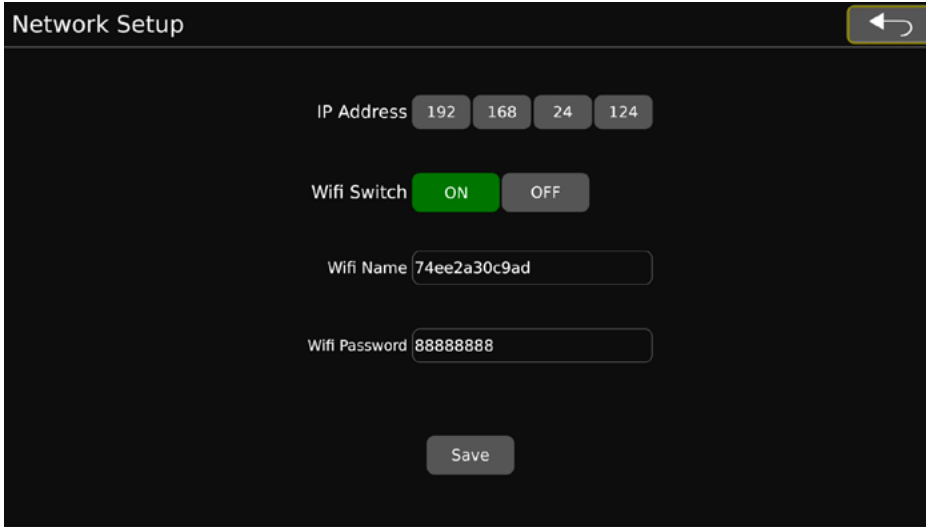
- ▶ G-Sensor Setup: ON/OFF
- ▶ Sensitivity: G-sensor sensitivity , can be either High or Low
- ▶ GPS Setup: ON/OFF
- ▶ Speed: overspeeding value limit setup; Unit can be set as km/h or miles/h

Display—Select Display Mode, As Shown Below:



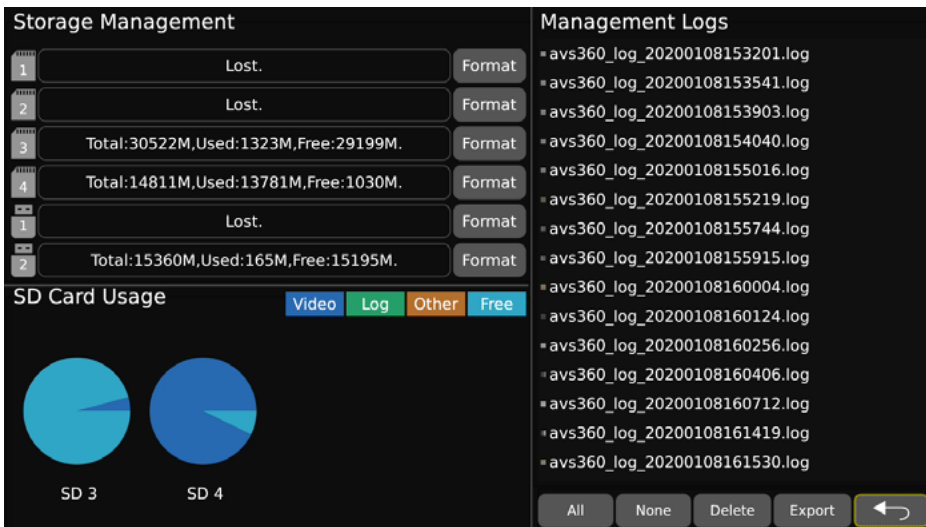
- ▶ SD Screen Adjustment: when set to CVBS output, the screen display can be adjusted. **Note:** to switch between NTSC and PAL, reset the system for the parameter change to take effect.
- ▶ Blending Region: blending overlapping ON/OFF
- ▶ Display Direction: Horizontal and vertical screen display switching
- ▶ Default View: the default display mode can be Dual+Left, Dual +Right, Dual +Front, Dual +Back, Full Dual and Quad.

Network: Network Settings Interface, As Shown Below:



- ▶ IP Address: Network IP address settings
- ▶ Wi-Fi switch: Wi-Fi function ON and OFF
- ▶ Wi-Fi Name: Wi-Fi hotspot name setting—max length is 16 bits
- ▶ Wi-Fi password: Wi-Fi password setting—Minimal length is 8 bit, max is 16 bits

Storage Management, As Shown Below:



Description:

Storage management—supports up to 4 SD cards and 2 USB drives, and supports exporting log files.

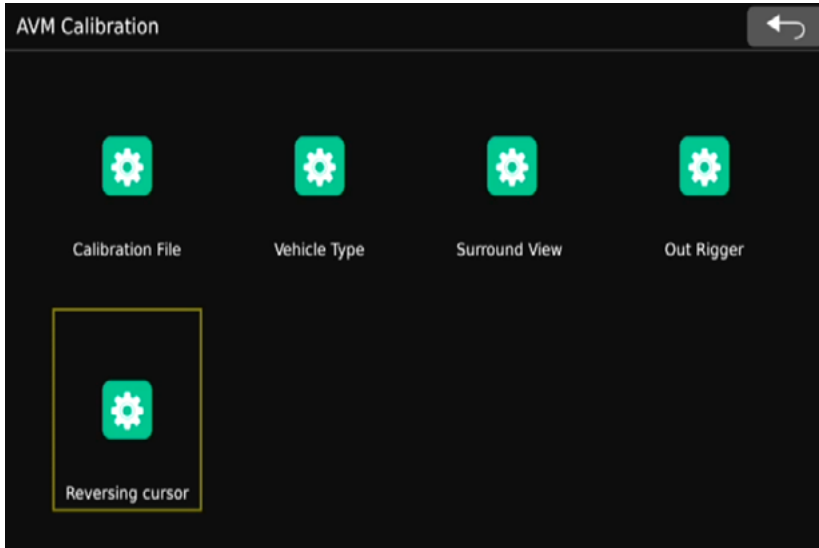


format SD cards or USB drive

- ▶ 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

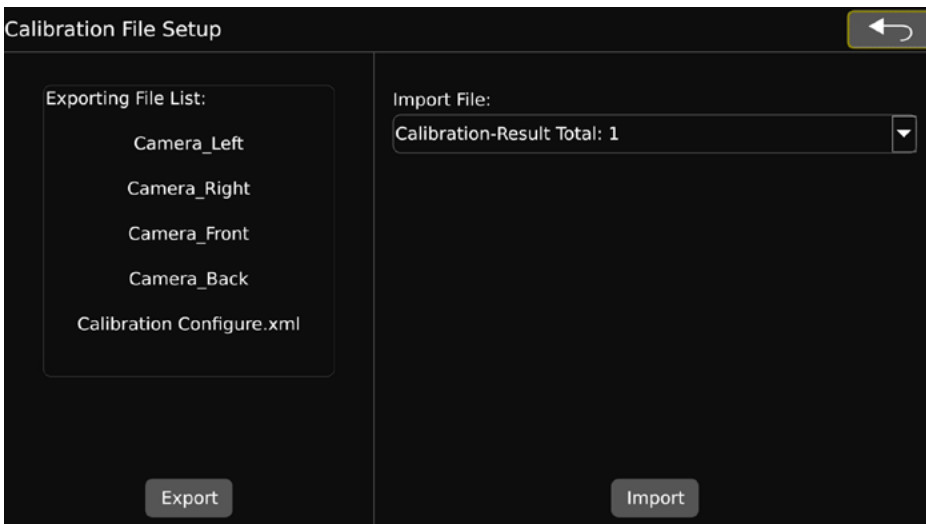
AVM Interface



Description:

- ▶ Calibration File: calibration images export and calibration results import
- ▶ Vehicle Type: Vehicle Type replacement
- ▶ Surround View: blending angle and surround view parameter setting
- ▶ Out Rigger: Out Rigger parameter setting
- ▶ Reversing cursor: Adjust backup lines

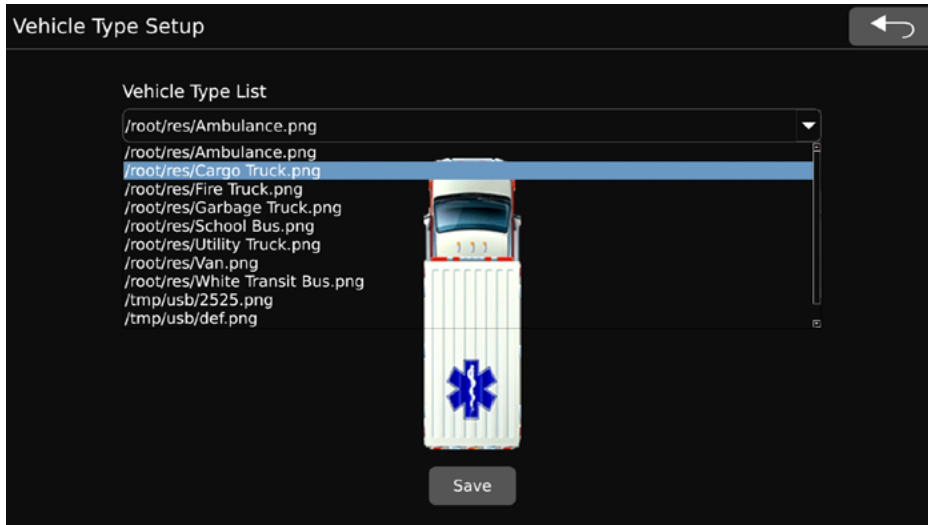
Calibration File Setup: calibration images export and calibration results import:



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 the USB Drive, including the 6-channel camera images and the XML file.
- ▶ Import: import the calibrated result to the ECU. Make sure that the calibration result is correct.

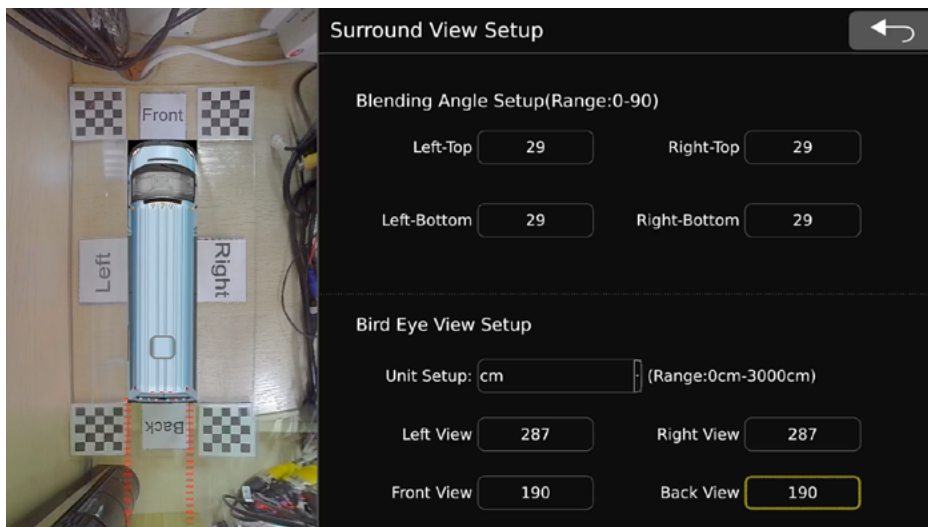
Vehicle Type Setup: as shown below:



Description:

- ▶ This interface does not refresh USB resources in real time, user must first connect USB before entering this interface.
- ▶ There are (8) eight vehicle types by default: Ambulance, Cargo Truck, Fire Truck, Garbage Truck, School, Utility Truck, Van, White Transit Bus .
- ▶ Program customized vehicle type: copy the vehicle type in PNG format to the USB drive, and then program this vehicle type into the ECU to be the same vehicle type.

Surround View Blending Angle and Surround View Parameter Setting

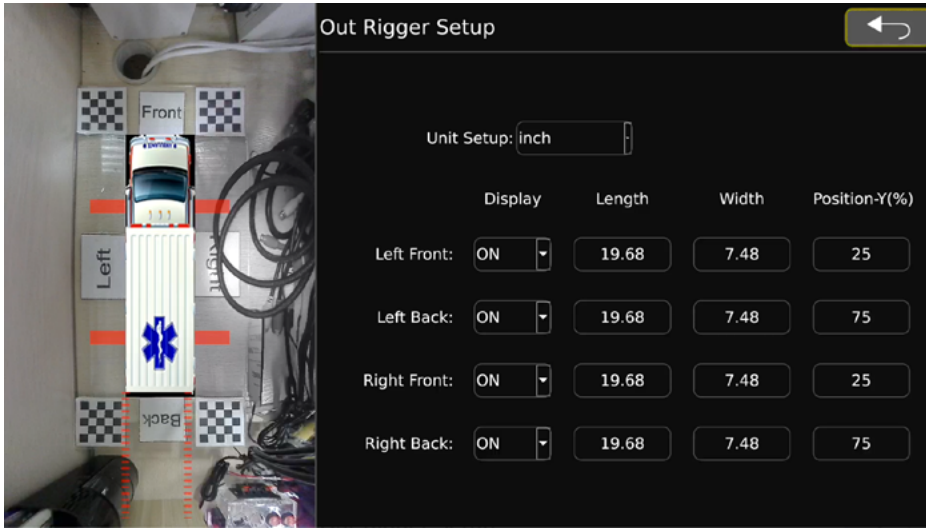


Description:

- ▶ Blending angle setting: blending angle of 4 corners can be set separately; range is 0 to 90 degrees.

- ▶ Width setting per channel: width value of 4 channels can be set separately; unit of measure can be in either inch/cm.

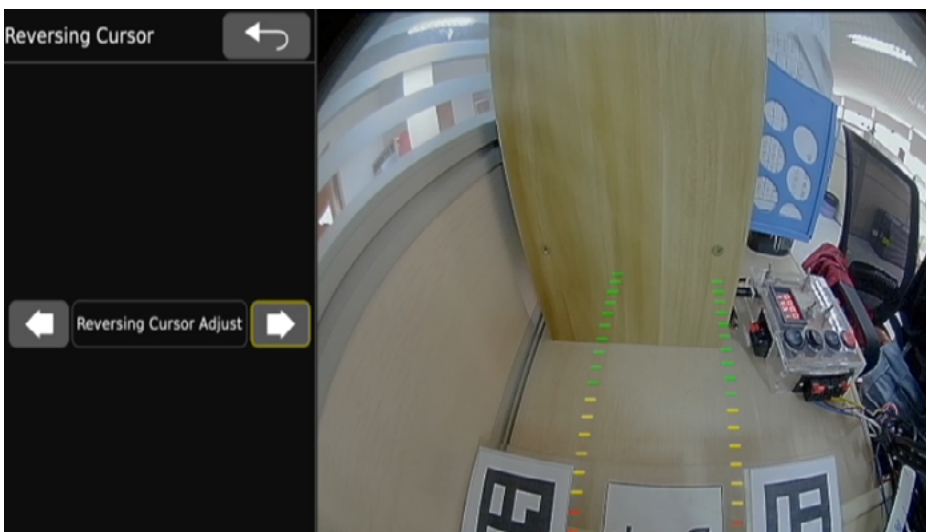
Outrigger: Outrigger Setting Interface



Description:

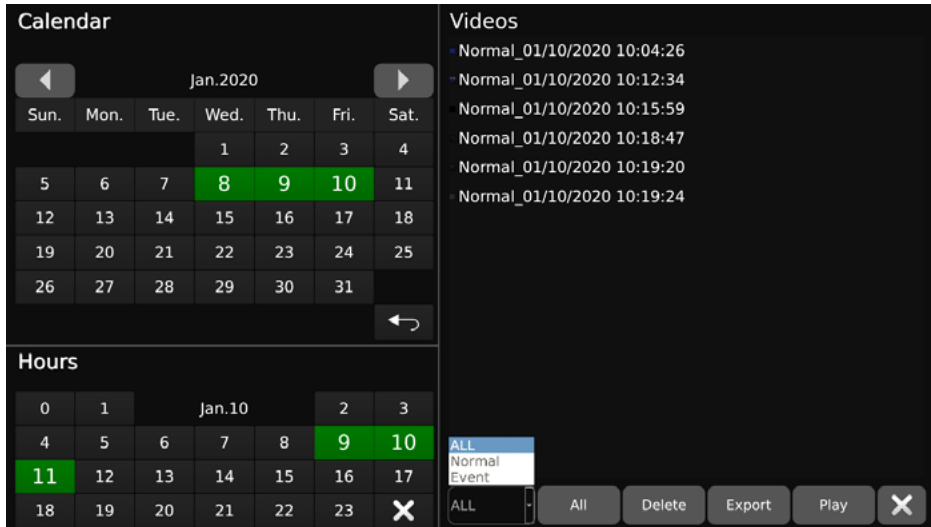
- ▶ Unit of measure can be in either inch/cm.
- ▶ ON/OFF: Outrigger ON/OFF—ON display, OFF hidden.
- ▶ Length setting: Outrigger length setting (when the unit of measure is in inches, the range will be 0-111inches; when the unit of measure is in cm, the range is 0-284cm)
- ▶ Width setting: Outrigger width setting (when the unit of measure is in inches, the range will be 0-37inches; when the unit of measure is in cm, range will be 0-95cm)
- ▶ Position-Y (%): Set the display percentage based on vehicle size, and adjust the location of the Outrigger.

Reversing Cursor: Adjust Backup Lines



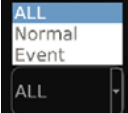

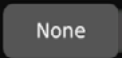
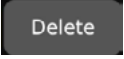

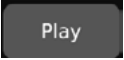
- ▶ Press button  left and  right move the backup lines

Video: Recording Management Interface

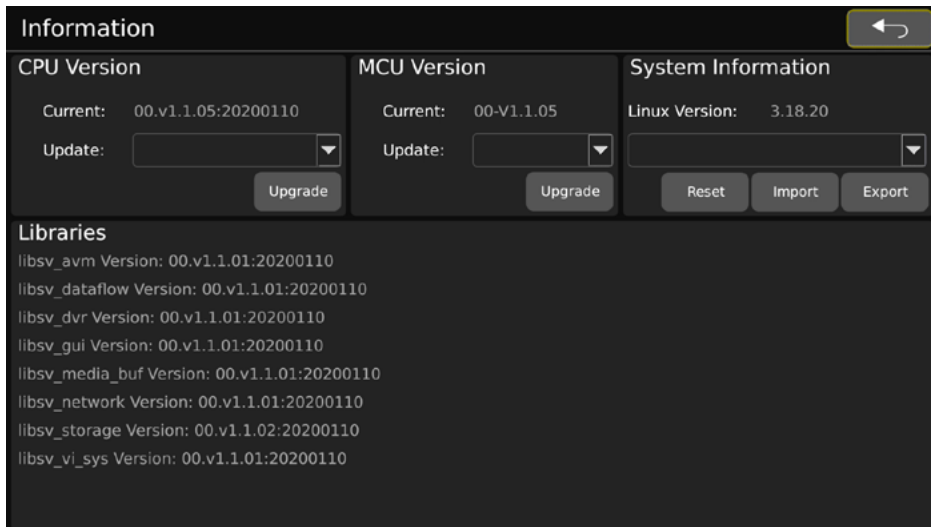


Description:

- ▶ Video management can only save videos for three months (90 days), including before or after the present month.
- ▶ The data color will be green if there is a video recording file saved.

- ▶  recording type selection—choose from : ALL, Normal, Event (including panic, speed, G-force)
- ▶   Select all or none the video recording files in the list
- ▶  Delete the selected recording file
- ▶  Export the selected recording file.
- ▶  Play back the selected recording file

CPU/MCU/Linux Version Information: As Shown Below



Description:

CPU Version

- ▶ Current: current CPU version
- ▶ Update: CPU upgrading; make sure that the intended firmware package has been chosen to be updated

MCU Version

- ▶ Current: current MCU version info
- ▶ Update: MCU upgrading; make sure that the intended MCU package has been chosen to be updated

System Information

Linux Version: system info:

- ▶  Restore factory setting
- ▶  Import configuration file
- ▶  Export configuration file

NOTES

Support Information

Contacting FRC (Fire Research Corporation)

FRC Customer Service and Product Support:

(8am to 5pm EST weekdays)

- Main Phone: 631.724.8888
- Fax: 631.360.9727 (24 hours)
- Email: service@fireresearch.com

If your inView 360 HD system needs to be returned, please contact FRC Technical Support, and provide the model and/or serial number of your unit. Ask for a Return Merchandise Authorization (RMA) number. An RMA number allows the Service Technicians to better track your product when it comes in for service. Please show the RMA number on the outside of the package. ANY RETURNED PRODUCT WITHOUT AN RMA NUMBER MAY BE REFUSED.

Product Information

For product information and documentation related to the inView 360 HD system, please visit the inView 360 HD product page on the FRC website: <http://www.fireresearch.com/>. This product page can be found under the **Video** top level menu header, and then the **inView 360 HD** page is located under the fly-out submenu. Contact information can be found under the **Contact** menu item, and then from the **Contact FRC** fly-out submenu item. This Operation Guide and the rest of the inView 360 HD video manuals are linked as PDFs on the left side of the product page. Also, these manuals are available on the Manuals page (under the Video header), which is located under the Resources menu item, and then the **Manuals** fly-out submenu item.

Warranty

Complete warranty details are available online on the [FRC Limited Warranty page](#). This page can be found through the above link for the FRC website. Go to the **Manuals** tab (under the **Resources** menu item), and then scroll all the way down to the bottom of this page. There is a link for the [Warranty Policy](#) PDF under the [Reference/Data Sheets](#) header.