GATEKEEPER

MOBILE VIDEO SOLUTIONS FOR BUILDING SAFER & SMARTER COMMUNITIES

SV12 v3 360° Surround Vision Camera System

User Manual & Install Guide

Document Ref. No. : DN3377
Version No. : 1.0.7
Document Date : June 2022

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GLOSSARY

Term/Abbreviation	Description
ACC	Accelerometer
AHD	Analog high definition.
CAN	Controller Area Network is a vehicle bus standard designed to allow microcontrollers and devices to communicate with each other in applications without a host computer.
DVR	Digital Video Recorder – a device that records audio and video input from the cameras and stores it to a hard disk drive and/or an SD card for retrieval and viewing.
FlexFi	Internal Wi-Fi 2GHz and 5 GHz. It allows DVR to be configured as a client or access point.
FTP	File Transfer Protocol is a standard network protocol used to transfer computer files from one host to another host over a TCP-based network, such as the Internet.
FPS	Frames per Seconds.
GPS	Global Positioning System – it is a radio navigation system that allows land, sea, and airborne users to determine their exact location, velocity, and time 24 hours a day, in all weather conditions, anywhere in the world.
H.264	Also known as MPEG-4 Part 10, Advanced Video Coding (MPEG-4 AVC), this is a video coding format that is currently one of the most commonly used formats for the recording, compression, and distribution of video content.
H.265	Also known as HEVC video, High-Efficiency Video Coding. Due to the advanced technology, it required a 40% less bandwidth and storage space than H.264.
ICD / ICD2	Interactive Control Display, purpose-built touch screen monitors for operating Gatekeeper Systems DVR's.
IO	Input/output
LAN	Local Area Network – it is a computer network that interconnects computing devices within a limited area such as a school, work area, or an office building.
LCD Monitor	Liquid Crystal Display Monitor – it is a display screen that uses electronically modulated segments controlling a layer of liquid crystals and arrayed in front of a light source (backlight) or reflector to produce images and text.
MAC Address	Media Access Control address – it is a unique identifier assigned to network interfaces for communications on the physical network segment.

OSD	On-Screen Display – an image superimposed on a screen commonly used to display information such as volume, channel, date/time, device status, etc. It also forms the basis of the menu system display which is used to configure the system settings of the digital video recorder.
HD/HDD	Hard Drive – a high-capacity, self-contained storage device containing a read-write mechanism plus one or more hard disks, inside a sealed unit. Also called hard disk drive.
TCP	TCP is one of the main protocols in TCP/IP networks which enables two hosts to establish a connection and exchange streams of data. TCP guarantees delivery of data and also guarantees that packets will be delivered in the same order in which they were sent.
UDP	UDP is a simple connectionless transmission model with a minimum overhead of protocol mechanisms.
USB	Universal Serial Bus – it is an industry-standard that defines the cables, connectors and communications protocols used in a bus for connection, communication, and power supply between computers and electronic devices.
UTC	Coordinated Universal Time is a time standard based on International Atomic Time with leap seconds added at irregular intervals to compensate for the Earth's slowing rotation. It is the primary time standard by which the world regulates clocks and time.

Event Abbreviations.

When a recorded video is viewed in G4 Viewer+ the abbreviations displayed on the screen for events are specific to their default values.

SENSOR	OSD NAME
BRAKE	BK
WARNING LIGHTS	WN
STOP ARM	SA
DOOR	DR
LEFT TURN	LT
RIGHT TURN	RT
EXTRA1	EX1
EXTRA2	EX2

1 Introduction

1.1 Welcome to Your New SV12 v3

Congratulations on the purchase of your new Gatekeeper Systems SV12 v3.

The 360° Surround Vision Camera System provides real-time and broad surround view of the vehicle for blind-spot detection. With 4 channels 1080P wide-angle cameras and video processor, a high resolution panoramic real-time stitching scene is available on the display monitor. The display monitor is off when the vehicle is moving forward. As the vehicle is reversing or making side turns, the display monitor turns on and provides a split-screen display of a 360° stitching image and a rear, left, or right view. The 360° Surround Vision Camera System is easy to install and calibration is customizable to meet specific vehicle requirements. The display monitor shows the parking assist line when parking the vehicle.

It supports external Wi-Fi antennae, two 128GB SD cards for storage and it is NDAA compliant. To playback the recorded video or search for any sensor alarm triggers, the SV12 v3 utilizes Gatekeeper's custom video viewing software, "G4 Viewer Plus". G4 Viewer Plus is an easy-to-use application that allows users to quickly find the video of interest and save as a clip in MP4 format. G4 Viewer Plus is available as a free download from Gatekeeper System website (www.gatekeeper-systems.com).

1.2 Important Safety and Handling Information

Before using the product, please ensure that you observe the safety precautions described below. Always ensure that the product is used correctly and by the listed instructions. Be sure to also check the manuals included with any other product accessories that you may use.

SAFETY AND INFORMATION SYMBOLS USED IN THIS MANUAL	
	This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" that may be of sufficient magnitude to constitute a risk of electric shock to persons.
	This symbol is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying this product. Failure to heed these warnings or instructions may damage the product or cause it to operate incorrectly.
	This symbol indicates text of importance or special significance in the accompanying product literature. These may be important operating instructions or supplemental information.
	This symbol draws the user's attention to time-saving tips and helpful guidelines for using the product's features.
	This symbol draws the user's attention to recommended best practices which should be observed when installing and using the product.

The battery must be disconnected from the vehicle before working on the electrical system of the vehicle when installing, servicing or removing Gatekeeper products.

Preparing to Install

- Customers shall be responsible for addressing any systems on the bus that require attention as a result of disconnecting the bus battery. This includes, but is not limited to, entering a radio theft code, programming radio stations, etc.

Installing the product

- All Gatekeeper Systems employees or contractors who perform electrical work (e.g., installing, servicing or removing a SV12 v3, installing a backup camera system, etc.) on a customer vehicle shall ensure that the battery in the vehicle is disconnected before work commences.

Operating the product

- The SV12 v3 has an operating temperature range of -4°F to +155°F (-20°C to +70°C). It is good practice to ensure that the product is mounted in a suitable location which does not exceed acceptable temperature ranges during normal operations.
- Do not remove the cover of the product as this will void the warranty.
- When a system has shipped with a GPS antenna, please ensure that the GPS antenna is mounted externally on the roof of the bus with a clear view of the sky, and with the magnetic side facing down.

Updating the product

- Firmware updates (available from www.gatekeeper-systems.com) are system and product model specific. These firmware updates must be applied to the SV12 v3 system only.

Repairing the product

- Your SV12 v3 doesn't have any user-serviceable parts. Do not open or disassemble it or attempt to repair it or replace any components.
- Disassembling the SV12 v3 may damage it or may cause injury to you. If your product needs service, is damaged, or malfunctions, contact Gatekeeper Systems for assistance. If you attempt to open it, you risk damaging your product, and such damage isn't covered by the warranty on your SV12 v3.

If at any time there is a question about how to proceed, please contact Gatekeeper Systems immediately at either 1-888-666-4833 or 1-604-864-6187 for assistance. Review all available installation documentation, including technical bulletins. Additional resources, technical bulletins and product tutorials can be found at https://www.gatekeeper-systems.com/support/downloads/

2 Your SV12 v3 at a Glance

2.1 Take a Tour

This is the front panel of the SV12 v3:

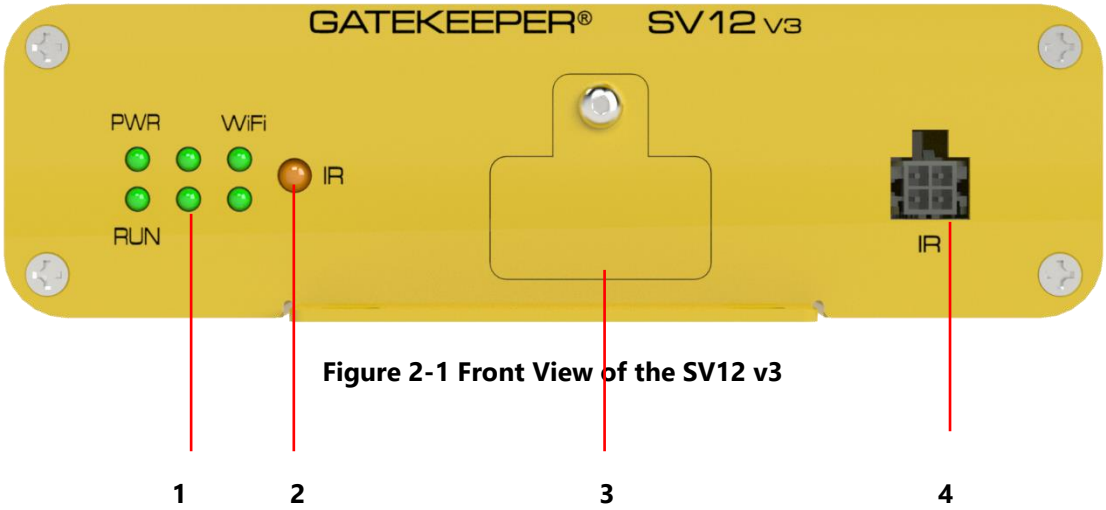


Figure 2-1 Front View of the SV12 v3

1. *LED Status Indicators:* Status indicator lights which light up and/or flash to alert the user to the device's operational status and/or alarm status.

2. *IR Receiver:* This IR port receives the control signals from the IR remote control.

3. *SD Card Slot:* The SD Card is installed in this slot. The slot is protected by a cover which is only removed when the SD Card needs to be accessed.

4. *IR Molex Connector:* IR 4 pin Molex connector is to attach an IR extension cable to the SV12 v3 to allow IR control to work.

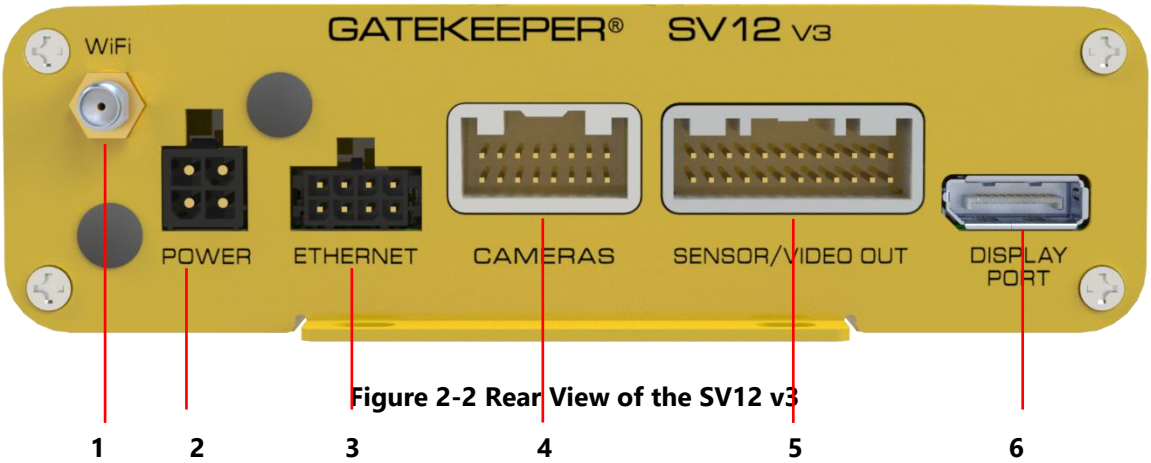


Figure 2-2 Rear View of the SV12 v3

1. *Wi-Fi Antenna In:* This is the connection point for the Wi-Fi antenna. If there are no Wi-Fi antenna attached, these ports should be covered with a rubberized cap.

2. *Ports for connecting Power:* The power port use power ignition cable (CAB000518).

3. *Ethernet port:* The ethernet is used to connect to the laptop.

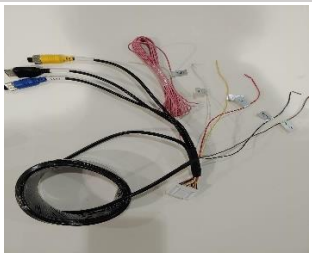
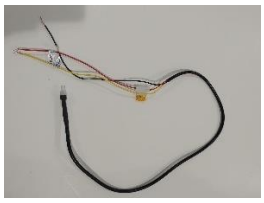
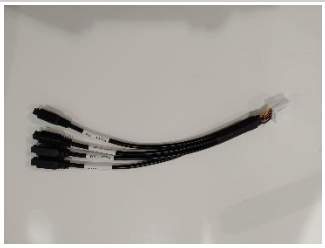
4. *Cameras:* This is the input port for the audio and video signals from all the attached cameras. This port uses the SV12 v3 camera cable (CAB000516) for the connection.

5. *Sensor/Video Out:* This is the input port for the attached sensors. This port uses the sensor video cable (CAB000517) for the connection.

6. *Display Port:* This is the port for ICD connection.

3 What's Included

The following items are included as part of your basic product package.

	**SV12 v3 Digital Video Processor** *(SV12 v3 Assembly)* Video processor to merge the image.
	**4 Cameras 1080P AHD** 4 1080P AHD wide angle (190º) Cameras.
	**Sensor Video Cable** *(CAB000517)*
	**Power Ignition Cable** *(CAB000518)*
	**Fastening Screws**
	**SV12 v3 Camera Cable** *(CAB000516)*

There are numerous customizable options and accessories which can tailor the product installation to fit your unique operating environment and requirements.

Please contact Gatekeeper Systems for information on optional download kits and other accessories for use with your product.

3.1 Controller

3.1.1 IR Remote Controller

- **Arrow Keys**: These buttons can be used to move the cursor or menu highlight to the left and right as well as up and down in order to select a button or menu item.
- **Menu**: These two buttons provide a quick way to return to the main menu.
- **Playback Control Keys**: When you are viewing video playback, these keys will allow you to easily Pause/Step through the video frame by frame, Play the video at normal speed, play the video at Slow speed (pressing repeatedly cycles through the available slow-motion speed settings), and stop the video playback.
- **View Mode:** To change the view to full screen display or exit from full screen display.
- **Numeric Keys:** To enter the numeric values.
- **Exit/ESC:** To exit from the menu.

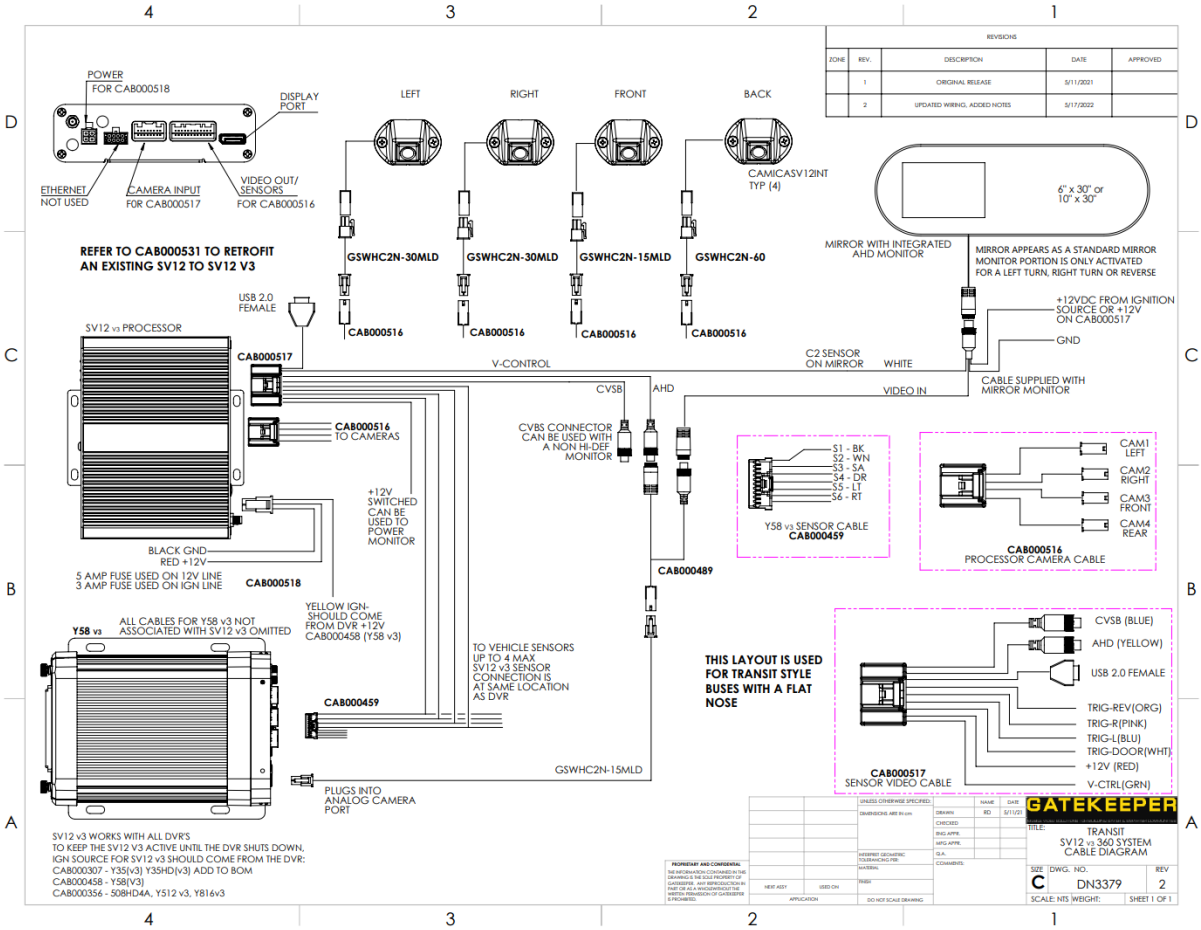
3.2 System Specifications

Video Processor	
Video Input	4 Analog High Definition (AHD) channels
Video Output	1 channel 1080P, 1 channel D1
Video Resource	1080P (1920 x 1080)
Video Compression	H.264
Video System	NTSC / PAL
Trigger Input	Left turn, Right turn, Reverse signal, Extended view
Trigger Display	Left turn – split display of left side view and 360° stitching image Right turn – split display of right-side view and 360° stitching image Reverse – split display of rear view and 360° stitching image Extended – single screen 360° stitching image
Operating Temperature	-4°F to +155°F (-20°C to +70°C)
Camera	
Imaging Sensor	1/2.9" SONY CMOS
Video System	NTSC / PAL
Resolution	1080P (1920 x 1080)
Minimum Illumination	0.1 Lux (day), 0 Lux (with IR)
Power Supply	12V (powered from video processor)
Operating Current	<140mA DC 12V
Operating Temperature	-4°F to +155°F (-20°C to +70°C)
IP Rating	IP69K
Calibration	
Type	Automatic and manual calibration
Mode	2D/3D

4 Hardware Installation

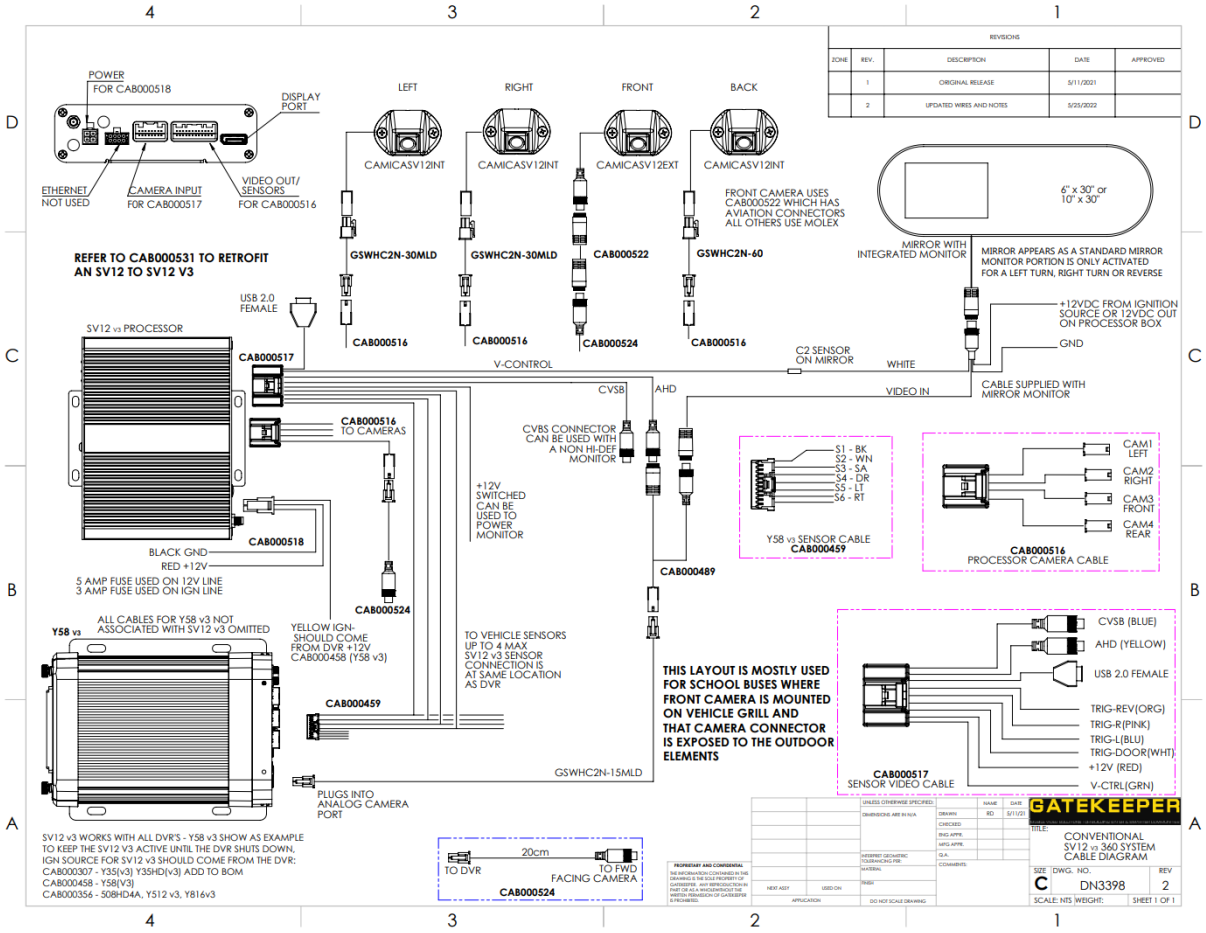
4.1 Quick Reference Guide for Installation

4.1.1 Cable Diagram for SV12 v3 (Transit)



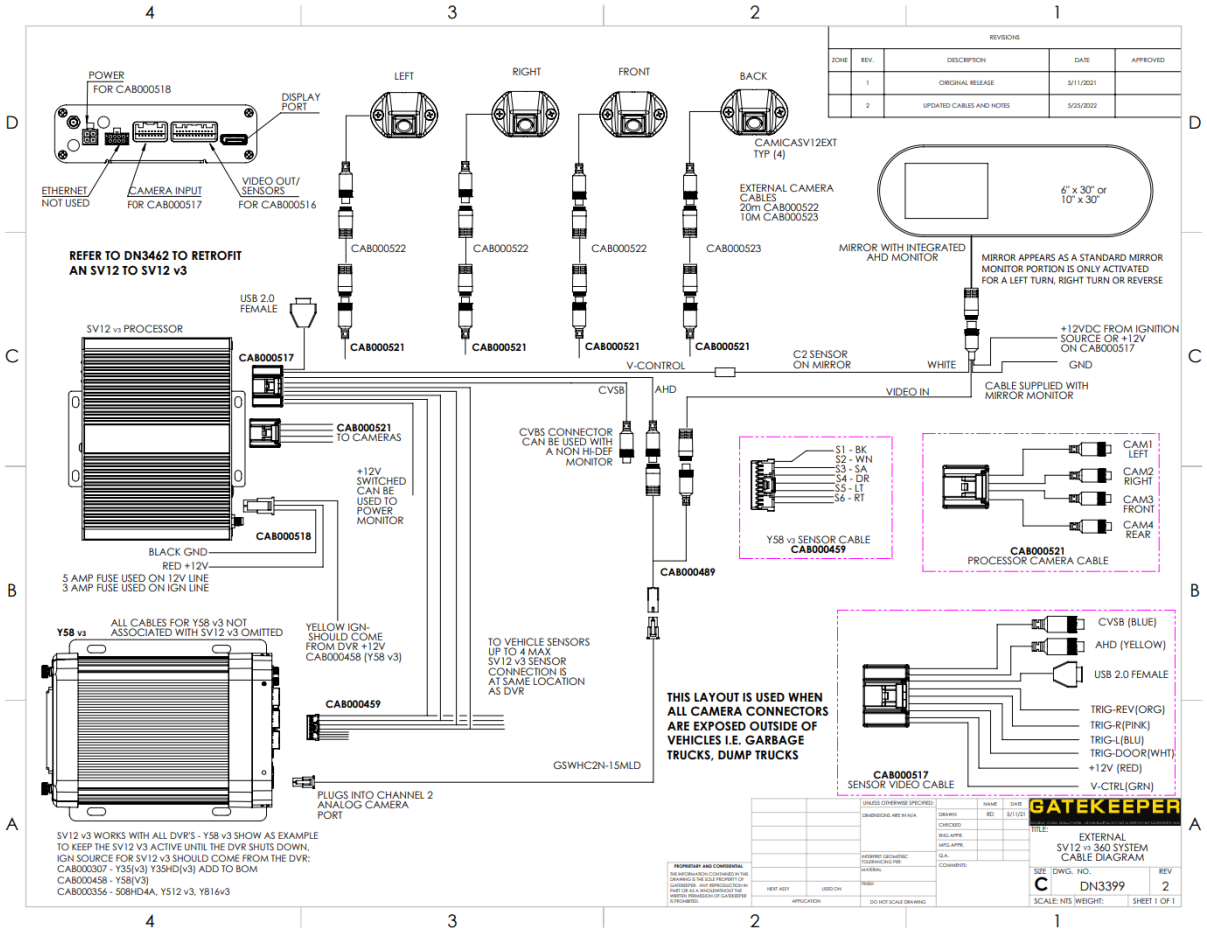
For transit buses, SV12 v3 has all 4 cameras mounted around the top of the bus so all cables are internal.

4.1.2 Cable Diagram for SV12 v3 (Conventional)



For school buses, SV12 v3 has a forward camera mounted in the grill of the bus, so it has an external cable for that camera along with the internal cables.

4.1.3 Cable Diagram for SV12 v3 (Exterior)



For trucks, like dump trucks, garbage trucks etc all 4 cameras are mounted and cables are run outside

4.2 Installation Guidelines

4.2.1 Instructions for Mounting the System

Installation Requirements

The device has an operating temperature range of -4°F to +155°F (-20°C to +70°C). Please ensure that the device is mounted in an area in which acceptable temperature ranges are experienced.

As part of installation best practices, it is recommended to mount the device in the vehicle cabin area where there is environmental control (i.e., heating and/or air-conditioning). This will extend the device operating life by not exposing it unnecessarily to adverse environmental conditions.

Please take a moment to read and understand the following important installation conditions to ensure the Customer Warranty will not be voided.

- DO NOT remove any enclosures/covers associated with the device as this will void the warranty.
- Remove the In-Line Power fuse prior to jump-starting the vehicle.
- Select a solid ground connection for the device.
- DO NOT use any third-party accessories, unless approved by Gatekeeper Systems.

- The device is designed for interior use only. Do not install in areas that are exposed to excessive moisture.
- Mount the device in a location that has good airflow and is not subject to excessive heat/cold variations.
- Ensure that the device is mounted where it is not easily accessible by non-authorized personnel.
- Ensure that ALL provided Split Loom are used around exposed cables. Grommets are to be used as directed by the install sheet. Failure to use provided Split Loom and Grommets will void the warranty.
- Gatekeeper Systems provides Tek Screws with which to mount the SV12 v3 – these have been tested and are approved for mounting.
- DO NOT plug in the cable to the processor until the wires have been connected

Connections

- Plug the CAB000517 cable on the back of the SV12 v3 video processor. The sensors on CAB000517 cable will connect to CAB000459 on DVR.
- On the other end of the CAB000517 cable, you have four standard connectors to connect the CVBS or AHD port to connect to the monitor, DVR, or the mirror display.
- CAB000516 SV12 v3 camera cable is to connect the cameras.

GND	**(A)** *(Black)*	Connect to the negative terminal of the battery, -12V. Typically, grounds are established in the fuse panel, and installers would need to connect there.
IGNITION	**(B)** *(Yellow)*	Connect to the vehicle ignition, +12V, the signal required to activate the device. Ensure that the provided 3 AMP fuse is used. Ignition is obtained from the "cold" side of the solenoid.
POSITIVE	**(C)** *(Red)*	Connect to the positive terminal of the battery, +12v. Ensure that the provided 15 AMP inline fuse is used. +12V is obtained from the "hot" side of the solenoid, or the cables that connect directly to the battery from the fuse panel

CAB000516

Wire Labelled as:	**Connect to:**
Left CAM	Left Camera
Right CAM	Right Camera
Front CAM	Front Camera
Rear CAM	Rear Camera
CBVS	D1 quality
AHD	Analog HD
USB	To transfer the files from and to SV12 v3 and connect to the mouse
V CTRL	To connect to mirror

Mounting the cameras

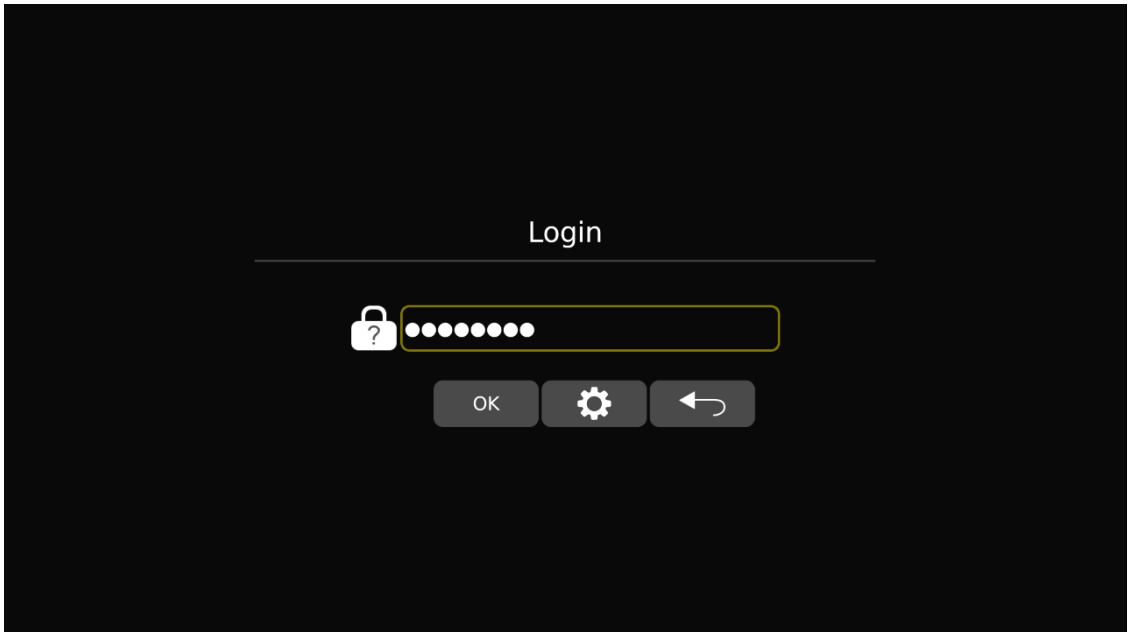
- Make sure that the cameras are mounted perpendicular to the ground.
- Don't mount the camera on the curve.
- Make sure to mount the cameras on the same height on the vehicle.

- All cables running through holes in sheet metal (ceiling, bulkhead, etc.) must be protected with grommets.

4.3 Login Credentials

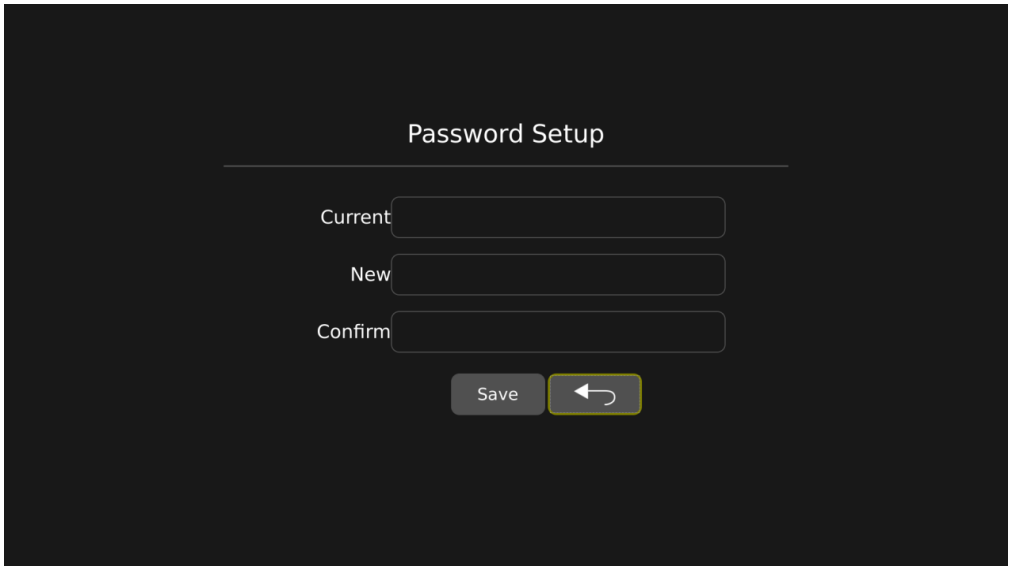
4.3.1 Login Screen

From the IR remote control, press menu. The login screen shows up.



Login Instructions	
	To input password: **DEFAULT SETTINGS:** • **88888888**
	To enter the settings menu.
	To setup new password.
	To return to the previous screen.

4.3.2 Password Setup



After clicking the password setup button on the login screen the password setup screen shows up.

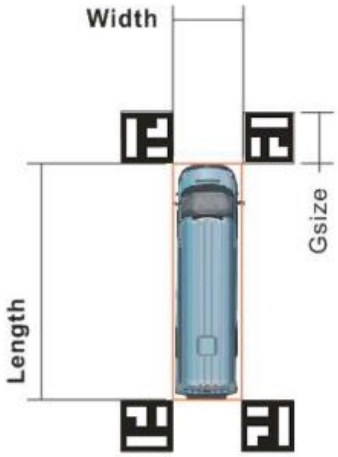
Password Setup Instructions	
	To input the current password.
	To input the new password.
	To confirm the new password.
	To save the new password.
	To return to the previous screen.

4.4 Handling Calibration

4.4.1 Board Sheet

1. We need 4 marking mats for the calibration. It is recommended to use a 100 x 100 cm mats with 20 x 20 cm black and white patterns as shown below.
2. Lay marking mats parallelly around the vehicle and make sure you can see the whole board sheet through the camera. Lay them as close as possible to the vehicle. Place the "A" marked corner closer to the vehicle.

3. The calibration mats may need to be moved so that the mirrors do not block the view of the calibration mats. (Dark shadows and or reflecting sunlight on one or more of the mats, may require the movement of the mats and or moving vehicle to another area to avoid harsh sunlight and shadows)



4.5 Upgrade from SV12 to SV12 v3

Please refer to the following for upgrading SV12 to SV12 v3:

1. Upgrade SV12 video processor to SV12 v3 video processor:

You will need the following to replace SV12 video processor with SV12 v3 video processor (For retrofit SV12 Conventional video processor and SV12 Transit video processor):

- SV12 v3 video processor
- SV12 v3 medusa camera cable (CAB000516)
- Retrofit adapter cable (CAB000531)

You will need the following to replace SV12 video processor with SV12 v3 video processor (For retrofit SV12 Exterior video processor):

- SV12 v3 video processor
- SV12 v3 medusa camera cable (CAB000516)

- Retrofit adaptor cable (CAB000531)
- 4 Adapter cable for exterior camera – M/M (Male Aviation to Male Molex (CAB000424)

You can use the same calibration mat (G4-Calibration Mats), and connect SV12 cameras with existing camera cables (GSWHC2N-15MLD, GSWHC2N-30MLD, GSWHC2N-60) to the new SV12 v3 camera cable (CAB000516).

2. Upgrade SV12 camera to SV12 v3 camera:
If a camera is not working and you want to replace it with the new SV12 v3 camera, you can replace the particular camera with a SV12 v3 camera. If you need all 4 cameras to be replaced you can purchase 4 SV12 v3 cameras. You can use the same calibration mat (G4-Calibration Mats) and connect the new cameras with existing standard camera cables (GSWHC2N-15MLD, GSWHC2N-30MLD, GSWHC2N-60) to the SV12 camera cable CAB000470.

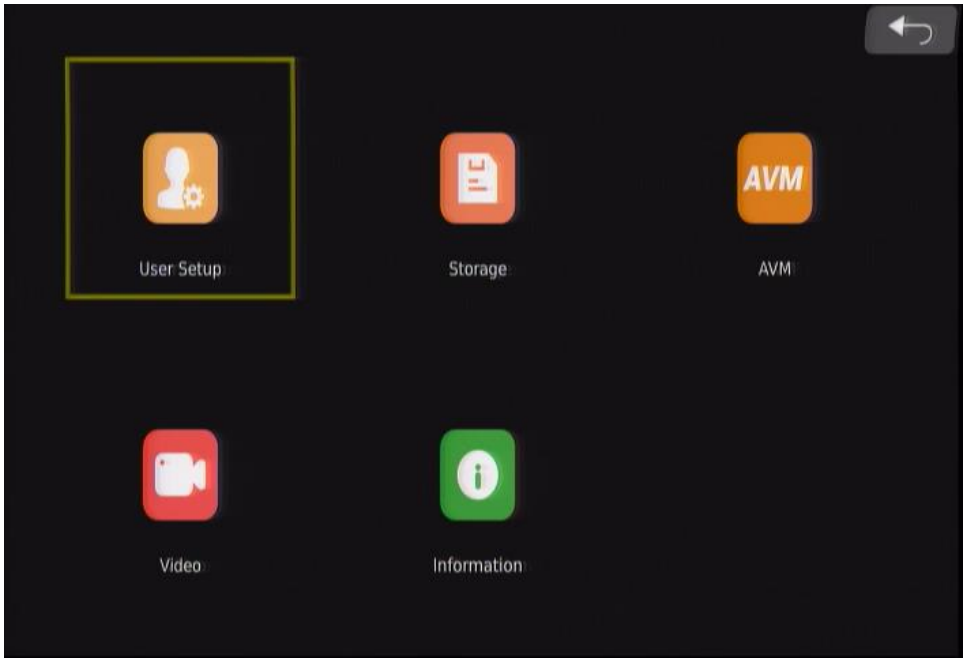
If you want more camera cables (GSWHC2N-15MLD, GSWHC2N-30MLD, GSWHC2N-60) you have to order them separately.

3. Upgrade whole SV12 system to SV12 v3:
You will need the following to replace SV12 video processor with SV12 v3 video processor:

- SV12 v3 video processor
- 4 SV12 v3 cameras
- Power cable (CAB000518)
- Sensor cable (CAB000517)
- SV12 v3 camera cable (CAB000516)
- SVM 3D Calibrate Tool_V1.3

You can use the old calibration mats, and the existing standard camera cables (GSWHC2N-15MLD, GSWHC2N-30MLD, GSWHC2N-60).

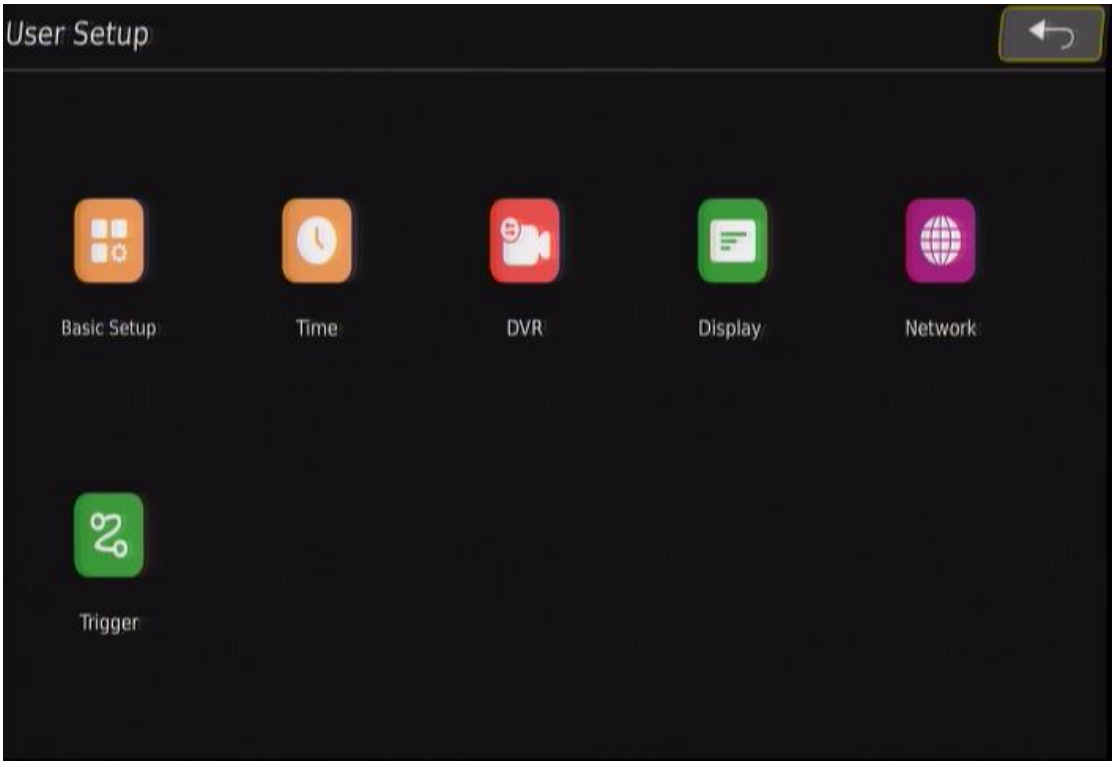
4.6 Main Menu Interface



To navigate through Setting menu, use the shift key from the IR remote control.

4.6.1 User Setup

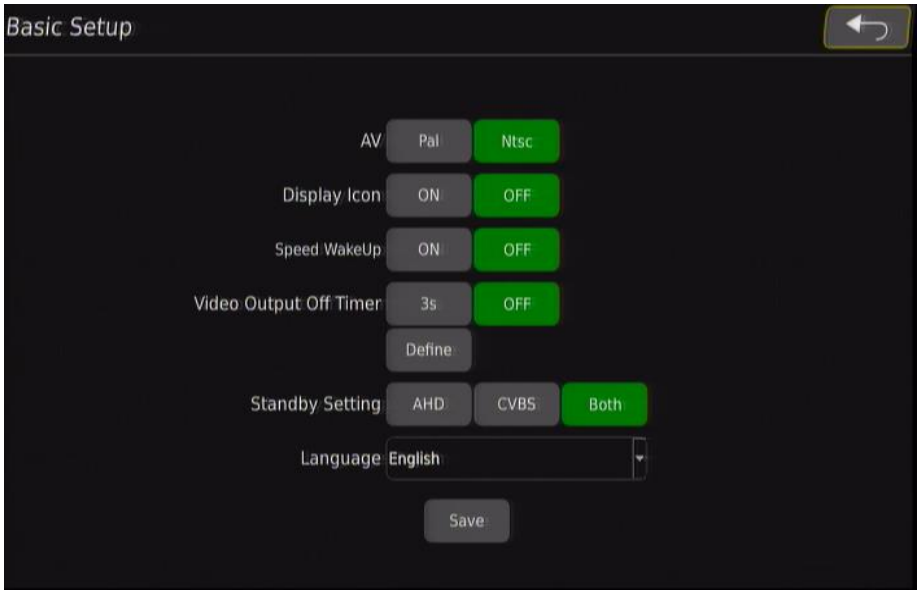
Navigate To – ***Setting → User Setup***



User Setup	To setup the basic settings, DVR settings, display settings and network settings

4.6.1.1 Basic Setup

Navigate To – ***Setting → User Setup → Basic Setup***

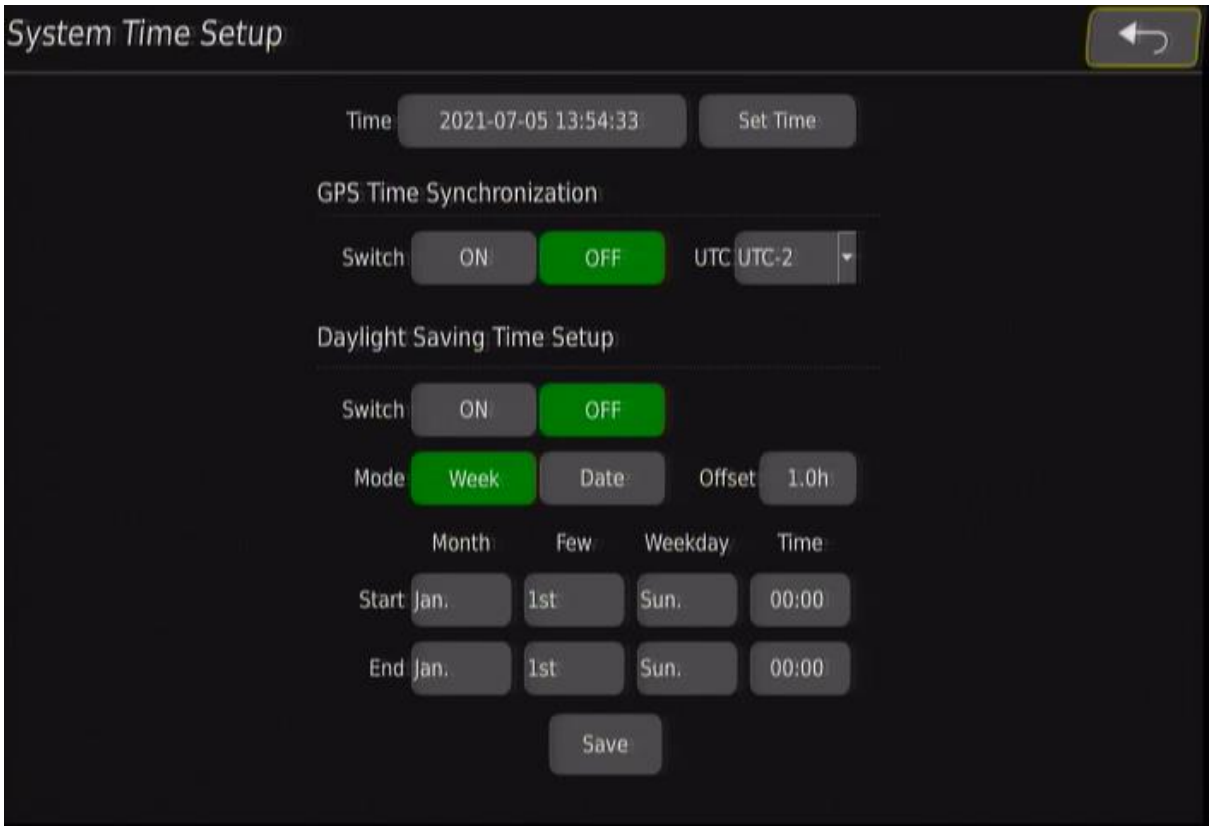


Basic Setup	To setup basic interface settings.	
	AV	To set the region. • PAL • NTSC • **DEFAULT SETTINGS:** • **NTSC**
	Display Icon	To hide/display the home page icons. **DEFAULT SETTINGS:** • **OFF**
	Speed WakeUp	To wake up the device at certain speed. **DEFAULT SETTINGS:** • **ON**
	Video Output Off Timer	When the ignition line loses its signal, the DVR stays on and outputs video for the specified time • 3s • OFF • Define **DEFAULT SETTINGS:** • **OFF**
	Standby Setting	To enable the standby setting mode from the following options: • AHD • CVBS • Both

		DEFAULT SETTINGS: • **Both**
	Language	To set the language from the following options: • English • Chinese • French • German • Dutch • **DEFAULT SETTINGS:** • **English**
	Save	To save the settings.

4.6.1.2 Time

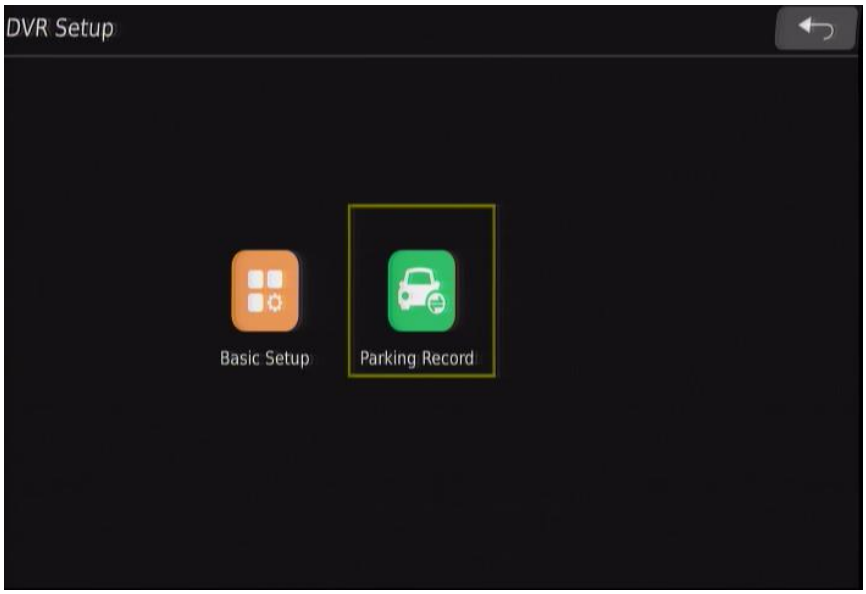
Navigate To – ***Setting → User Setup →Time***



System Time Setup	To setup system time.	
	Time	To change the time. After changing the time, click set time to save the settings.
	GPS Time Synchronization	
	Switch	To enable/disable the GPS time synchronization.
	Daylight Saving Time Setup	
	Switch	To enable/disable Daylight saving.
	Mode	To set the mode from the following options: • **Day** • **Week**
	Start	To set the start date and time.
	End	To start the end date and time.
	Save	To save the settings.

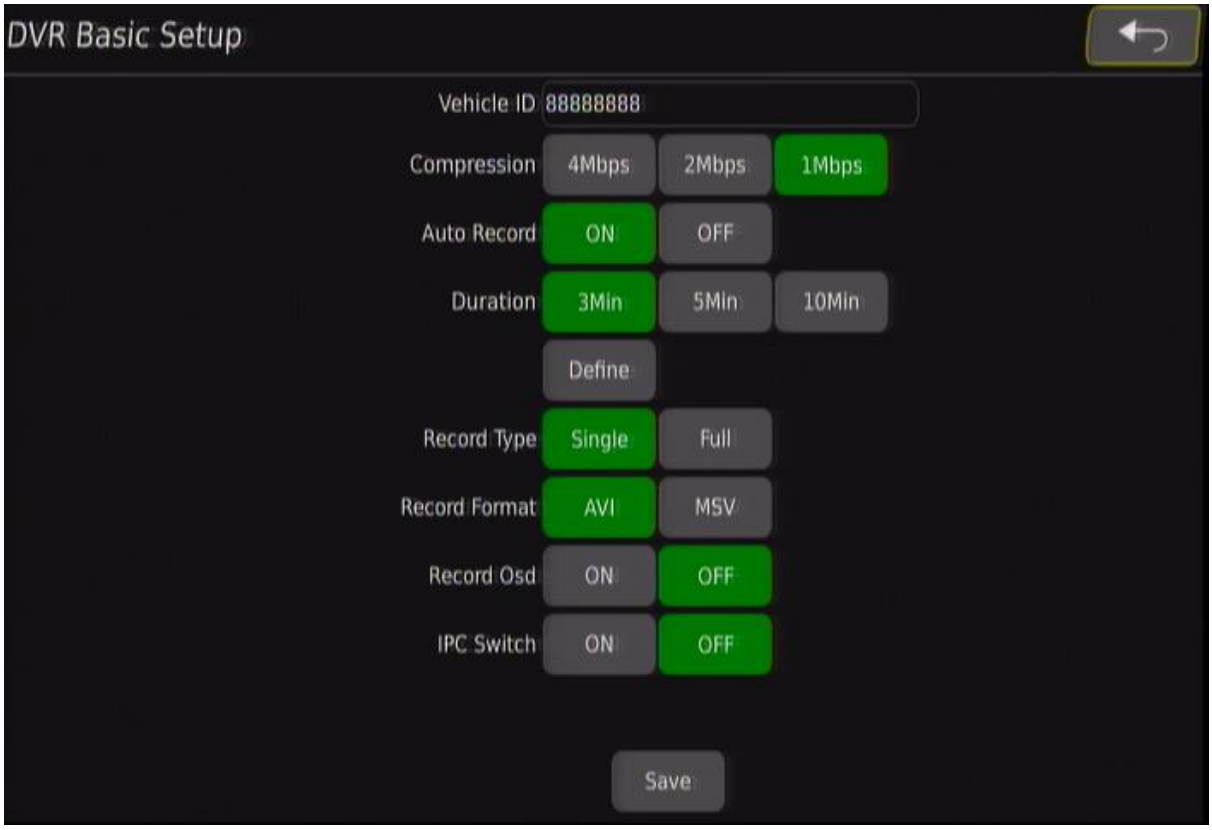
4.6.1.3 DVR

Navigate To – ***Setting → User Setup → DVR***



4.6.1.3.1 DVR Basic Setup

Navigate To – ***Setting → User Setup → DVR Setup → DVR Basic Setup***



DVR Basic Setup	To setup basic recording settings and recording event settings interface.	
	Vehicle ID	To set the vehicle ID. **DEFAULT SETTINGS:** • **Blank Field**
	Compression	To set the video compression setting from the two options: • 4Mbps • 2Mbps **DEFAULT SETTINGS:** • **4 Mbps**
	Auto Record	To enable/disable the auto recording. **DEFAULT SETTINGS:** • **ON**
	Duration	To set the video duration from the following options: • 3Min • 5Min • 10Min • Define (3-30Min) **DEFAULT SETTINGS:** • **3Min**
	Record Type	To set the recording type from the two options: • Single • Full **DEFAULT SETTINGS:** • **Single**
	Record Format	To set the recording format from the following options: • AVI • MSV **DEFAULT SETTINGS:** • **AVI**
	Record OSD	To enable the OSD recording. **DEFAULT SETTINGS:** **OFF**
	IPC Switch	To enable the IPC Switch. **DEFAULT SETTINGS:** • **OFF**
	Save	To save the settings.

4.6.1.3.2 Parking Record

Navigate To – Setting → User Setup → DVR Setup → Parking Record

DVR Parking Record Setup	To setup parking record on the system.	
	Switch	To enable/disable the parking record.
	Voltage	To set the voltage in between 9-24V. **DEFAULT SETTINGS:** • **10**
	Delay Shutdown	To set the delay shutdown in between 1-1440min. **DEFAULT SETTINGS:** • **3**
	Save	To save the settings.

4.6.1.4 Display

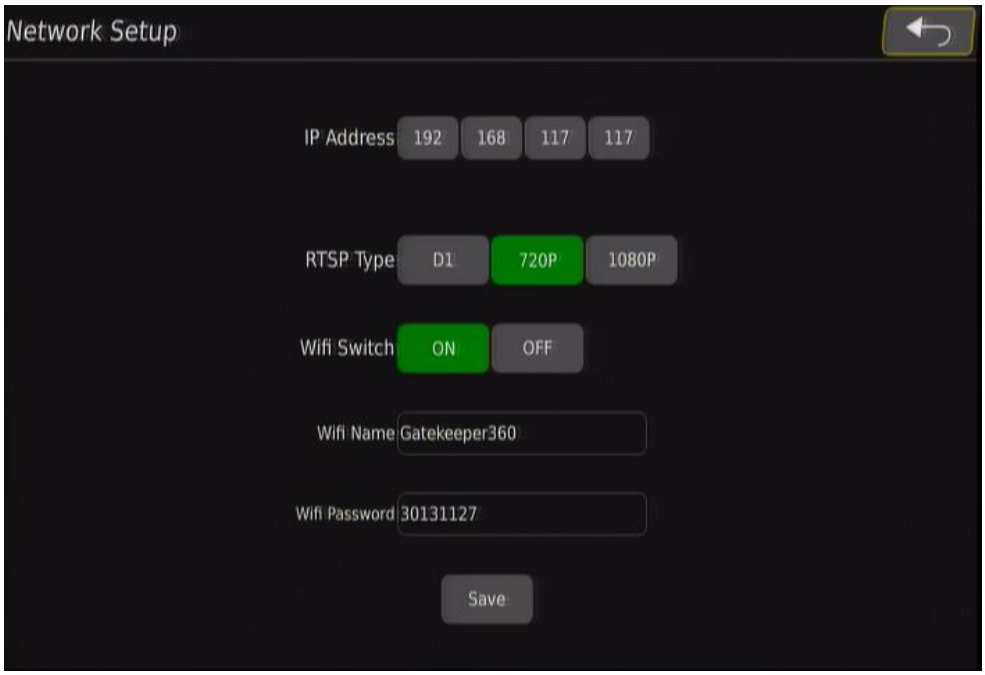
Navigate To – ***Setting → User Setup → Display***

Display Mode Setup	To setup display mode settings.	
	SD Screen Adjustment	To adjust parameter for CVBS output screen. **Note:** Re-adjustment is required after switching between NTSC and PAL
	Logo Setup	To setup the start-up logo.
	Blending Region	To enable/disable the overlapping of the panorama image overlapping area. **DEFAULT SETTINGS:** • **ON**
	View Mode	To select the view mode from the two options: • 2D • 3D **DEFAULT SETTINGS:** • **3D**
	Compatibility Mode	To enable the compatibility mode of the device with the vehicle mirror. • ON • OFF **DEFAULT SETTINGS:** • **ON**

	Instant Rear View	To enable/disable the rear video as soon as the rear camera gets powered up. **DEFAULT SETTINGS:** • **OFF**
	Front Cursor	To enable/disable the front cursor for parking line. **DEFAULT SETTINGS:** • **OFF**
	Back Cursor	To enable/disable the back cursor for parking line. **DEFAULT SETTINGS:** • **ON**
	Vehicle Model Offset	To enable/disable the vehicle model offset. **DEFAULT SETTINGS:** • **ON**
	Default View	To select the default display mode setting at start-up from the following options: • Dual+Left • Dual +Right • Dual+Front • Dual +Back • Full Dual • Quad • IPC View **DEFAULT SETTINGS:** • **Dual + Front** • **IPC View**
	Save	To save the settings.

4.6.1.5 Network

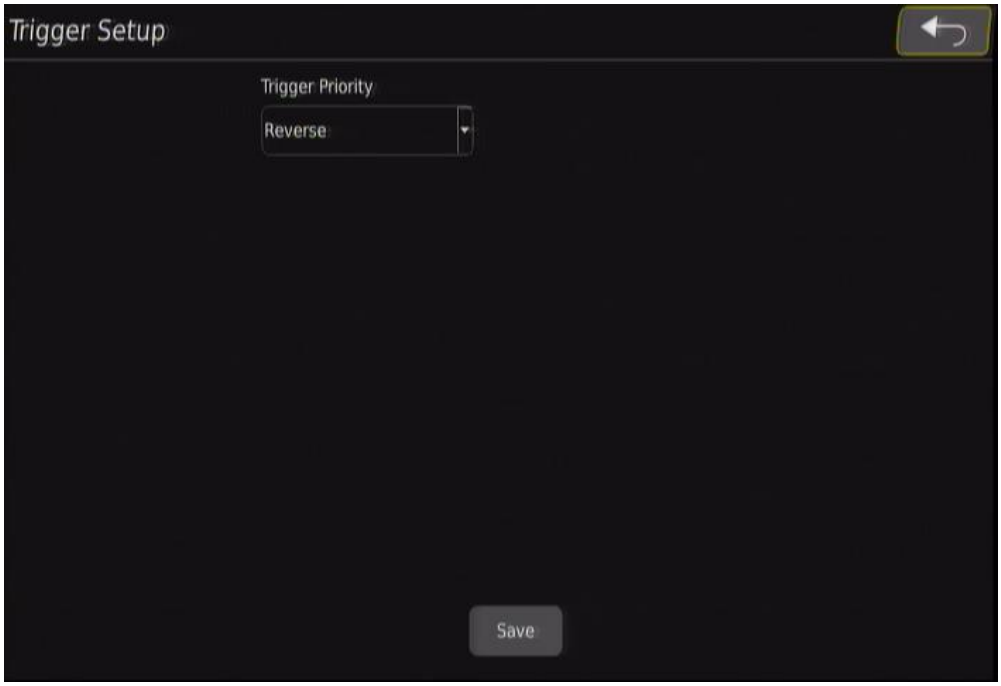
Navigate To – ***Setting → User Setup → Network***



Network Setup	To setup the network settings.	
	IP Address	To setup the IP address. **DEFAULT SETTINGS:** • **Blank Field**
	RTSP Type	To setup the network playback video stream resolution from the following options: • D1 • 720P • 1080 **DEFAULT SETTINGS:** • **720P**
	Wi-Fi Switch	To enable/disable the Wi-Fi hotspot setting. **DEFAULT SETTINGS:** • **ON**
	Wi-Fi Name	To setup the Wi-Fi name. **DEFAULT SETTINGS:** • **Blank Field**
	Wi-Fi Password	To enter the Wi-Fi password. **DEFAULT SETTINGS:** • **Blank Field**
	Save	To save the settings.

4.6.1.6 Trigger

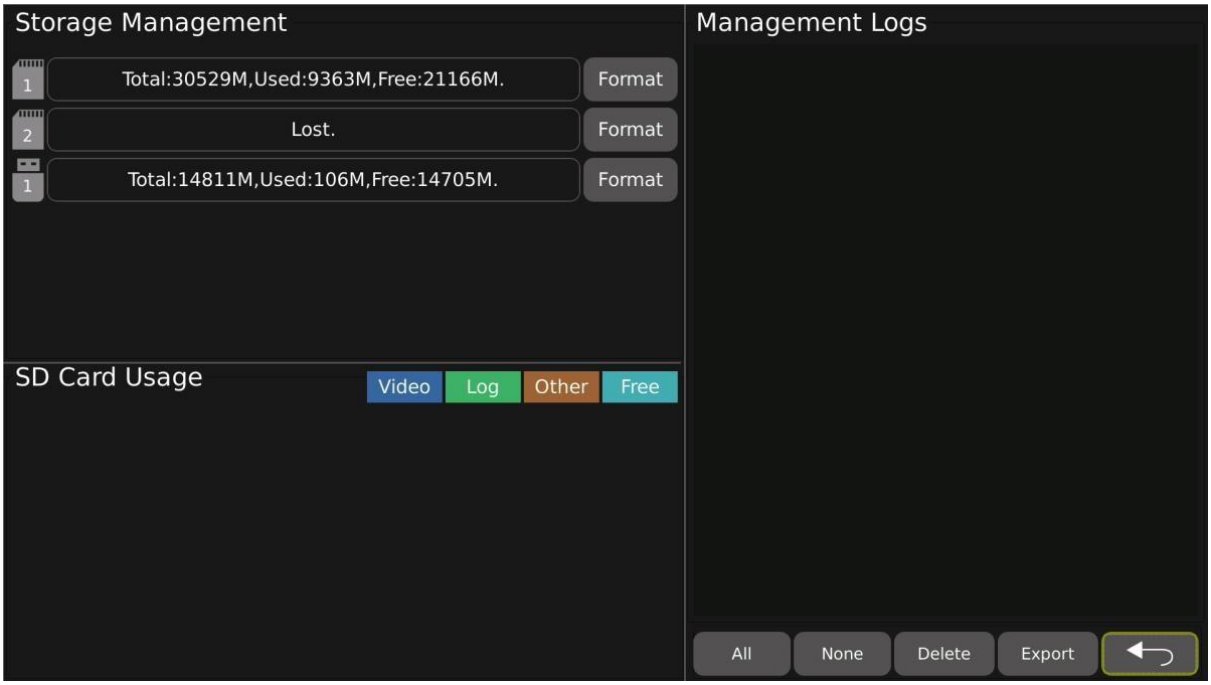
Navigate To – ***Setting → User Setup → Trigger***



Trigger Setup	To setup the trigger settings.	
	Trigger Priority	To set the first preference to an alarm trigger over the other. **DEFAULT SETTINGS:** • **Reverse**

4.6.2 Storage

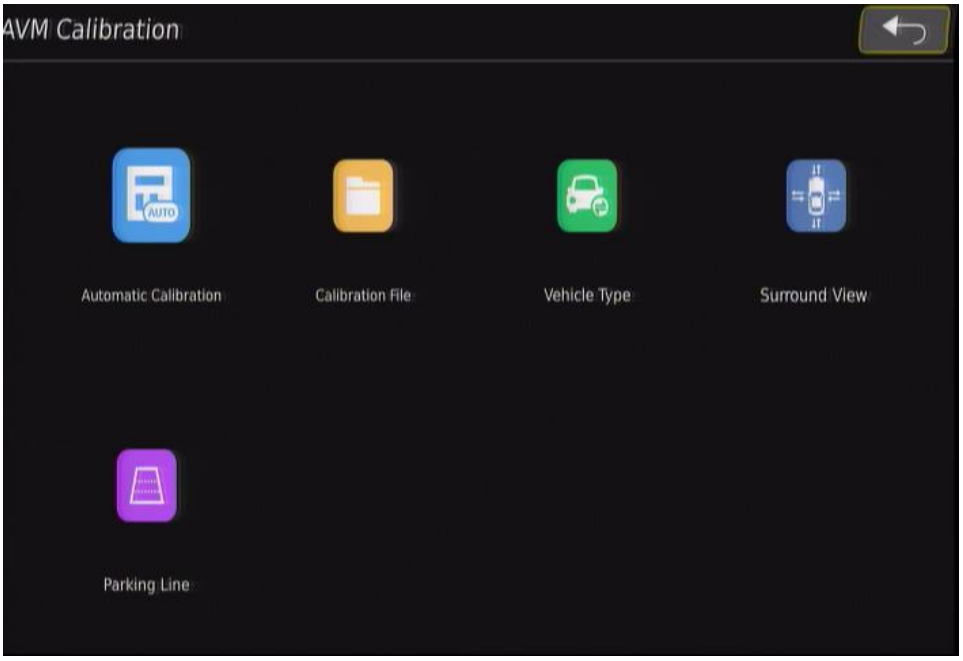
Navigate To – Setting → Storage



Storage	To setup the storage management settings, including SD card/U disk usage and format. It can support up to 2pcs SD card and 1 U disk.	
	Format	To format the SD card or U disk.
	SD Card Usage	To see the SD card usage.
	Management Logs	To see the system logs list. • All: To select all logs. • None: To unselect the selected logs. • Delete: To delete the selected logs. • Export: To export the selected logs.
		To return to the previous screen.

4.6.3 AVM

Navigate To – Setting → AVM

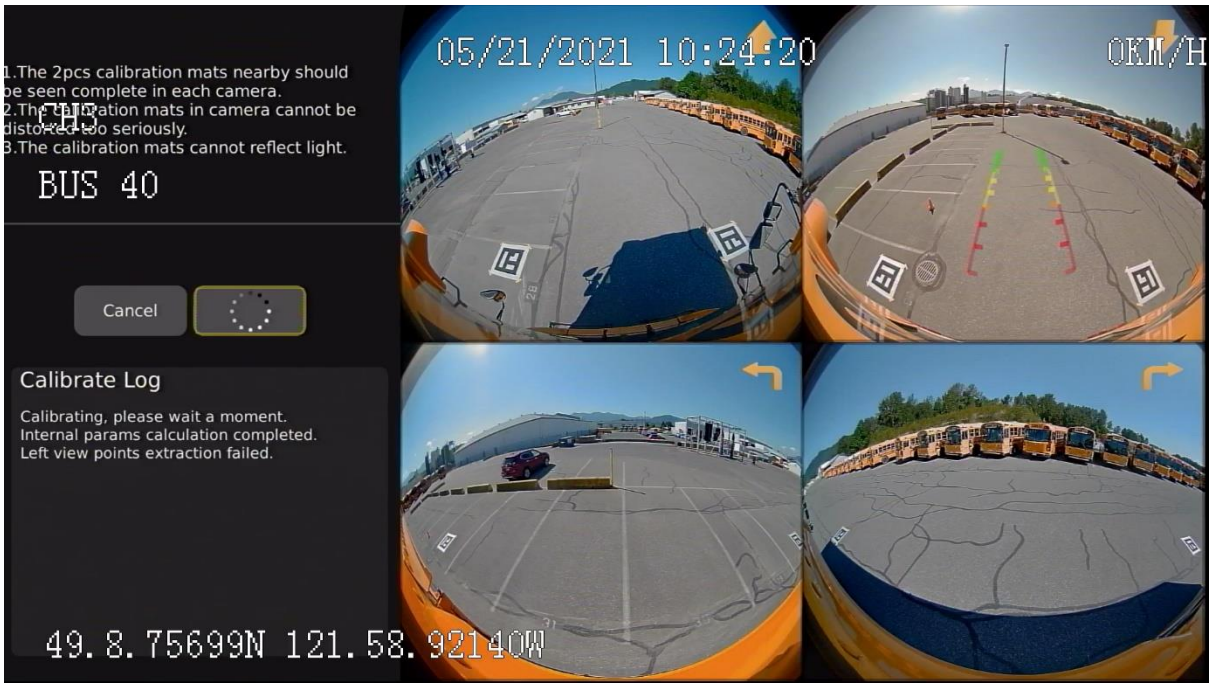


AVM	To setup the 360° panorama calibration, calibration file import/export, vehicle model switching and displaying mode setting.

4.6.3.1 Automatic Calibration

Navigate To – ***Setting → AVM → Automatic Calibration***

Click on Calibrate to start calibration.



The calibrate log appears.

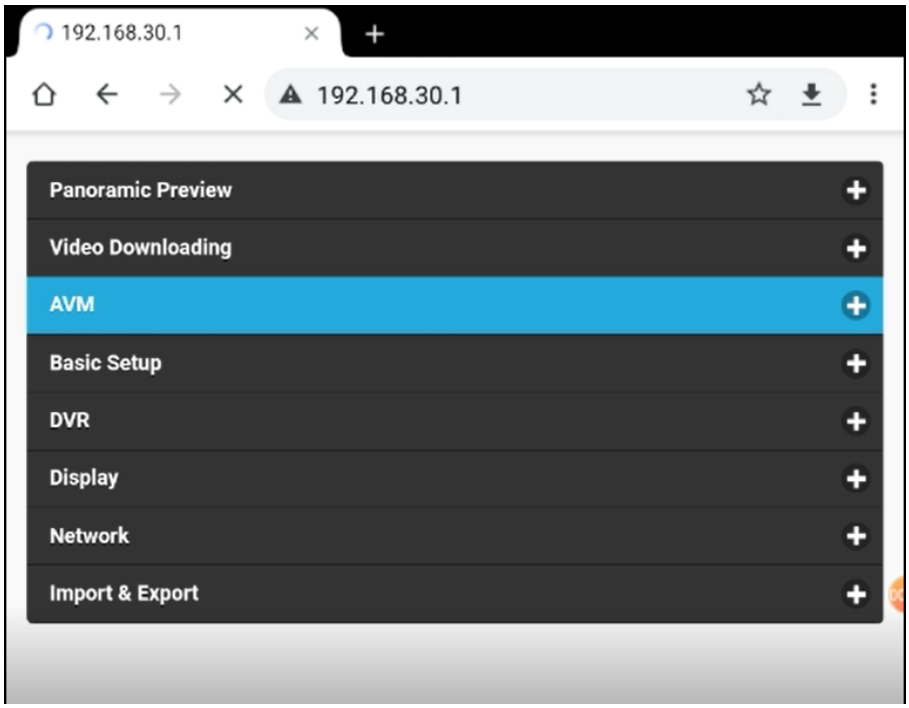
Calibrate succeed dialog box appears.

Note: After the automatic calibration is successful, it will jump to the following interface:

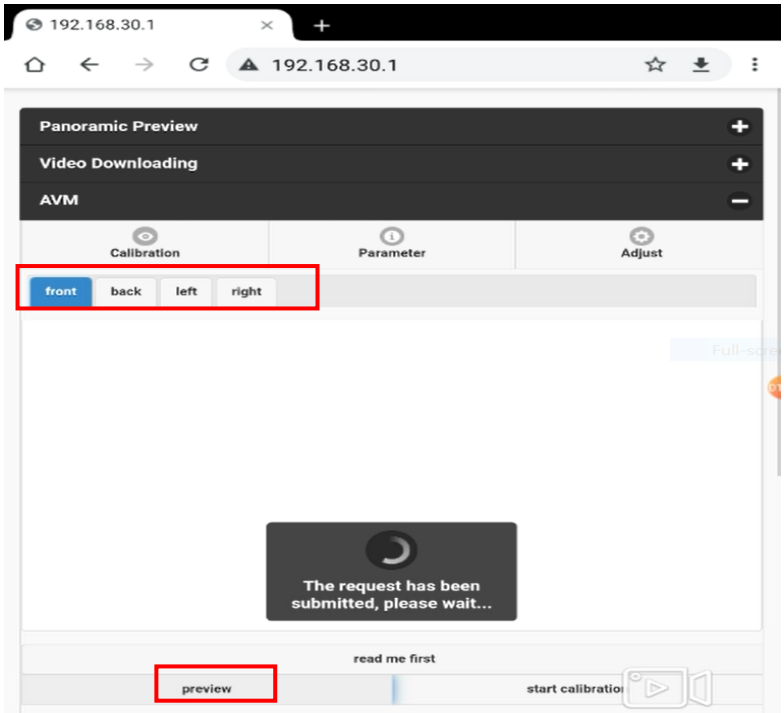
Automatic Calibration	To change the settings after calibration results.	
	Vehicle Type	To change the vehicle type.
	Precision	To adjust the precision for vehicle length and width.
	Vehicle Length	To increase/decrease the vehicle length.
	Vehicle Width	To increase/decrease the vehicle width.
		To move the vehicle model (up/down/left/right).
	OK	To update the calibration effect after adjustments.
	Adjust	Jump to the calibration internal parameter adjustment page.
	Save	To save the calibration result.
		To return to the previous screen.

4.6.3.1.1 Calibration Using Internet

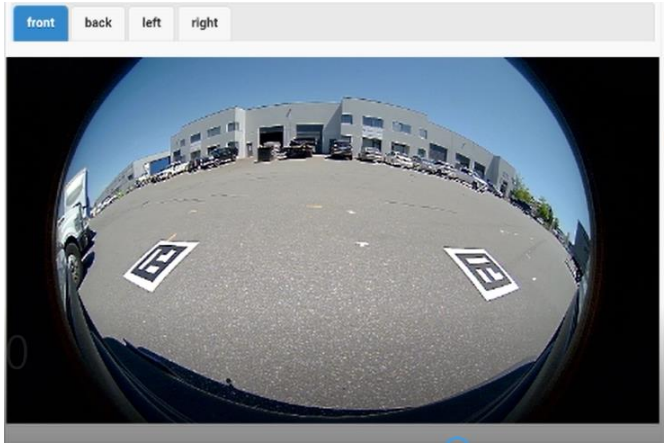
- Attach the Wi-fi antennae to the SV12 v3.
- Connect to the same Wi-Fi on the tablet.
- Open the Internet Explorer.
- Search for the IP Address 192.168.30.1.
- The menu opens in the window.

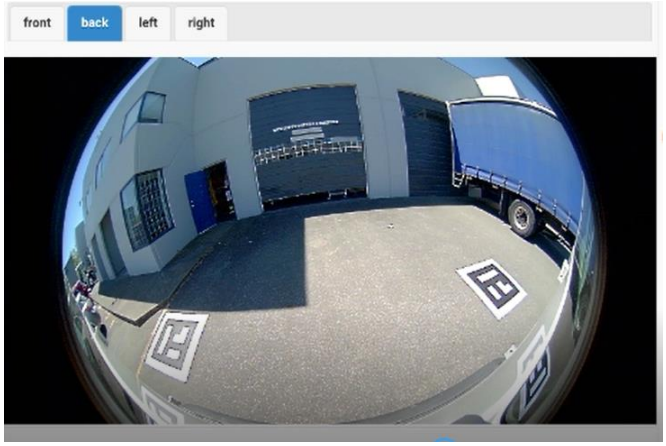


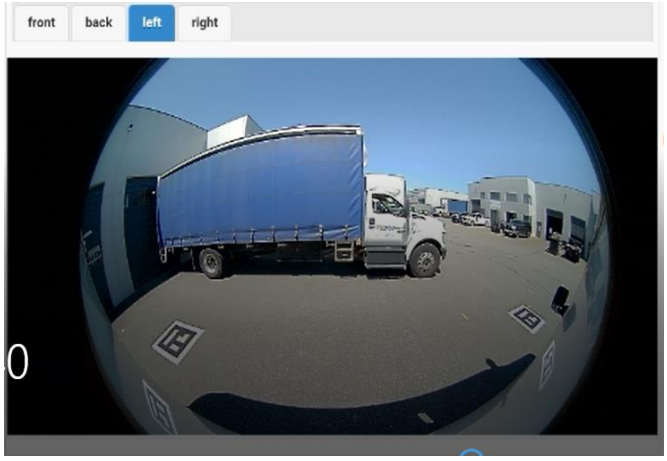
- Click on AVM.

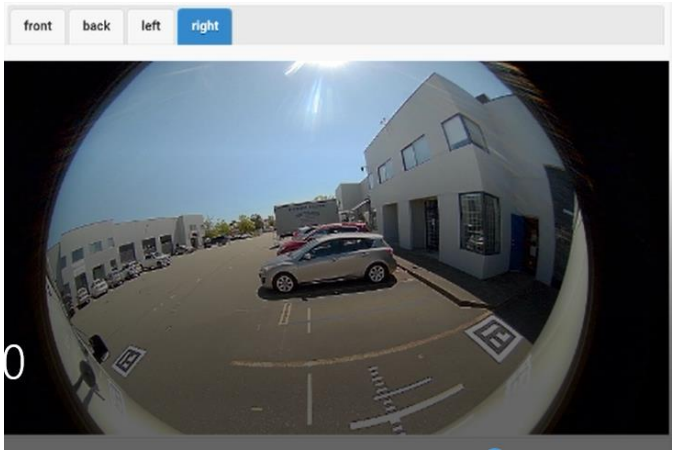


- Click on preview.
- View the front, back, left and right image by navigating through the menu on top.

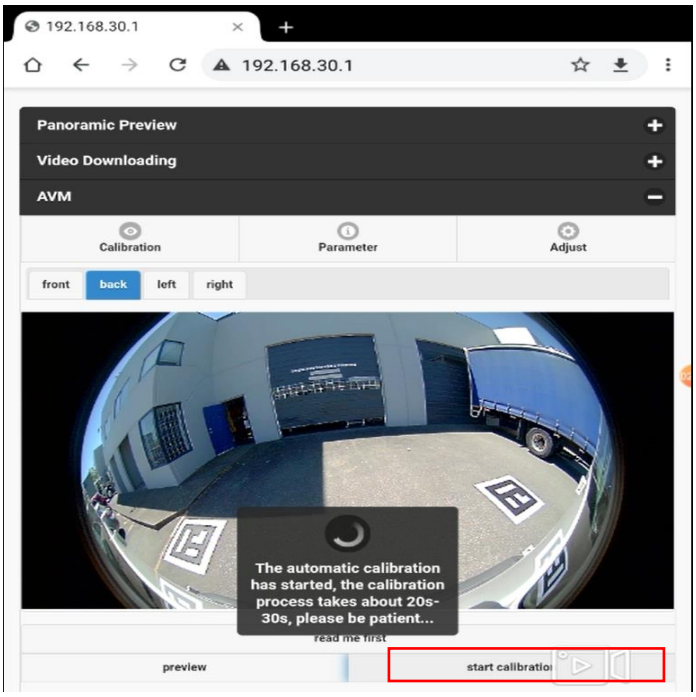




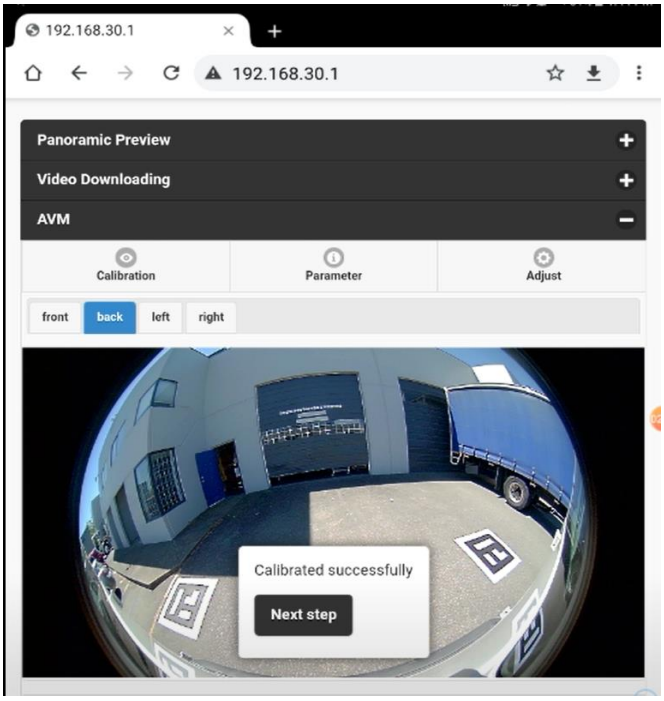




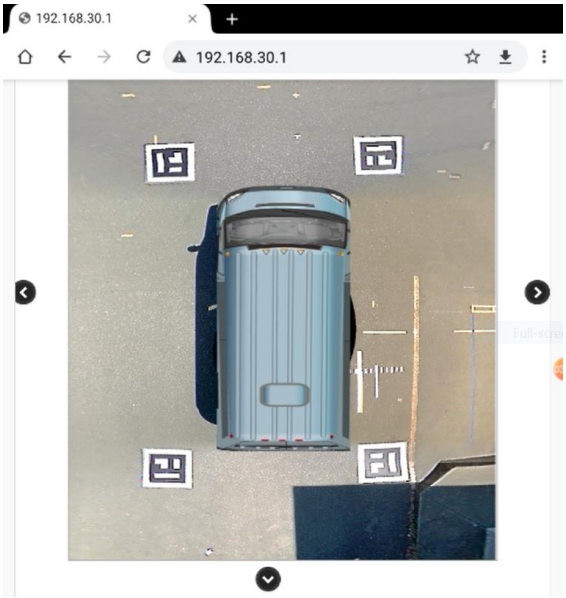
- Click on Start Calibration.



- Click on Next Step.



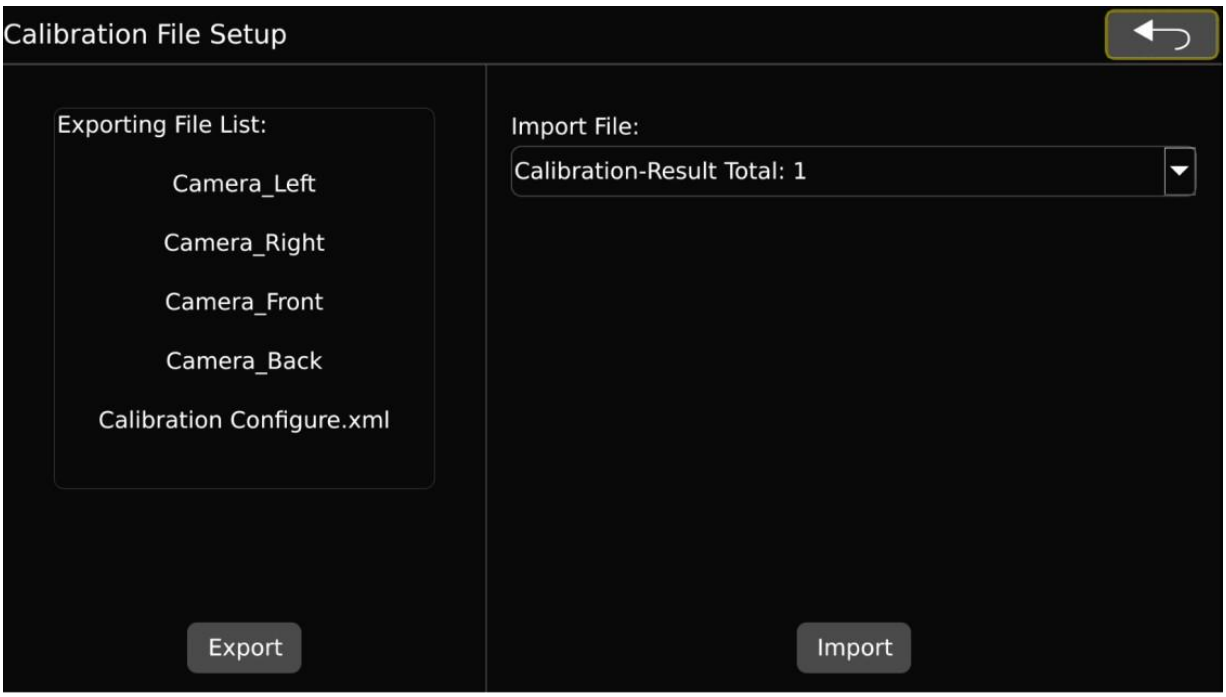
- Adjust the width and length of the bus by clicking on + and – sign under the picture labelled as vehicle length and vehicle width.
- Move the bus to cover any overlays using 4 arrows around the picture.



- Click on update.
- Click on save.
- The device will reboot.

4.6.3.2 Calibration File

Navigate To – ***Setting → AVM → Calibration File***



Note: Connect the USB with the import file before entering the menu.

Calibration File	To export calibration picture resources and import calibration files.	
	Export	Export the calibration picture file to USB, the resources include: 4 channel images + xml file.
	Import	Import the calibrated file. **Note:** Make sure to select the file with the correct name.

Let the system finish exporting/importing all the files before you pulled out the USB pen drive. Otherwise, you may lose some files.

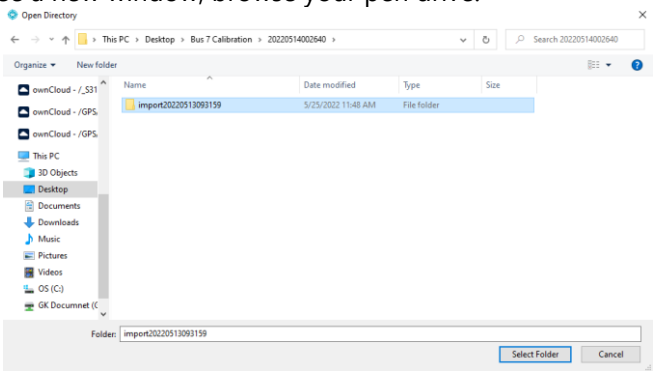
After exporting the calibration picture file, remove the USB from the video processor and plug it into a window-based pc. Copy the whole folder and paste it into your pc. Open SVMCalibrateTool_v1.3 software.

4.6.3.2.1 SVM 3D Calibrate Tool_V1.3

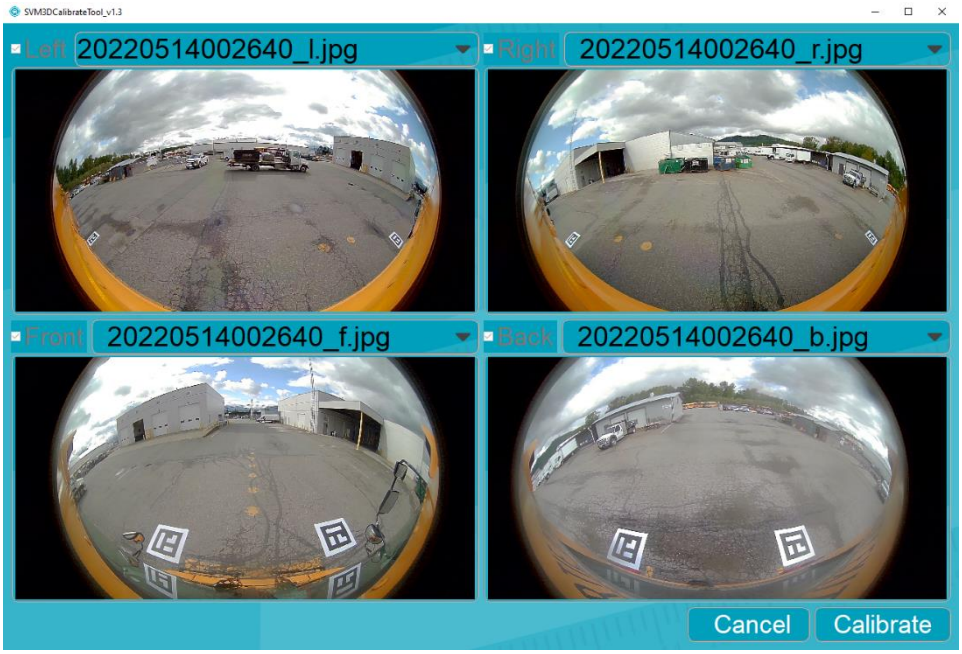
Import Settings to Calibration Tool

- Plug-in the USB pen drive into your window-based pc.
- DO NOT format the USB pen drive.
- You must see a folder named 20220514002640 (first four numbers are the year, followed by month, followed by day).
    - File naming break down – for example, a file name is *calibrate20220514002640*: *calibrate* means the file is exported from the video processing unit,
      2022 is the year,
      05 is the month,
      14 is the date, then
      002640 is the time of the file modification.

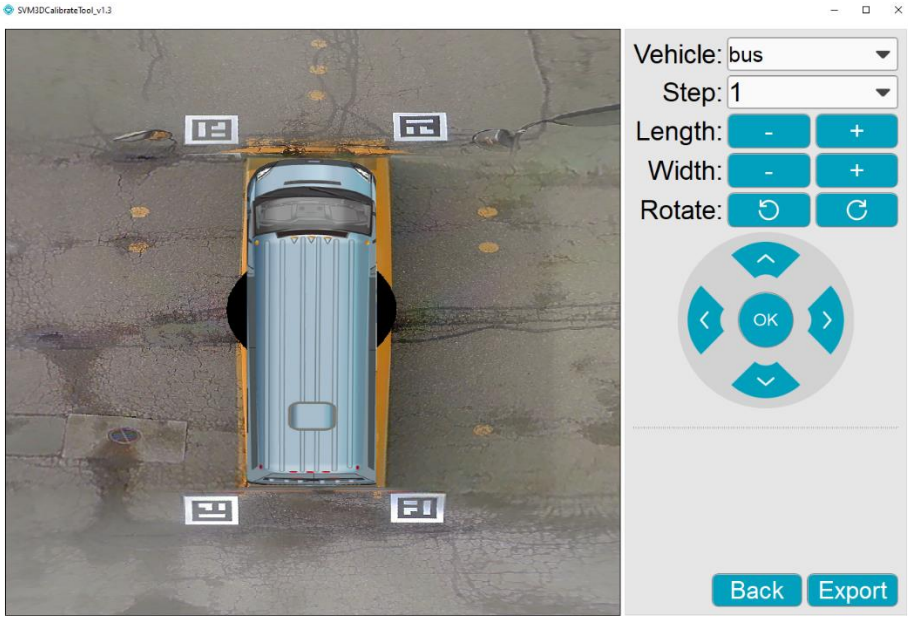
- Click on the "open a file" icon.
- Then you will see a new window, browse your pen drive.



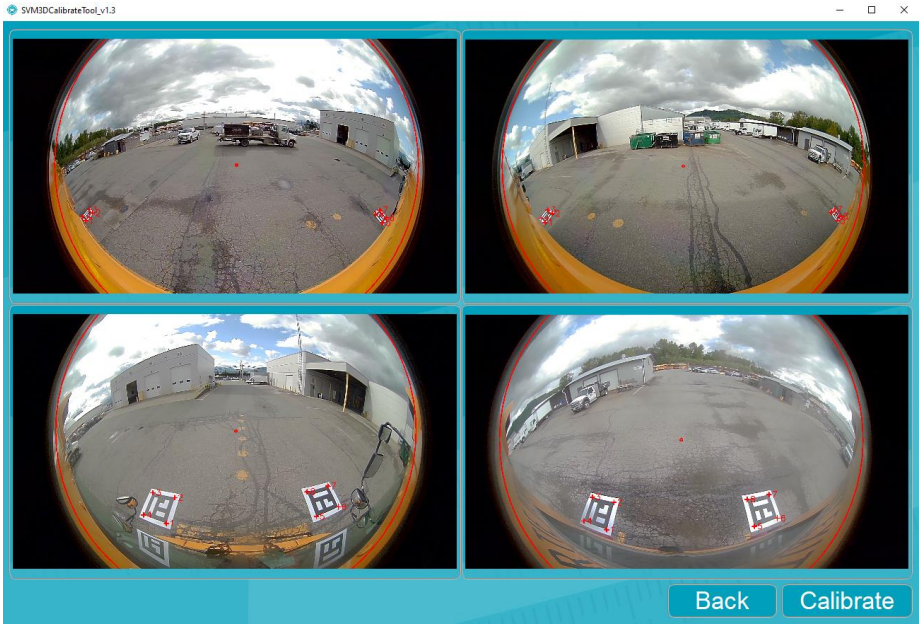
- Select the folder importXXX from the pen drive that you want to calibrate.
- Click on the "Select Folder" button.



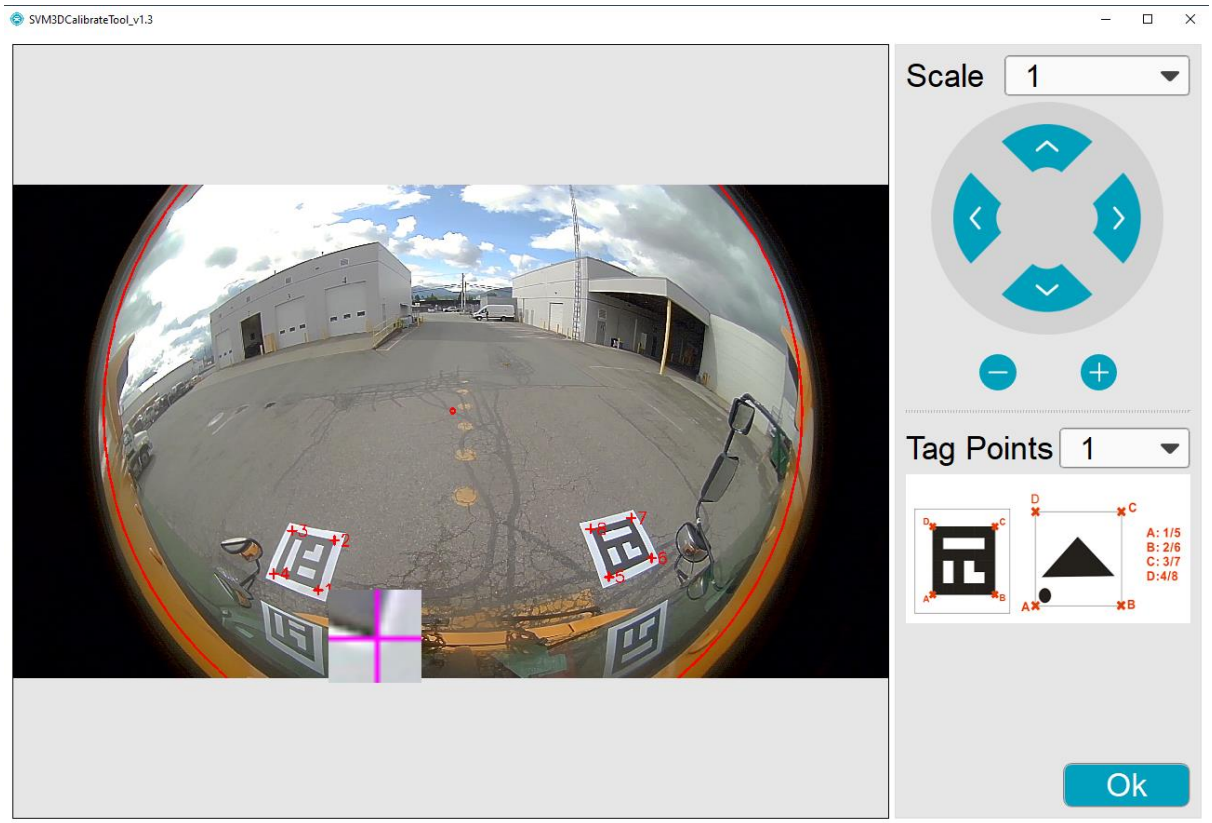
- The four camera images will appear (Left, Right, Front, Rear)
- Ensure The calibration mats are fully visible in each image, and not obstructed by mirrors or an open door.
- Click on the "Calibrate".



- The calibration adjustment screen will come up.
- If calibration fails, you will end up at a screen with the four camera images.

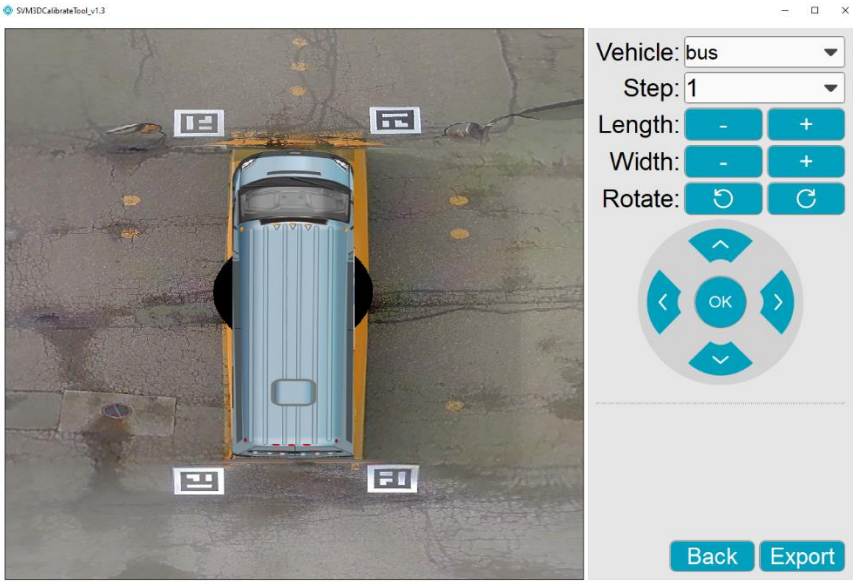


- Verify that each camera sees two full mats
- Verify no dark shadows cover or partially cover mats (if so, adjust mats out of shadows) and start again.
- Verify that none of the mats are reflecting sunlight which obstructs camera from seeing pattern on the mats (if so, adjust mats) and start again.
- If message Tag Points missing, double click on each image and verify tag points are in correct location.

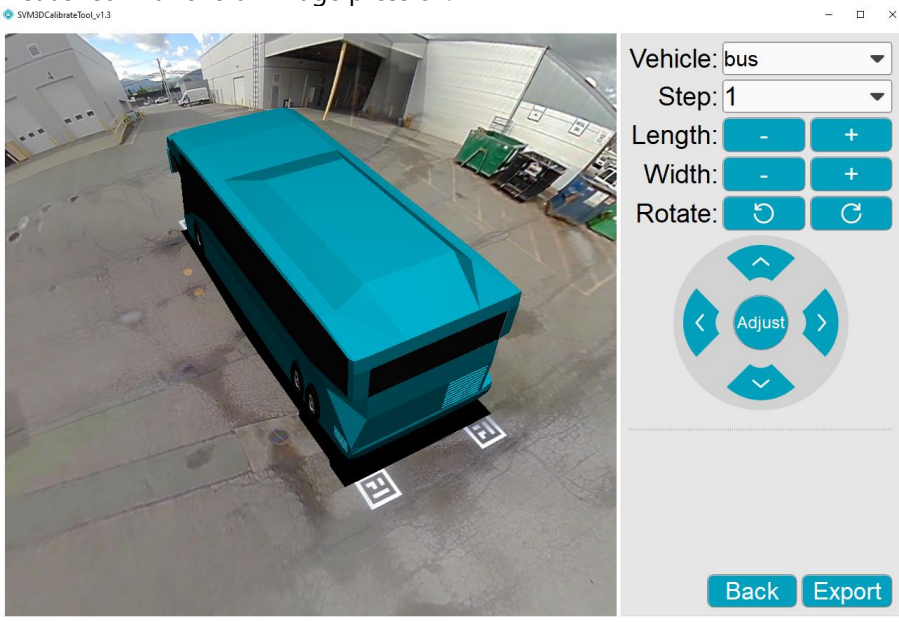


- Select Tag Points drop down menu to select tag point number
- Use the zoom square and place tag points in corresponding location
- Ensure Tag Points are not on reflect surfaces of the vehicle (ex. Reflection on windshield)

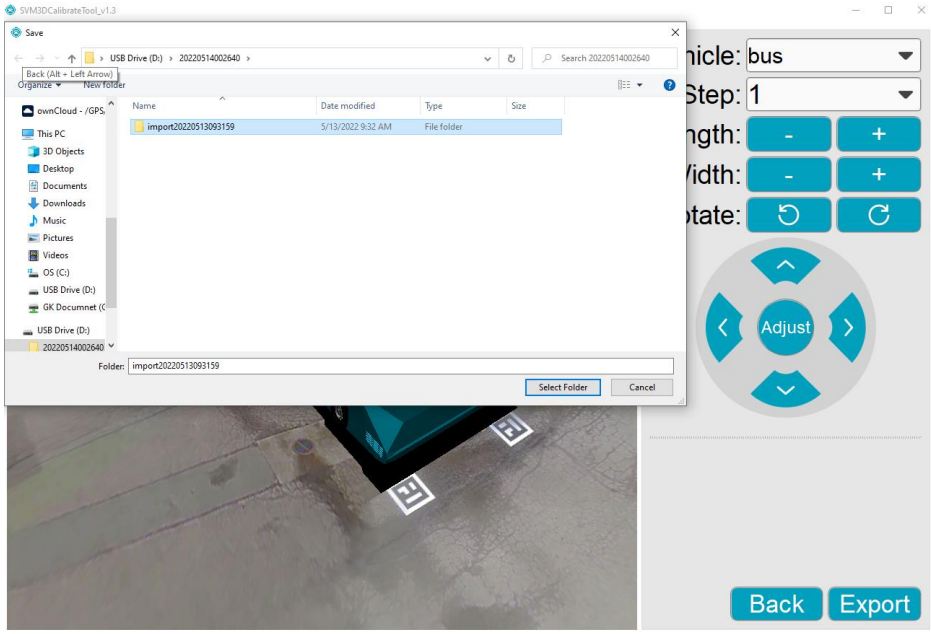
- Once the 8 Tag Points have been placed on the mats press OK.
- Repeat for each camera image (Left, Right, Front, Rear).
- Press Calibrate Button.
- If Calibration fails or Tag Points missing again, move mat positions and start again.



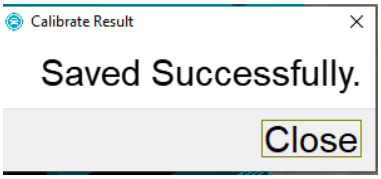
- Use the Length – and + buttons to decrease or increase the length of vehicle.
- Use the Width – and + buttons to decrease or increase the width of the vehicle.
- Cover any black zone with the vehicle overlay.
- Use the rotate buttons to rotate vehicle if not straight in the image.
- The four directional arrows can be used to move the overlay image in the corresponding direction.
- When satisfied with overall image press ok.



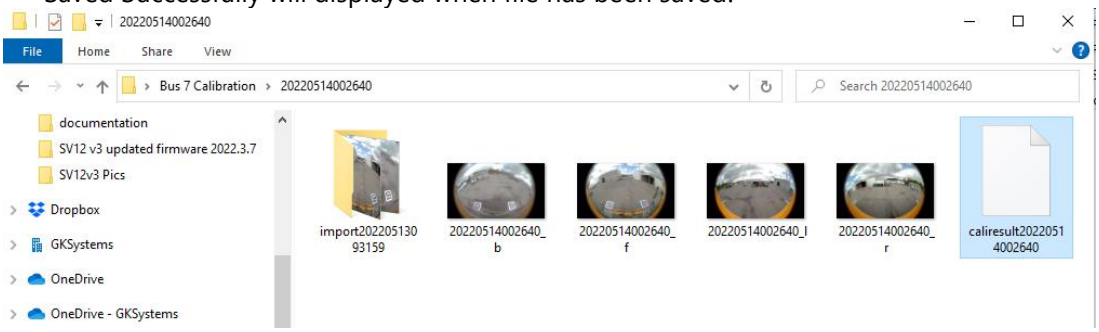
- By pressing the left mouse button while scroll mouse is over the image, you can rotate the image 360-degrees to verify calibration image.
- If not satisfied, more adjustments can be made by pressing the Adjust button.
- When complete, Press Export button.



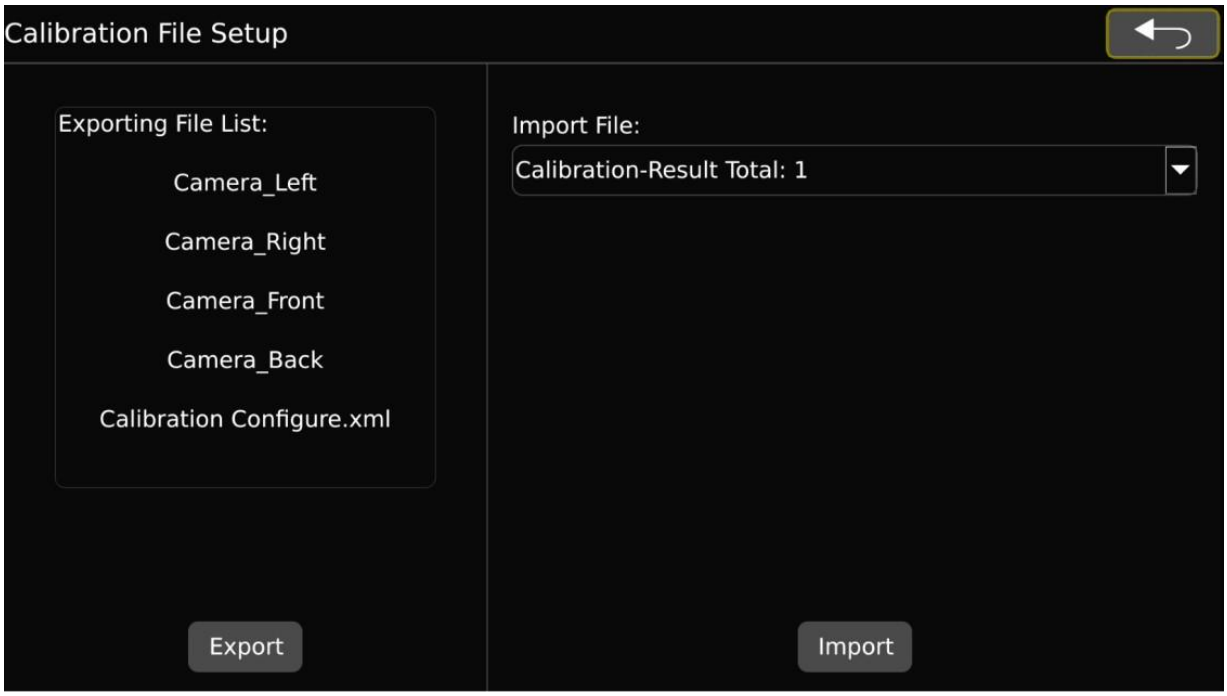
- Highlight the folder where you wish to save the calibration result



- Saved Successfully will displayed when file has been saved.



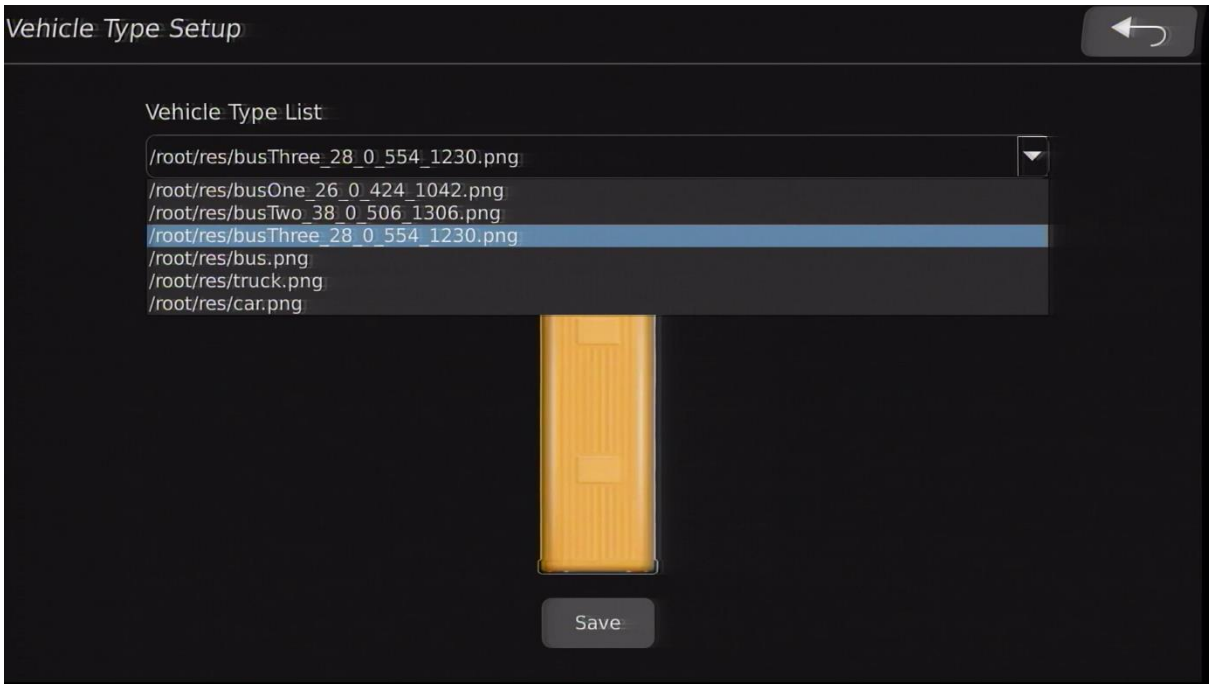
- Open the folder on the thumb drive where you saved the file.
- caliresultXXXX is your new calibration file that you will upload into the SV12v3
- Eject Thumb drive from computer.
- Insert the Thumb drive into the USB Port of the SV12v3
- If you haven't already back out of the SV12v3 calibration menu and then enter the menu again (failure to exit out of the menu will result in the calibration file not being seen in the drop down menu).



- Shift over to Import File and use the drop-down arrow to highlight the saved calibration result file from the thumb drive and select Import.
- The SV12v3 will automatically reboot once the calibration file has been uploaded to the unit.

4.6.3.3 Vehicle Type

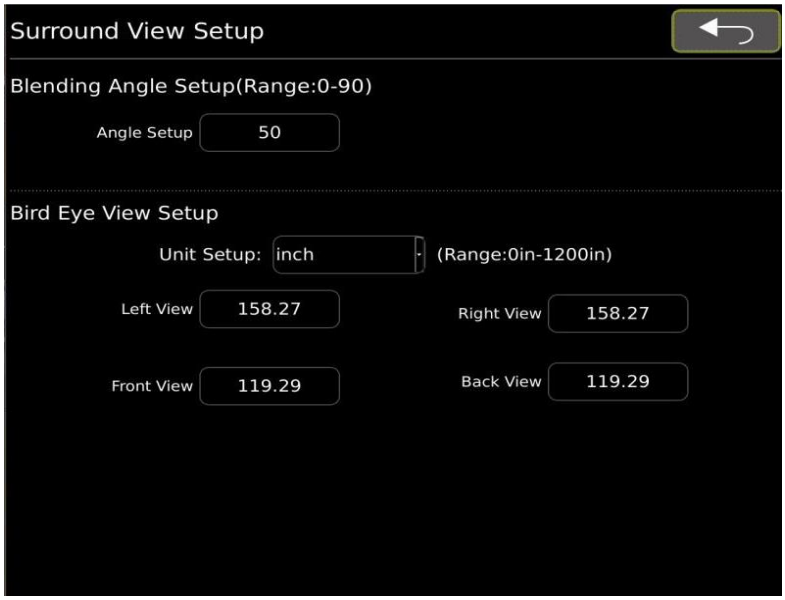
Navigate To – ***Setting → AVM → Vehicle Type***



Vehicle Type Setup	To change the vehicle model type.	
	Vehicle Type List	To select the vehicle type from 3 2D vehicle models and 8 3D car models. the mode of the vehicle model will only be displayed in the corresponding mode.

4.6.3.4 Surround View Setup

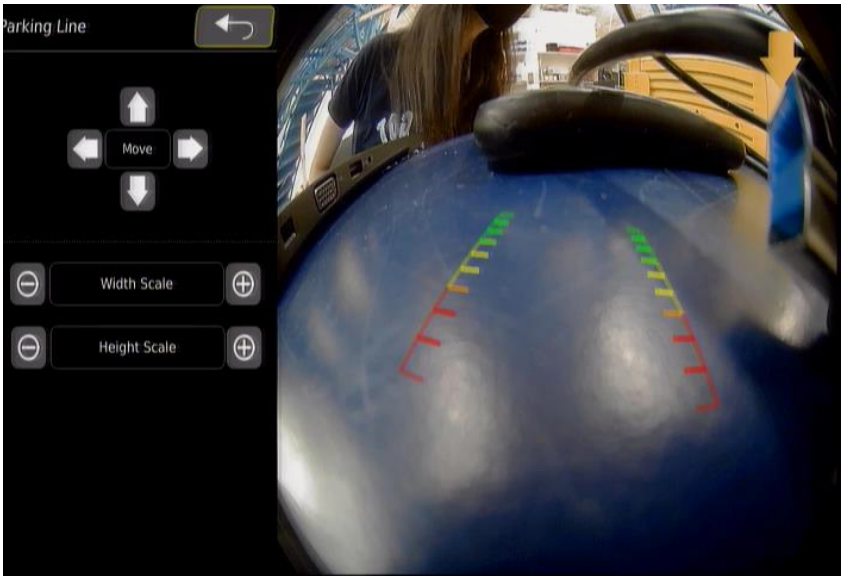
Navigate To – ***Setting → AVM → Surround View Setup***



Surround View Setup	To setup the overlap angle and surrounding visual range.	
	Binding Angle Setup	To set the overlap angle, the value can be set in the range of 0-90.
	• *Left View* • *Right View* • *Front View* • *Back View*	
	Bird Eye View Setup	
	• *Unit Setup*	To select the unit from inch or cm.
	• *Left View* • *Right View* • *Front View* • *Back View*	To set the panorama image visible width. The visible width of each channel can be set separately.

4.6.3.5 Parking Line

Navigate To – ***Setting → AVM → Parking Line***



Parking Line	To set the parking line.	
	Width Scale	To increase/decrease the parking line left or right.
	Height Scale	To increase/decrease the parking line height.

Note: If 3D mode is on the following menus are displayed.

4.6.3.6 3D Perspective

Navigate To – ***Setting → AVM → 3D Perspective***

3D Perspective	To change the 3D perspective of the vehicle.

	Vehicle Transparency	To set the vehicle model transparency (range 0.1-1)
	Camera Z-Position	To set the 3D view zoom settings.
	Camera Y-Rotate	To set the 3D view up/down rotation settings.

4.6.3.7 Back View Perspective

Navigate To – ***Setting → AVM → Back View Perspective***

Back View Perspective	To change the back view perspective settings.	
	Precision	To adjust precision.
	Camera Z-Position	To set the 3D view zoom settings.
	Camera Y-Rotate	To set the 3D view up/down rotation settings.

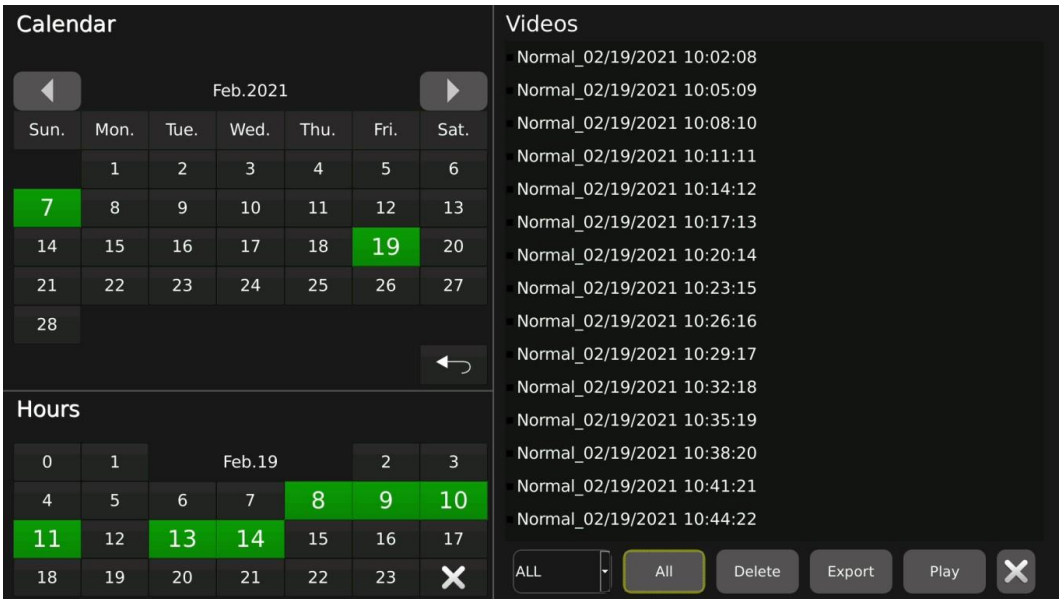
4.6.3.8 3D Display Adjust

Navigate To – ***Setting → AVM → 3D Display Adjust***

3D Display Adjust	To adjust the 3D display.	
	Display Mode	To select from Mode1 or Mode2. Mode1 is better for 3D, and Mode2 is better for 2D
	Mirror Display	To enable/disable the panorama image mirror display.
	Plane Radius	To set the ground radius. **Note:** The larger the radius, the smaller the 3D field of view.

4.6.4 Video

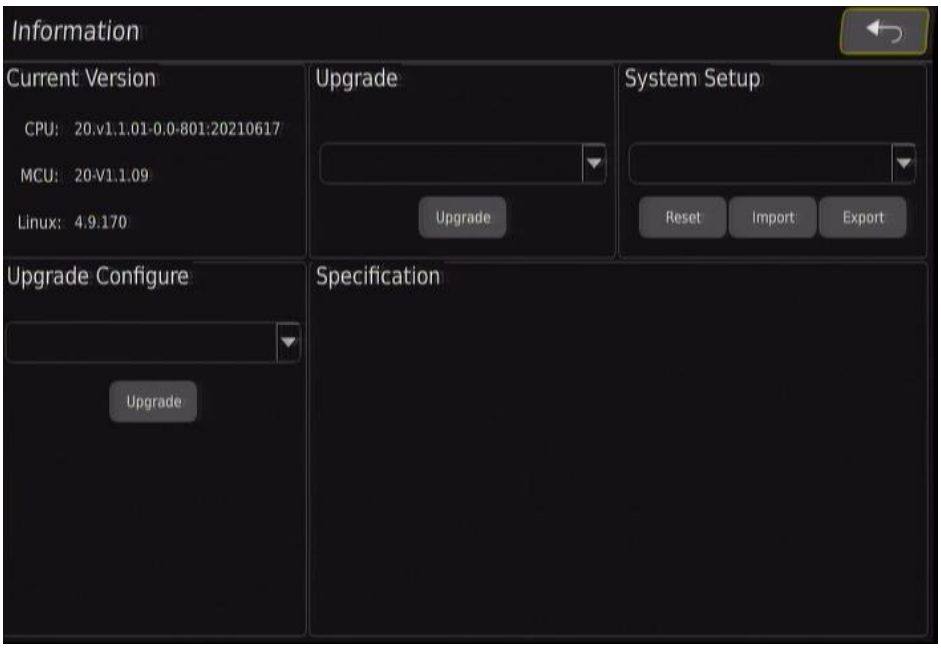
Navigate To – Setting → Video



Video	To manage video, local video viewing, video export etc.	
	Month switch button	To change the months. Date and time that have videos file will show in green. **Note:** Video management can only process videos within 3 months duration, which are the current month and one month before and after.
	All	To select all.
	None	To unselect the selected videos.
	Delete	To delete the selected videos.
	Export	To export the selected videos.
	Play	To play the selected videos.
		To exit.

4.6.5 Information

Navigate To – Setting → Information



Information	To provide information about the version.	
	Current Version	• CPU：To display the current software version information. • MCU：To display the current firmware version information. • Linux：To display the current Linux system version
	Upgrade	To upgrade the version. Select the version that needs to be upgraded and click the Upgrade button. **Note**: Do not remove the SD card or U disk during the upgrade process.
	System Setup	• Restore: To restore factory setting. • Import: To import the configuration file. • Export: To export the configuration file.

5 Maintenance and Troubleshooting

Maintenance
Whilst the SV12 v3 is a dependable and robust piece of equipment, it is still a complex electronic device and as such, will require maintenance occasionally. To ensure optimal performance, Gatekeeper Systems strongly recommends that a proper Preventive Maintenance Schedule be set up and adhered to.

Besides that, it is recommended that the following seven basic maintenance steps be performed at least twice a year:

No.	Maintenance Item	Check (✓)
1	Check that there are no loose mounting screws and that the SV12 v3 is still securely mounted.	
2	Wipe down the SV12 v3 and cameras using a clean microfiber cloth.	
3	Check cables on the back of the SV12 v3 to ensure they have not vibrated loose. Make sure that the cables do not show signs of wear, cracks, etc. If so, contact your Gatekeeper Systems sales representative to arrange for replacements.	
4	Check that the cameras are still positioned properly by playing back the recorded video.	
5	Check the system clock to ensure the proper date and time is shown. Be sure to check that daylight savings time is set properly and the system time is not out by an hour.	
6	Verify that the settings for the SV12 v3 and the cameras are still set properly.	
7	The DVR should provide the time / date when recording and OSD. These settings should be turned off so it should be the same as the rest of the cameras on the DVR.	

6 Customer Limited Warranty

GATEKEEPER SYSTEMS INC. warrants that any product manufactured or supplied by Gatekeeper Systems Inc and found in the reasonable judgment of Gatekeeper Systems Inc to be defective in material or workmanship will be repaired or replaced by Gatekeeper Systems Inc without charge for parts and labor.

This warranty shall cover the following periods and Gatekeeper equipment:

- Interior Cameras - 5 Years
- Exterior Cameras - 1 Year
- G series DVR's – 3 Years
- Gatekeeper Branded SD Cards – 3 Years
- Hard Drives & SSD – 1 Year
- 360° Surround Vision Camera System – 1 Year
- ITSS – Health Monitoring Panel – 1 Year

All Accessories and Other Products Not Identified above - 1 Year

The warranty periods commence on the date of shipment. During the period of the warranty the Company, at its discretion will repair and/or replace all improperly functioning equipment caused by a manufacturing defect. This warranty does not protect against accidental or intentional damage, vehicle electrical systems generating steady state or transients, voltages or currents exceeding product. specification, loss, acts of nature, water damage, or any other event that did not originate during the manufacturer of the product.

The Gatekeeper Systems product including any defective part must be returned to Gatekeeper Systems within the warranty period. The expense of delivering Company product to Gatekeeper Systems for warranty work will be paid by the customer. The expense of delivering Company product back to the customer will be paid by Gatekeeper Systems. Gatekeeper Systems' responsibility in respect to claims is limited to making the required repairs or replacements and no claim of breach of warranty shall be cause for cancellation or rescission of the contract of sale. Proof of purchase complete with the serial numbers of the products purchased will be required by the customer to substantiate any warranty claim. All warranty work must be performed by an authorized Gatekeeper Systems service representative.

This warranty does not cover any Gatekeeper Systems' product that has been subject to misuse, neglect, negligence, or accident, or that has been operated in any way contrary to the operating instructions as specified by Gatekeeper Systems either verbally, in writing, by instructions written on the product or in the Gatekeeper Systems Installation and Operating Manual. This warranty does not apply to any damage to the Gatekeeper Systems product that is the result of improper maintenance or to any Gatekeeper Systems' product that has been altered or modified so as to adversely affect the products' operation, performance or durability or that has been altered or modified so as to change its intended use.

Gatekeeper Systems Inc is not responsible for lost or missing video.

The warranty does not extend to repairs made necessary by normal wear or by the use of parts or accessories which are either incompatible with the Company product or adversely affect its operation, performance or durability.

Gatekeeper Systems reserves the right to change or improve the design of any Company product without assuming any obligation to modify any product previously manufactured.

ALL IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE SPECIFIED PERIOD FOR EACH PRODUCT CATEGORY AS LISTED IN THIS DOCUMENT. ACCORDINGLY, ANY SUCH IMPLIED WARRANTIES INCLUDING MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE, ARE DISCLAIMED IN THEIR ENTIRETY AFTER THE EXPIRATION OF THE APPROPRIATE WARRANTY PERIOD. GATEKEEPER SYSTEMS' OBLIGATION UNDER THIS WARRANTY IS STRICTLY AND EXCLUSIVELY LIMITED TO THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS, AND GATEKEEPER SYSTEMS INC. DOES NOT ASSUME OR AUTHORIZE ANYONE TO ASSUME FOR THEM ANY OTHER OBLIGATION.

GATEKEEPER SYSTEMS INC ASSUMES NO RESPONSIBILITY FOR INCIDENTAL, CONSEQUENTIAL OR OTHER DAMAGES INCLUDING, BUT NOT LIMITED TO THE EXPENSE OF RETURNING THE COMPANY PRODUCT TO GATEKEEPER SYSTEMS INC. CORPORATE HEAD OFFICE, MECHANIC'S TRAVEL TIME, CUSTOMER LABOR EXPENSES, TELEPHONE OR TELEGRAM CHARGES, RENTAL OF LIKE PRODUCT DURING THE TIME WARRANTY SERVICE IS BEING PERFORMED TRAVEL, LOSS OF USE OF THE PRODUCT, LOSS OF TIME OR INCONVENIENCE.

WARRANTY SERVICE

To obtain warranty service, the purchaser must notify the Company during the warranty period. The Purchaser will discuss the defect or problem with a Company technician, and once the problem has been verified the Company will issue a return material authorization number (RMA) authorizing the purchaser to return faulty merchandise to the Company for repair or replacement as determined by the Company. It may be necessary for the customer to assist Gatekeeper Systems in assessing failed product. Gatekeeper Systems may require the customer to remove hardware, manipulate software and/or perform other diagnostic activities. Failure to assist in and allow remote diagnostic activities may result in a service fee being charged.

Advance replacements will be issued for the first 90 days from the date of shipment. This Warranty applies to all Company products manufactured by Gatekeeper Systems and sold in the United States and Canada. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

CANADA OPERATIONS:
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7 Contact Information

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SALES & TECHNICAL SUPPORT

For technical support, contact Gatekeeper's Customer Care Group at Toll Free (N.A.) 1-888-666-4833

or email customercare@gatekeeper-systems.com

Gatekeeper also provides additional online training and support tools at:

https://www.gatekeeper-systems.com/support/