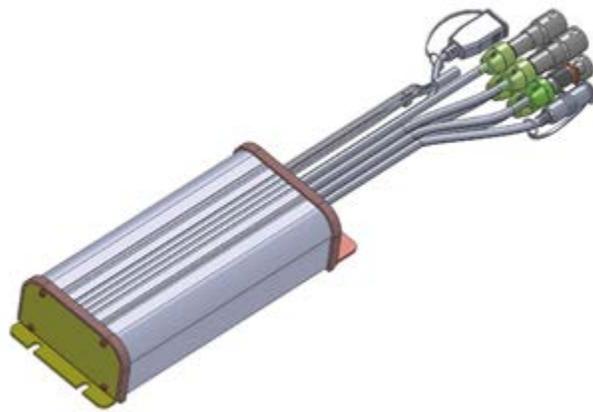




# VAVSMOD2 User Manual

Voyager 360 Camera System



Version 1.2  
July 26, 2021

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## 1. Content List

Item	Description	QTY
A	ECU (electronic control unit/module) with Harness	1
B	User Manual	1

A



B



## 2. Additional Products Required (Sold Separately)

### Compatible Camera

Item	Part Number	Description	QTY
C	VAVSCAM2	Camera and camera hardware	1

\*NOTE: 4x VAVSCAM2 required for full system

### Calibration Tools

Item	Part Number	Description	QTY
D	VAVS360IMAT	Calibration mat	4
E	VAVS360IRC	IR receiver and remote control	1

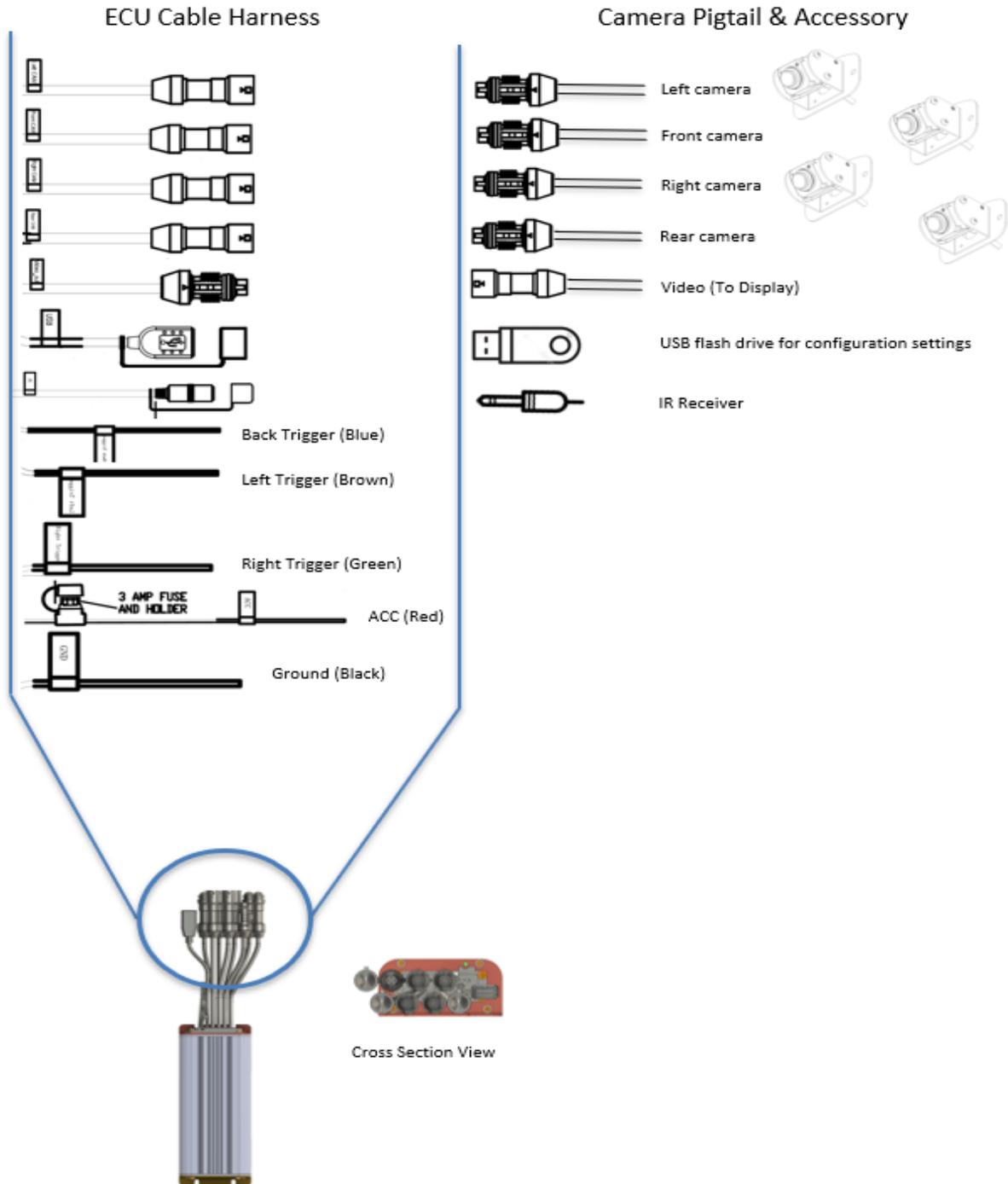
D



E

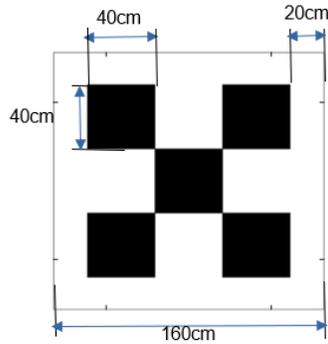


### 3. System Connections



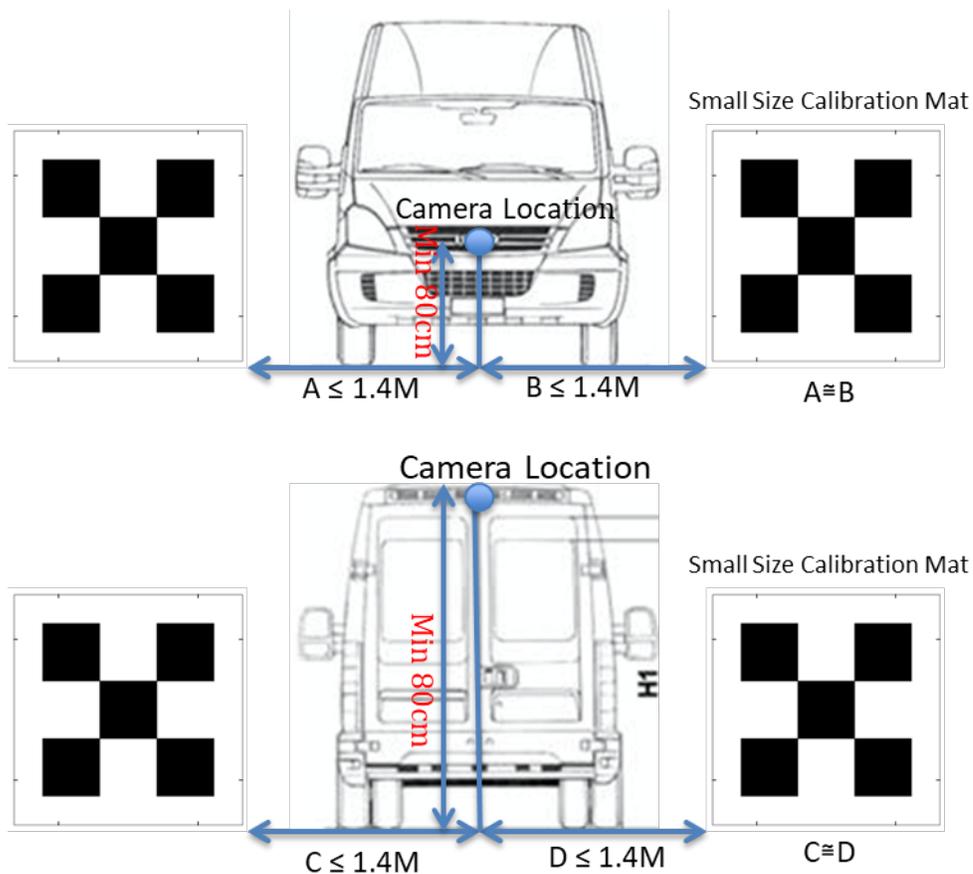
## 4. Camera Installation and Calibration Layout with Small Mat

### 4.1 Mat Dimension



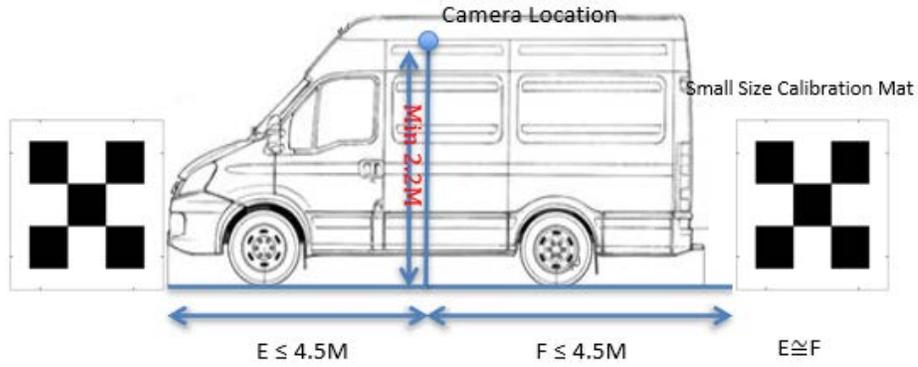
### 4.2 Camera Installation Front and Rear View

The camera is recommended to be mounted at the center ( $A \cong B$ ,  $C \cong D$ ), and the tolerance between C and D could be as much as +/- 30 cm, if the Camera is mounted on the Roof.

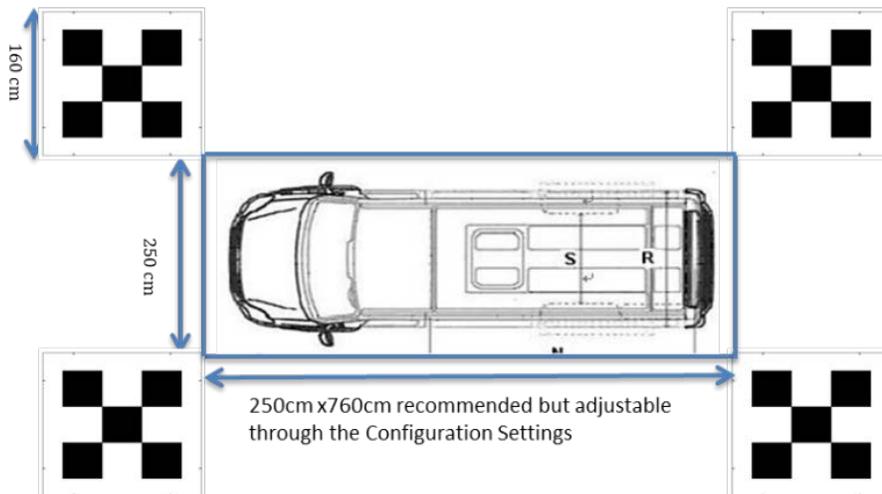


### 4.3 Camera Installation Side View

The camera is recommended to be mounted at the center ( $E \cong F$ ), and the tolerance could be as much as  $\pm 30$  cm.

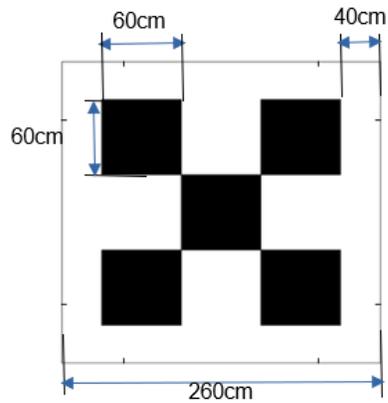


### 4.4 Calibration Layout Top View



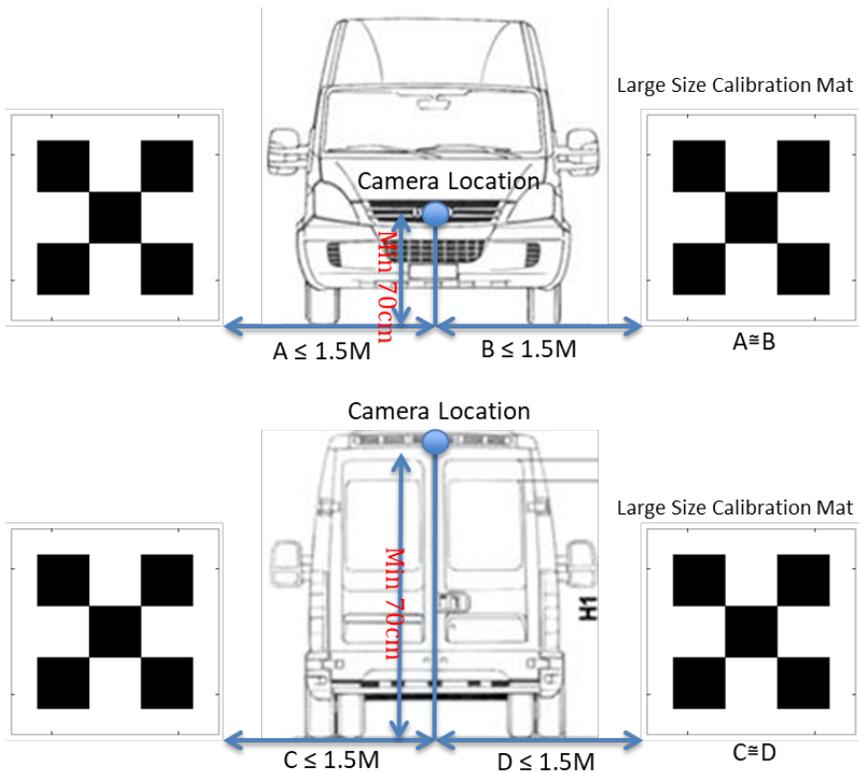
## 5. Camera Installation and Calibration Layout with Large Mat

### 5.1 Mat Dimension



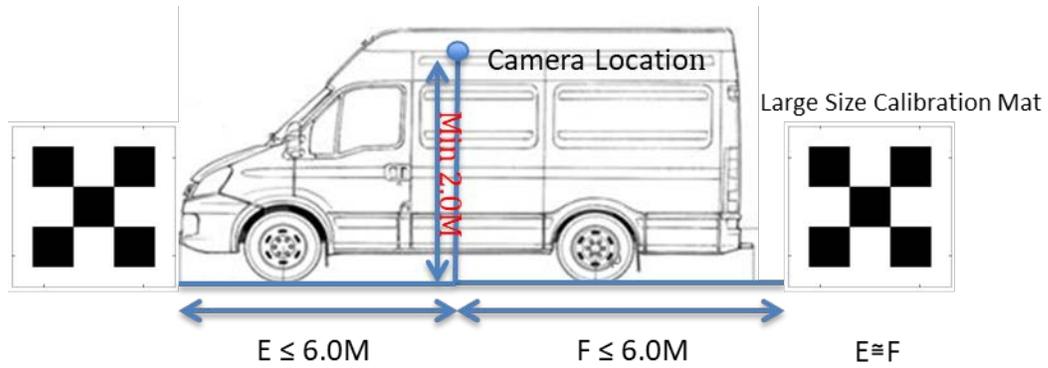
### 5.2 Camera Installation Front and Rear View

The camera is recommended to be mounted at the center ( $A \cong B$ ,  $C \cong D$ ), and the tolerance between C and D could be as much as  $\pm 30$  cm, if the Camera is mounted on the Roof.

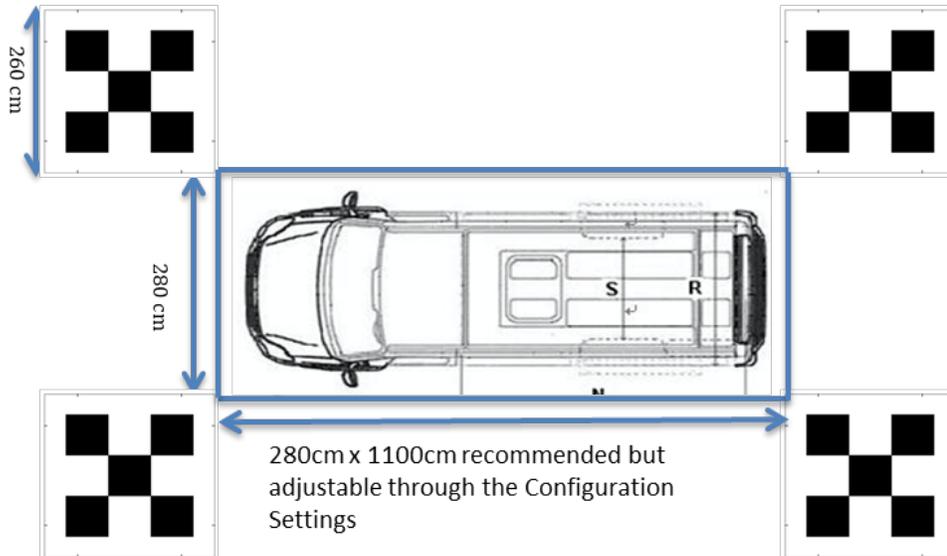


### 5.3 Camera installation Side View

The camera is recommended to be mounted at the center ( $E \cong F$ ), and the tolerance could be as much as  $\pm 30$  cm.



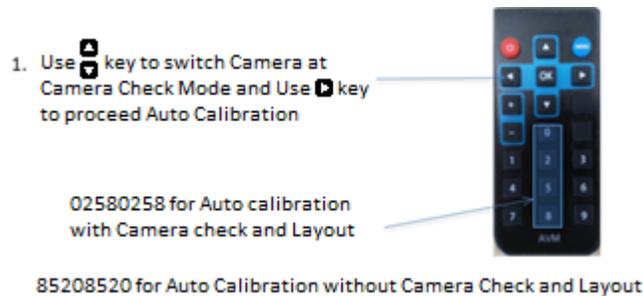
### 5.4 Calibration Layout Top View



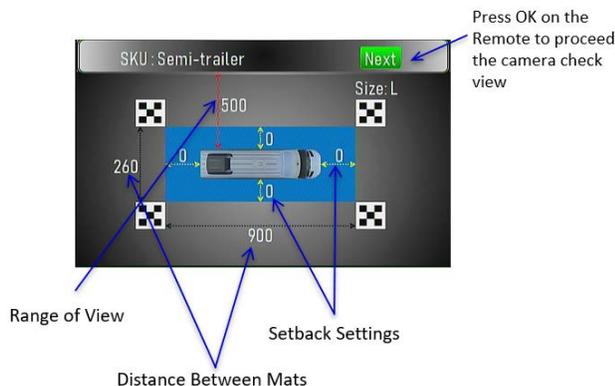
## 6. Auto Calibration

1. Plug the IR receiver to the connector labeled IR of ECU
2. If a new calibration layout, new SKU, or new Vehicle Image deployment is needed, plug the USB Disk to the connector labeled USB of ECU,
3. Use the Remote Control to process the Auto/ Manual Calibration
4. Press 02580258 on the Remote Control for Auto Calibration with Camera Check View.

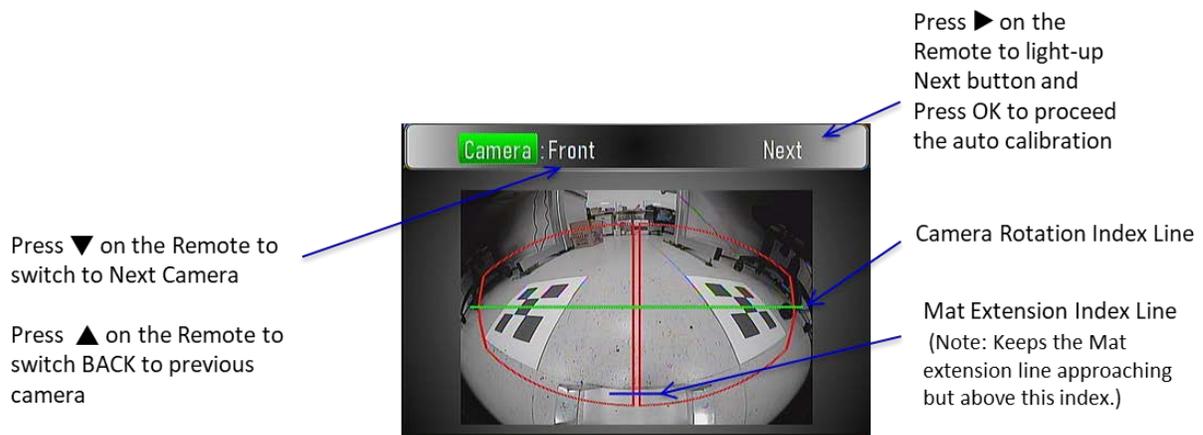
**NOTE:** As each button is pressed, you should see a red asterisk (\*) appear on the screen indicating the button press was received by the ECU module. Once eight asterisks (\*\*\*\*\*) are shown on the screen, the unit will enter the calibration process.



## 5. Calibration Layout Information Check View

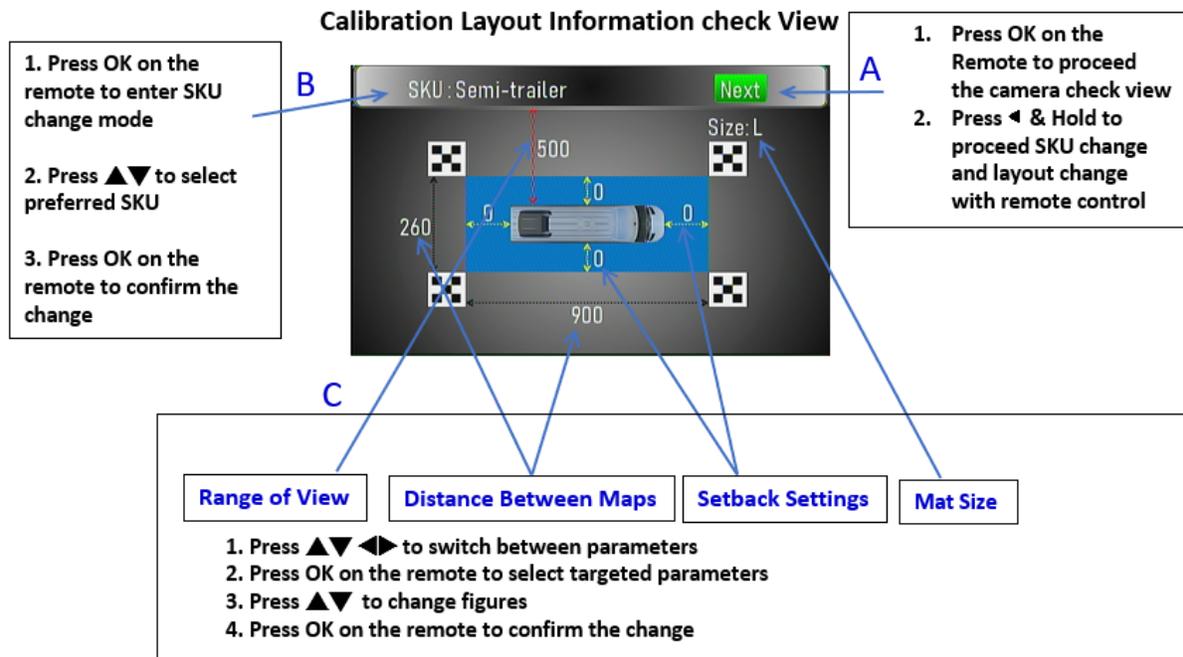


## 6. Camera Check View



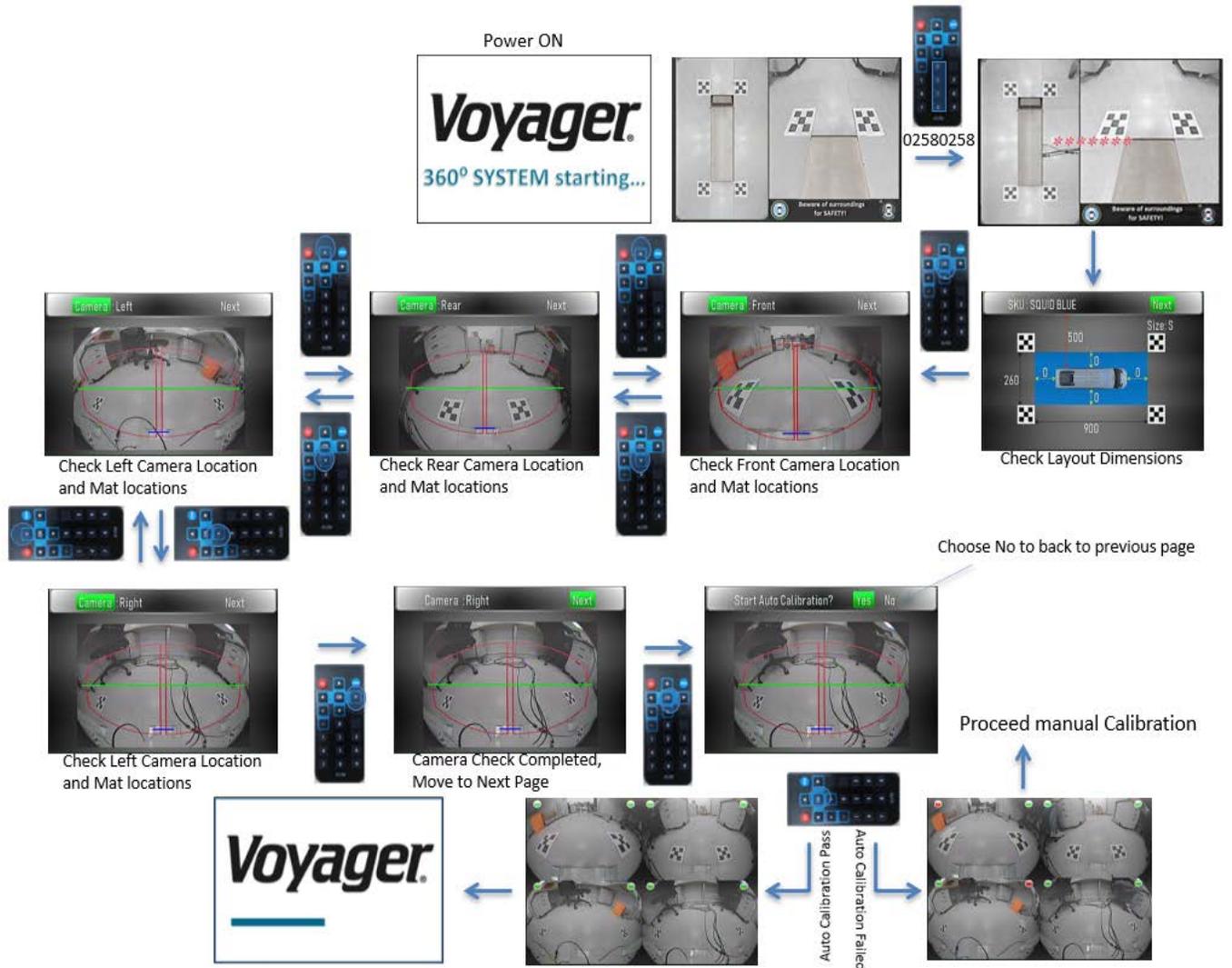
## 6.1 SKU, Layout and Mat Selection

1. In Calibration Layout Information Check View, press ◀ key and hold to proceed SKU, Layout and Mat size selection with remote control
2. Move the cursor to SKU and press OK to enter SKU change mode
  - Press ▲▼ to select preferred SKU
  - Press OK to confirm the change
3. Move the cursor to target parameter and press OK to enter the parameter change mode
  - Available parameters are Range of View/ Distance between mats/ Setback setting/ Mat size
  - Press ▲▼ to select preferred value
  - Press OK to confirm the change
4. Move the cursor to NEXT and press OK to proceed the camera check view

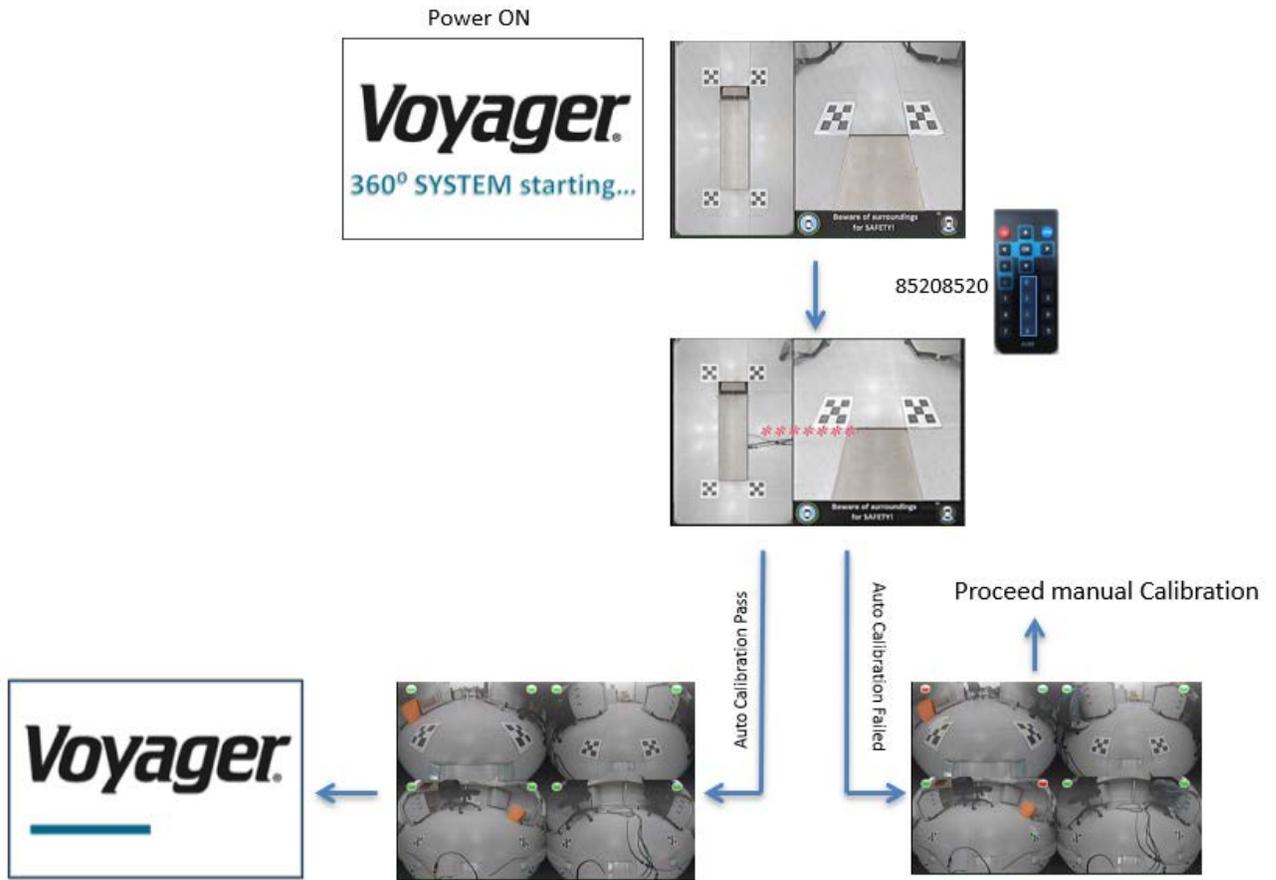


## 6.2 Auto Calibration Flow

1. Press **02580258** on the Remote to access Auto-calibration with Layout/Camera Check View



2. Press **85208520** on the Remote to access Auto-calibration **without** Layout/Camera Check

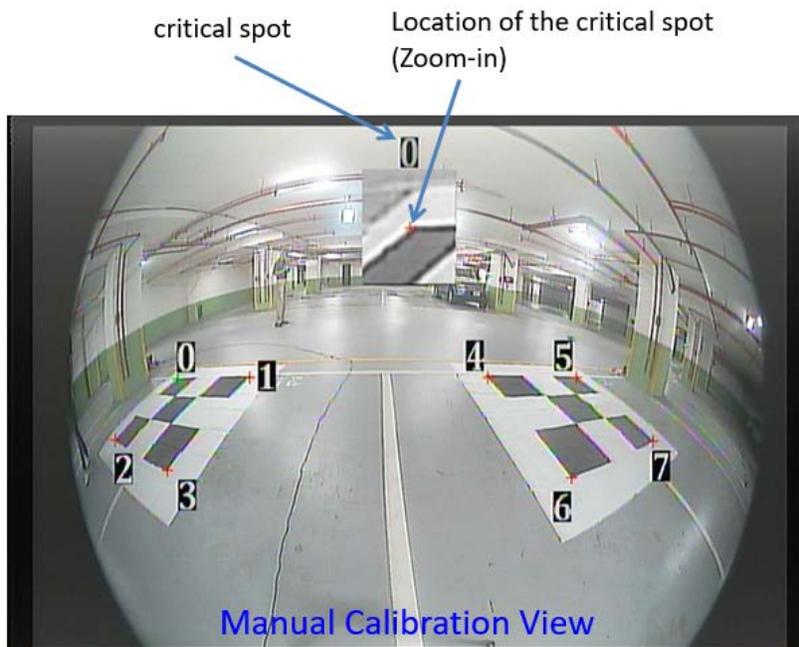


## 7. Manual Calibration

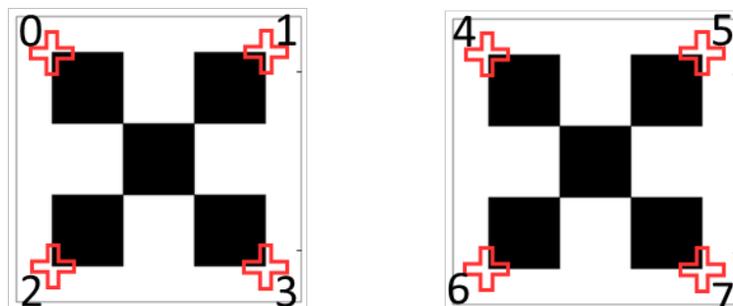
When the system failed to complete the auto calibration, it will lead to the manual calibration. (However, it is recommended to find the obstruction which caused the failure and remove it from the layout area. Then reattempt the auto calibration process.)

Manual Calibration Process:

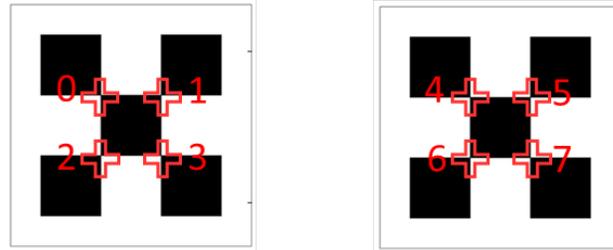
1. Use the numerical keys (0-7) on the remote to choose the critical spot which is NOT on the correct location.
2. Use the cursor (▲▼◀▶) to move the critical spot to the correct location and check the zoom-in window to confirm.
3. Use "MENU" key to switch cameras and inner/outer critical spot views



The Correct Locations of each outer critical spot

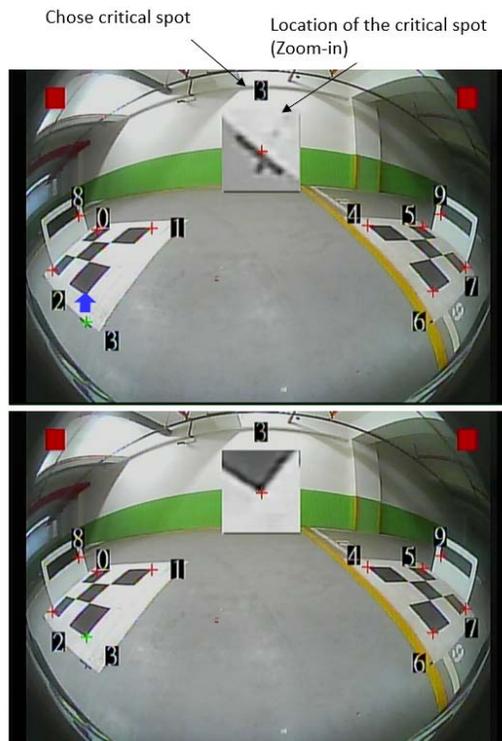


The Correct Locations of each inner critical spot



### 7.1 Manual Calibration Flow

1. Use the numerical keys on the remote to choose the critical spot which is NOT on the correct location. (in this case #3)
2. Use Remote cursor (▲▼◀▶) to move the cursor to the correct location. (The Zoom-in window at the top helps with accuracy)
3. Once finished with the adjustments, Press the “MENU” key to switch to inner 8 critical spots of same camera and repeat the adjustment, if needed.
4. When step 3 finished, Remote “MENU” key to switch to next camera and repeat step 1, 2, and 3.
5. When all four cameras are checked (Front -> Rear-> Left-> Right -> Front), Press “OK” to complete manual calibration setup. The system will reset and process the calibration.



## 8. Trigger Views

If the vehicle is driving forward without turn signals triggered, the VAVSMOD2 will give the driver a top view and Rear view



If the Left Turn Signal is triggered, the VAVSMOD2 will give the driver a top view and left-side view



If the Right Turn Signal is triggered, the VAVSMOD2 will give the driver a top view and Right-side view



If the vehicle gear is set to Reverse, the VAVSMOD2 will give the driver a full screen Rear view



Note: Reverse trigger has the top priority. Whenever the turn light and backward are both triggered, the VAVSMOD2 shows the backward view.

## 9. Specification

<b>VAVSMOD2 ECU</b>	
Power Supply	DC 12V
Power Consumption	700 mA (Max)
Working Temp	-40 °C ~ +85 °C
Storage Temp	-40 °C ~ +95 °C
Input Signal	AHD 720P
Video Input	Camera * 4
Video Output	CVBS/NTSC (640 * 480 Pixel)
IR port	1
USB port	1
<b>VAVSCAM2 CAMERA (SOLD SEPARATELY)</b>	
Image Sensor	1/3" (SONY)
Resolution	1.2M
Optical Lens	2G4P + IR Cut
Aperture	2.0
FOV	190° (H)/ 140° (V)
Optical Decenter	5 Pixel
Operating Temperature	-20°C ~ 70°C
Min Illumination	0.1 Lux
Power Supply	DC 12V
Water Resistance	IP67

## 10. Trouble Shooting Guide

Issue	Possible Causes	Corrective Actions
No power	Bad connection of power input	Please check AVM power and ground connection
No image on screen	Monitor signal cable is not connected	Please check if the monitor signal cable is properly connected or if any pins inside the connector are bent
Fuzzy screen on the monitor	Dirt on the surface of the lenses	Please clean the lenses with soft and clean fabric
The screen image is not clear	Monitor display resolution is too low	Resolution with 480X234 above is recommended
Dark image on screen	Camera video cable of camera is not connected to VAVSMOD2 ECU module	Please check if camera video cable is connected or if any pins inside the connector are bent
	Camera is damaged	Please replace camera (may require re-calibration)
No function of left/right/reverse trigger	Trigger signal is not properly connected	Please check if the trigger signal is connected
System will not auto-calibrate	Calibration Mat is obstructed	Check for objects obstructing the camera view of the Mats. Fold in side mirrors if they are obstructing.
	Calibration Mats are not within Red box	Preform calibration camera check (press 02580258 on the remote). Check that the Mats are <u>within the red box</u> AND <u>above the blue Mat Extension Index Line</u> .
	Poor lighting or Shadows on the calibration Mats	Check for poor lighting conditions or shadows that are being cast onto the calibration Mats. Correct the poor light condition.