



Automatic Passenger Counter MDVR-PCC2 Installation and Configuration Instruction



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1. Device installation

Owing to the special onboard environment, the installation of MDVR-PCC2 need to meet the following specifications. If there are other questions, you can consult the relevant technical staff.

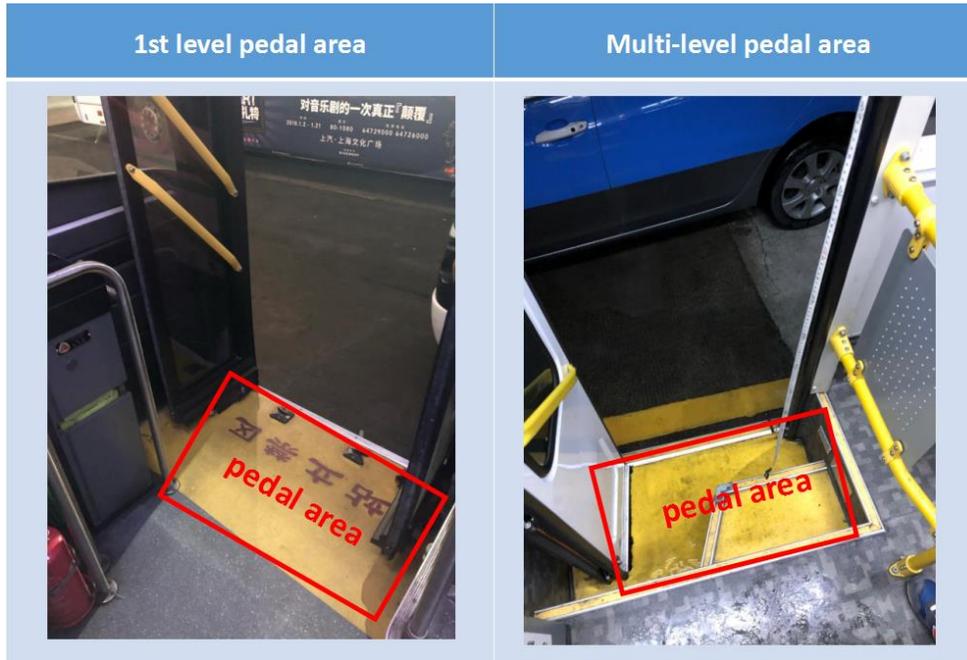
1.1. Installation tools

Tool	Application	Note
PC	Configuration on MDVR-PCC2	Use browser IE8 or IE11(act as administrator)
Measuring tape and other measuring tools	Measure the height of the lens from the ground at the installation location of MDVR-PCC2.	The measurement of altitude information is configured after MDVR-PCC2 installed. The altitude information has an impact on the statistical accuracy of the algorithm.
crewdrivers, wire stripper and so on	Install device	
Anti-theft screwdriver	Used to remove the SD card slot on the side of the MDVR-PCC2 MDVR-PCC2	
Aviation head test line		Need to contact technical personnel to provide
Easycheck		Configure MDVR-PCC2 via Meriva MDVR
Easycheck App	Provide MDVR-PCC2 configuration interface	Download it from Android Store or Apple Store.
Test horizontal angle app	Measurement of MDVR-PCC2 horizontal angle	



1.2. Related terms

Pedal area: the 1st level of a bus that is yellow area, it is not allowed for passengers to stay there; for the coach bus or multi-step bus, the pedal area is area combined with the 1st level and the 2nd level together;



Pedal area center point: The pedal area is a rectangular area, the center point is the intersection of two diagonal lines.

1.3. Location selection

According to majority of vehicle model, the height for installation are divided into normal height (2m-2.4m) and special height (1.8m-2m); location selection must meet the following requirements:

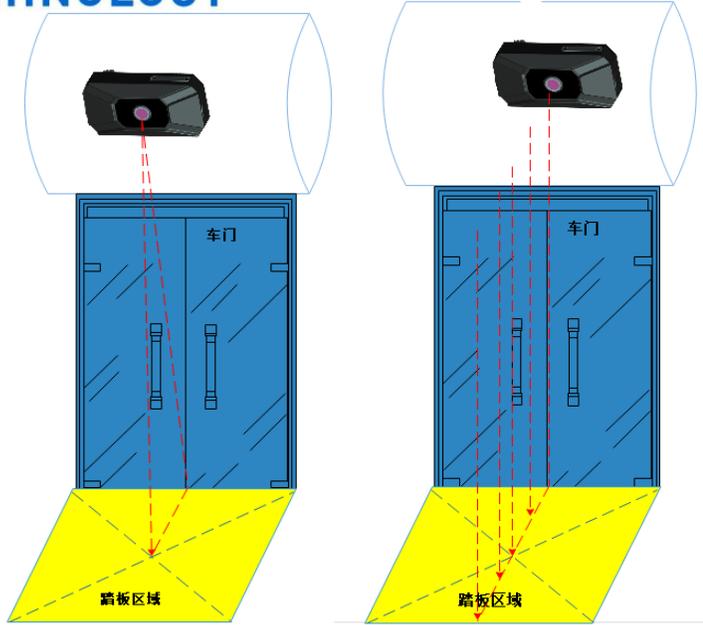
a. Normal Height

Location requirement

- Directly above on passenger boarding are;
- Select the installation location of the middle of gate width;
- MDVR-PCC2 must be horizontal;
- Installation height must be in the range of 2m to 2.3m.



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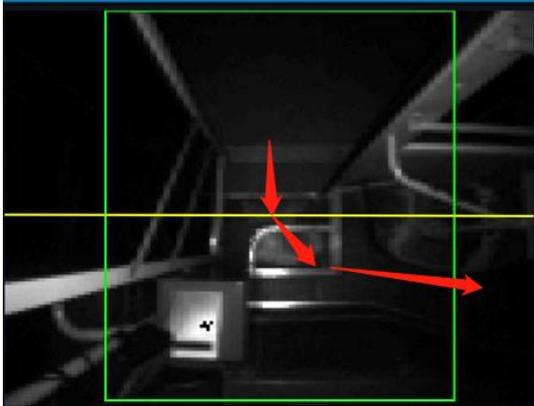
Effect image:





b. Special Cases

For those doors which are not vertical, MDVR-PCC2 will need be adjusted to go as the aisle, shown in picture 2.



For those doors that has steps, MDVR-PCC2 need to be rotated for a bit, so it's parallel to the stair, shown below:





1.4. Confirm the installation

After choosing the best location to install, follow these steps to complete the installation of MDVR-PCC2 :

1. Install the bracket on MDVR-PCC2 by add the first screw in the middle.



2. Install the whole set of MDVR-PCC2 on the selected location.



3. Adjust the pitch angle so that it is horizontal and the lens is vertical to the pedal area. Then fix MDVR-PCC2 by screw.

4. After the installation is complete, you need to measure MDVR-PCC2 by the mobile phone APP tool to confirm the installation status, to confirm if MDVR-PCC2 is horizontal. The



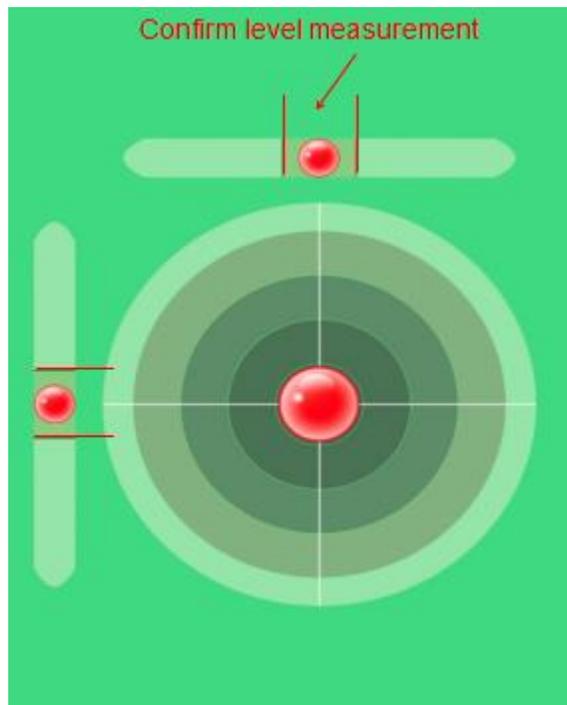
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measurement methods are as follows:

- ① Open the phone APP level measurement tools, make the phone fit the surface of the MDVR-PCC2 .



- ② Check the phone interface, observe the ball in the range to meet the installation level requirements.



5. The installation shall be fixed to prevent the statistical error caused by the swaying of the MDVR-PCC2 during the running of the vehicle.

6. The blue film must be removed.

1.5. Threading docking

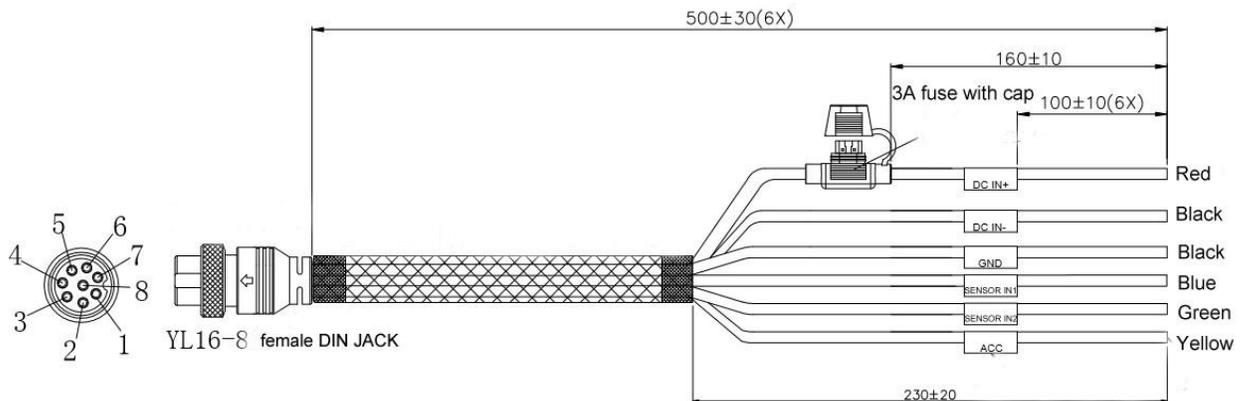
1. After completing the installation of MDVR-PCC2 , start to connect MDVR-PCC2 to MDVR to get power.



The definition of each port on MDVR-PCC2

No.	Port name	Application
1	Power input	Power supply
2	RS485	Communication
3	LAN port	Communication

Standard power cord definition:



2. Connect the 8-pin female extension of the extension cord to the "Power" male connector of MDVR-PCC2, and extend the "DC + (red line)" and "DC- (thick black line)" wires to the vehicle power cord while extending the "ACC" and the car keys on the car docking; can be observed by the indicator light around the lens when it is in normal power supply;

3. MDVR-PCC2 algorithm statistics depend on the vehicle door switch signal control, the installation needs to select the switch door signal access mode to complete the wire connection; mainly in the following two modes:

Independent mode: That is, the passenger flow meter itself can obtain the signal of vehicle door opening and closing; the default level needs to connect with "sensor1" and "GND". In pulse mode, the door open signal is connected with "sensor1", Close the signal then "sensor2 (green line)" and "GND (thin black line)";

Sync Mode: MDVR-PCC2 will get door switch signal from MDVR via LAN ;(this is to simplify the wiring, no need to connect door signal twice if MDVR has connected door signal already).

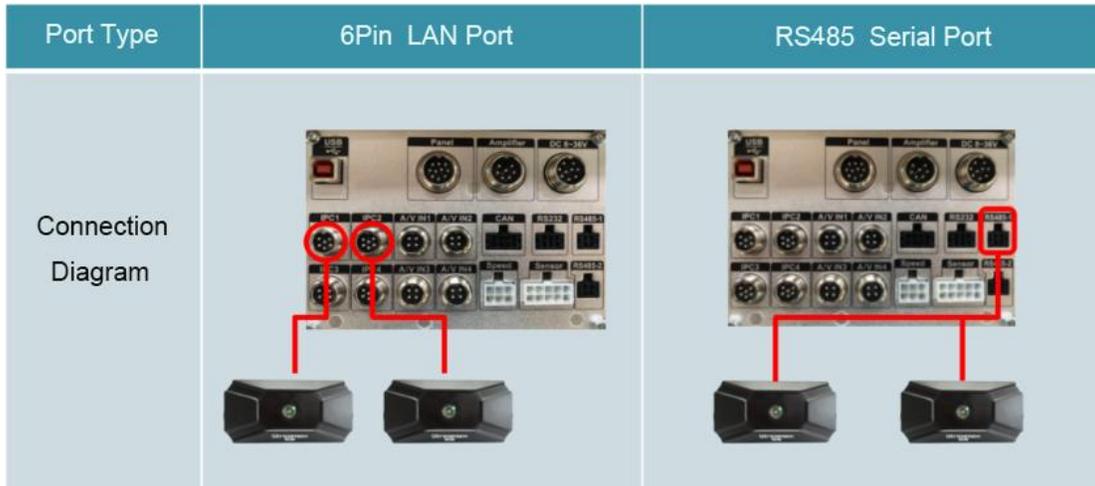
4. MDVR-PCC2 support 6PIN LAN Port and RS485 for communication.



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Note: MDVR-PCC2 cannot use LAN and RS485 for communication simultaneously, choose either 6Pin LAN or RS485;

MDVR-PCC2 Connection Example:



5. Seal the connector junctions with Tap.

2. MDVR-PCC2 Debug configuration

Note: MDVR-PCC2 configuration can be done on both PC and Easycheck if use MDVR-PCC2 with Meriva DVR. If use MDVR-PCC2 with 3rd party MDVR, MDVR-PCC2 configuration on PC will be the choice only.

2.1. Configuration on PC

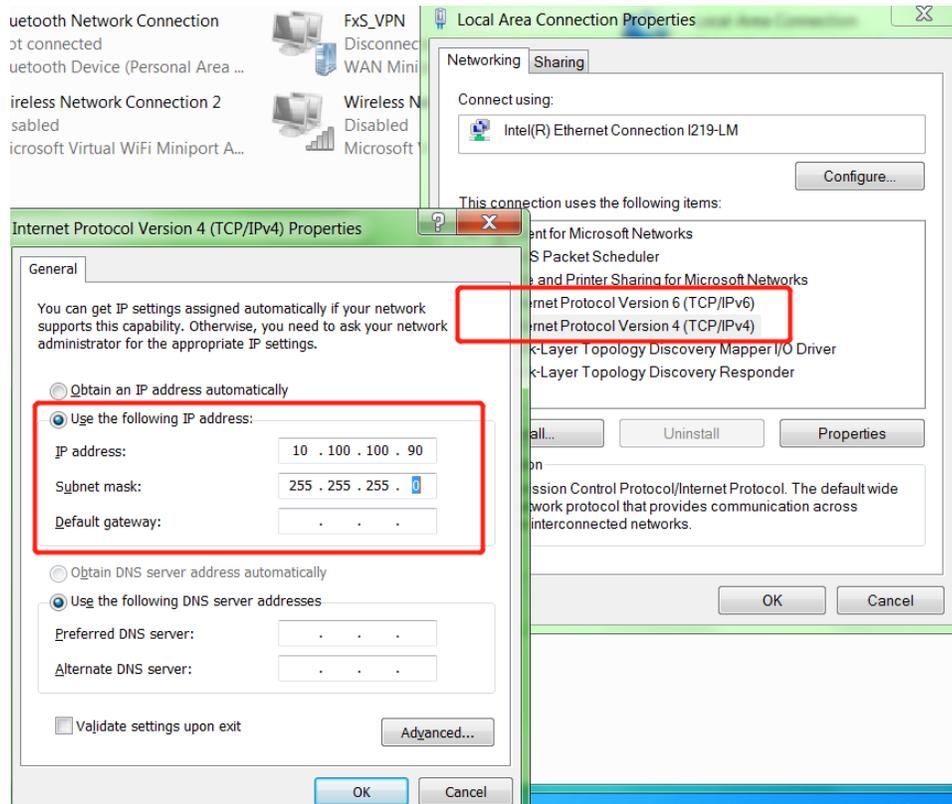
2.1.1 Connect and snapshot

- 1) Connect MDVR-PCC2 to laptop via LAN adapter cable;
- 2) MDVR-PCC2 Default IP: 10.100.100.90, if the IP address was changed ,please use following Search tool to find the IP address;

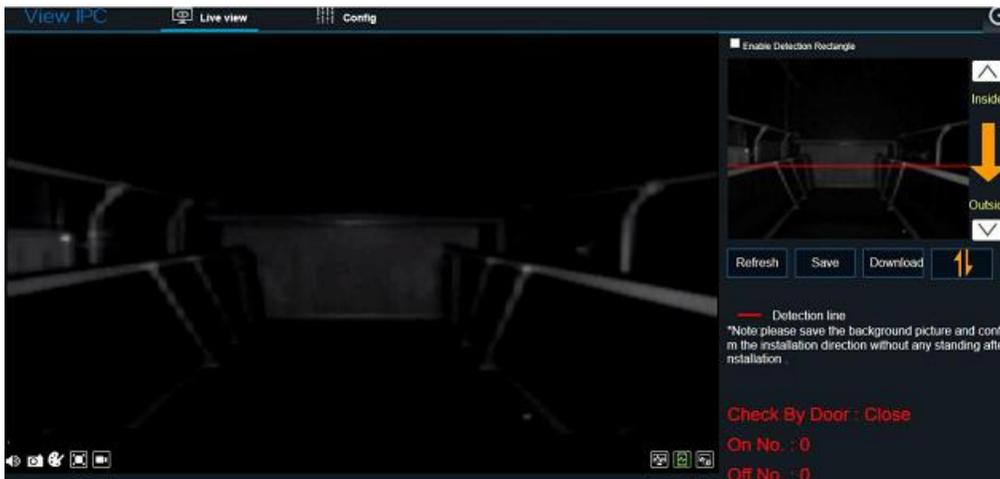


Search.zip

- 3) Change laptop LAN IP to the same subnet with MDVR-PCC2 , make sure there is no IP conflicts between laptop and MDVR-PCC2 ; Login MDVR-PCC2 by input its IP on IE browser.



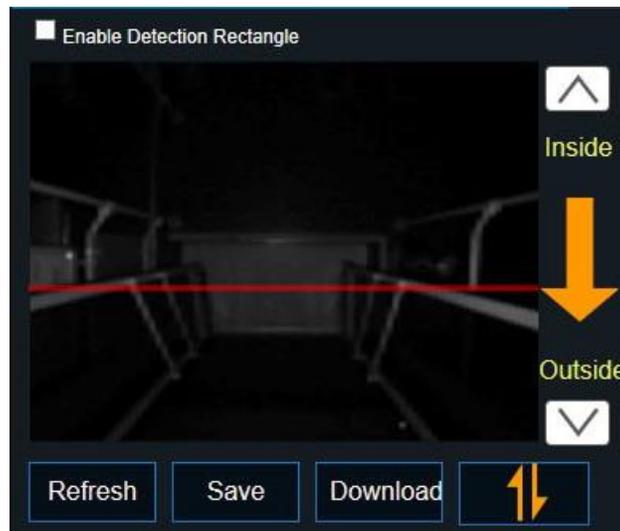
- 4) Input username: admin. password: Null ,login MDVR-PCC2 preview interface as following.



- 5) Take background Snapshot
Background snapshot is important for algorithm. This step is important to make sure MDVR-PCC2 accuracy.
- a. Login in MDVR-PCC2 and take background snapshot in 【Preview】 page.



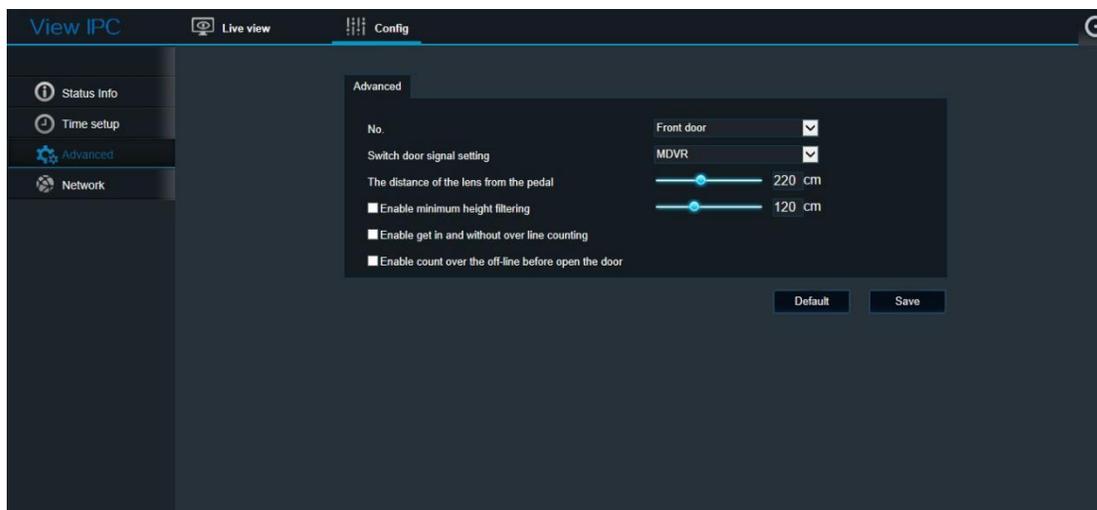
- b. Make sure bus door in open status. Click **【Refresh】** to take background snapshot, check MDVR-PCC2 image direction, make sure the direction is right. Or click this icon  to adjust the image direction.
- c. Click  &  adjust the detection line in image, make sure it is in the middle of boarding area.



- d. After double check the settings on Image and background snapshot. Click **【SAVE】** to save the background snapshot to MDVR-PCC2 as comparison sample image.

2.1.2 Parameter configuration

Click **【Config】** - **【advanced】** to setup MDVR-PCC2 Parameters on algorithm.





No. : Select the right MDVR-PCC2 on relative door;

Switch door signal source:

【MDVR-PCC2】 Mode is used for get door switch signal independently with Sensor cable on MDVR-PCC2 . Setup 【Trigger source】 and 【trigger】 option by trigger source properties.

【MDVR】 mode means get door switch signal from MDVR. MDVR-PCC2 will use the trigger signal from MDVR IO inputs.

Select different mode by door switch signal connection.

MDVR-PCC2 Len Height from floor of boarding area:

Adjust height parameter by the distance from MDVR-PCC2 Lens to Pedal.

Enable Min. Height filtering:

This option is enabled as default, it can be adjusted passengers' height by application scenarios.

Enable get in and without over line counting:

This option is disabled as default. When passenger is crowded in bus cab during rush hours, we might need enable this option to improve the MDVR-PCC2 accuracy.

Enable Count over the off-line before open the door:

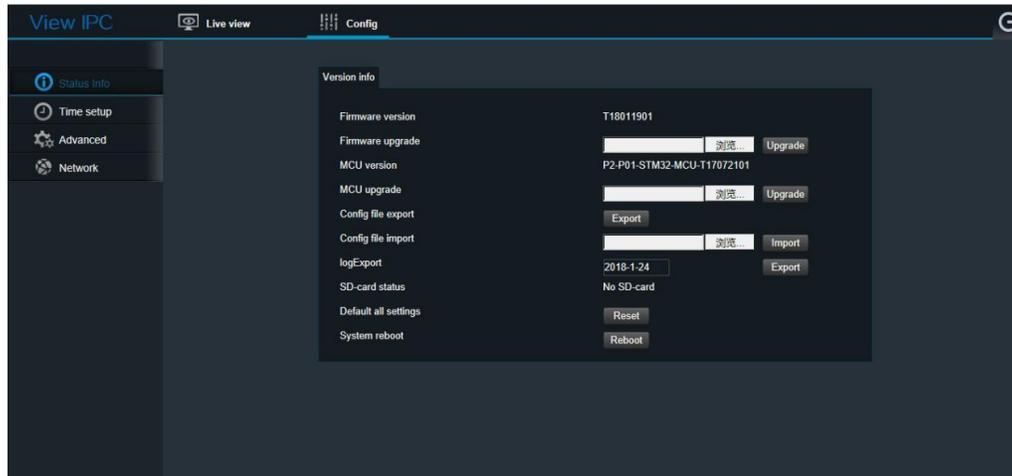
This option is disabled as default. When passenger is crowded on Pedal, after open the door, passenger might get off quickly, Enable this option will improve MDVR-PCC2 accuracy in this situation.

After finished settings, Click 【SAVE】 to save the settings.



2.1.3 Other features

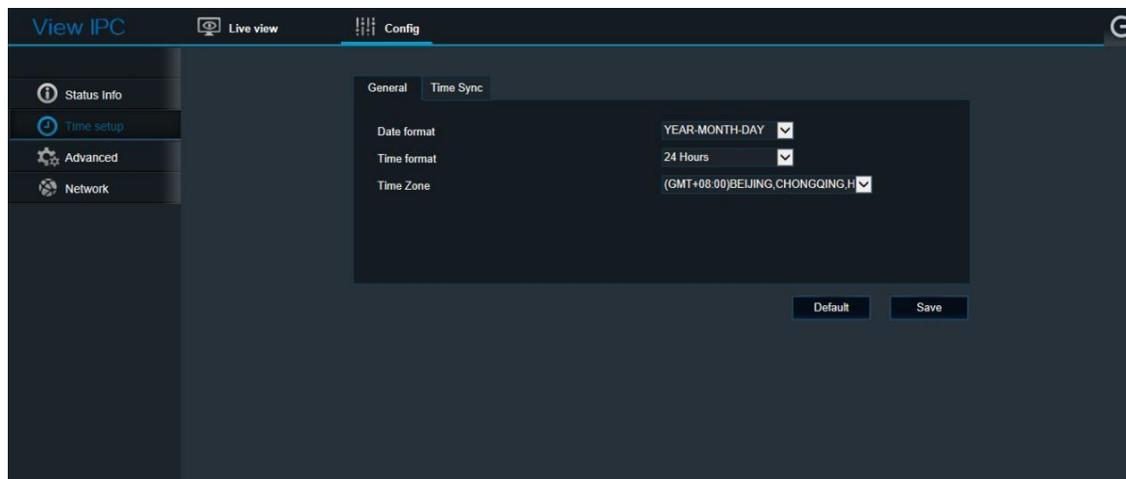
1) MDVR-PCC2 Status info



Description:

This interface is used for check MDVR-PCC2 Firmware version, MCU version, Config file export/import, SD card status, Reset settings, Reboot.

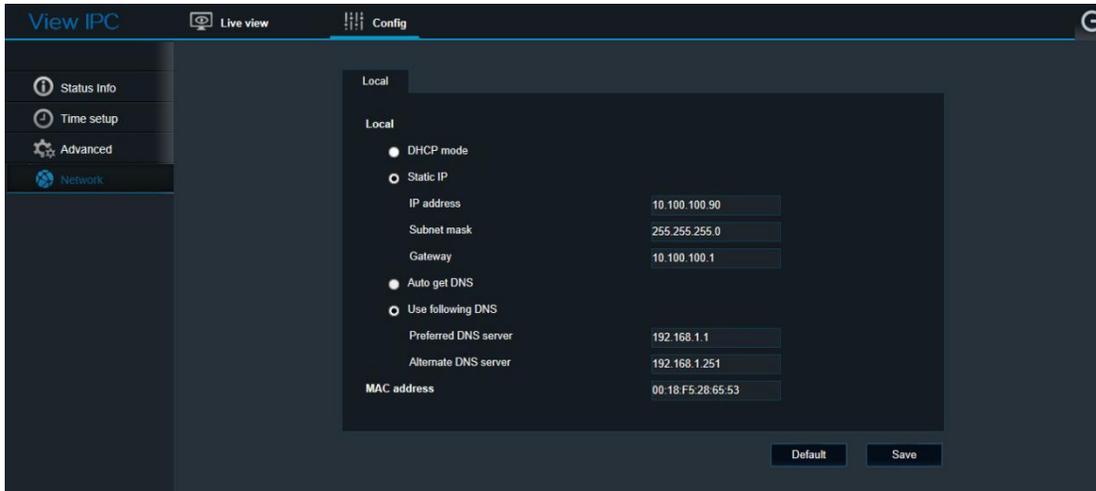
2) MDVR-PCC2 Time Settings:



Description:

This interface is used for Setup MDVR-PCC2 time.

3) Network Setup:



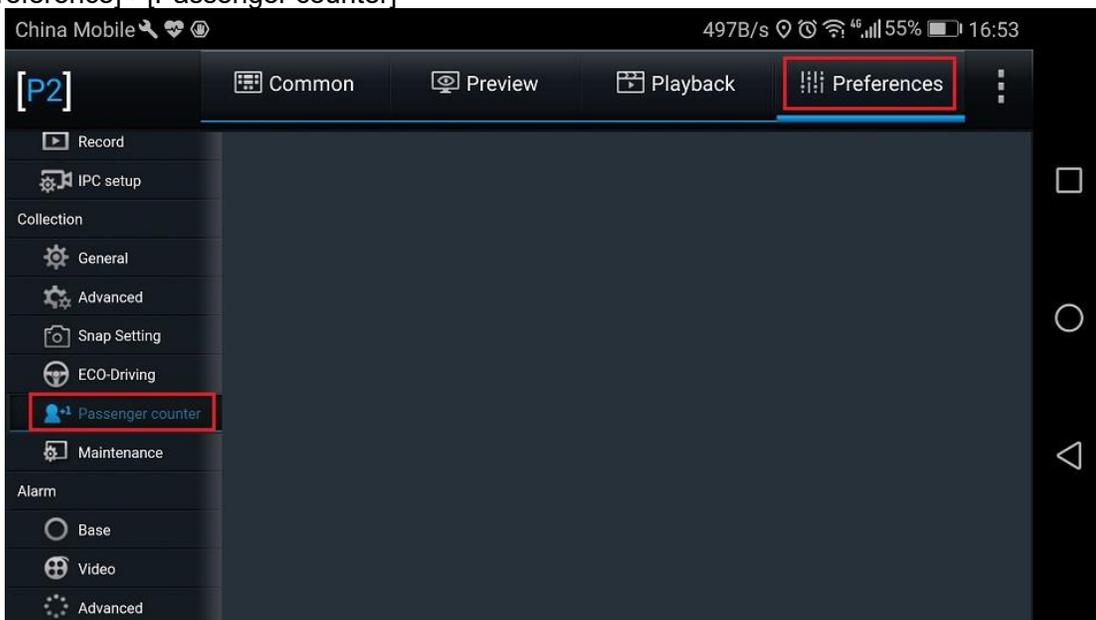
Description:

Setup MDVR-PCC2 IP address and MAC address, user don't need change this part. If there are multiple MDVR-PCC2 in MDVR system, make sure there is no MAC address conflicts, or MDVR-PCC2

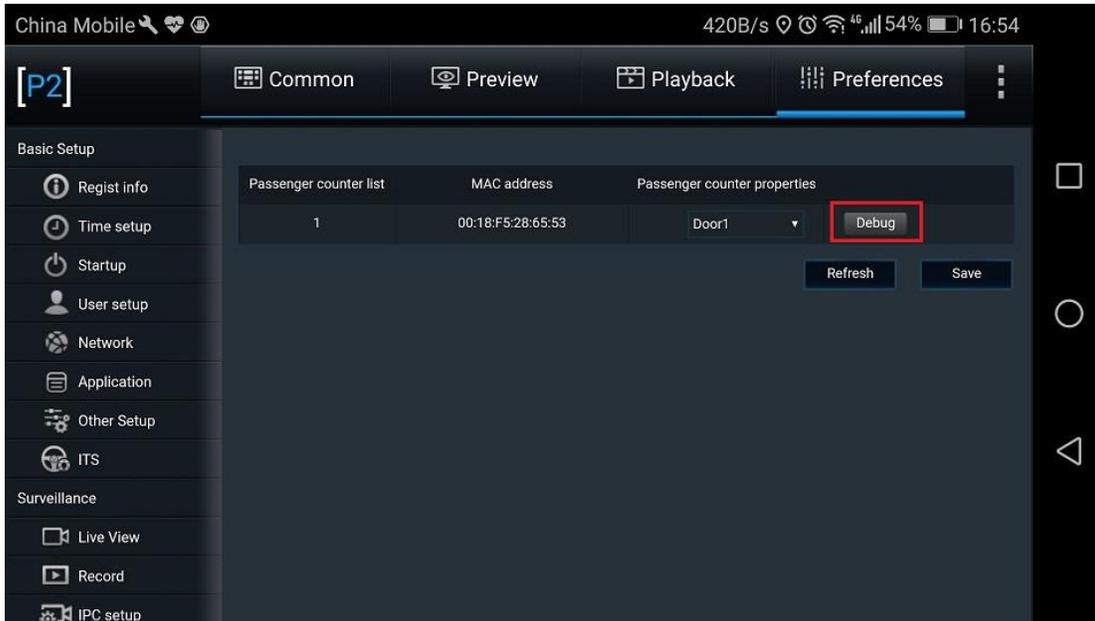
2.2. Configuration on Easycheck

2.2.1 Connect and snapshot

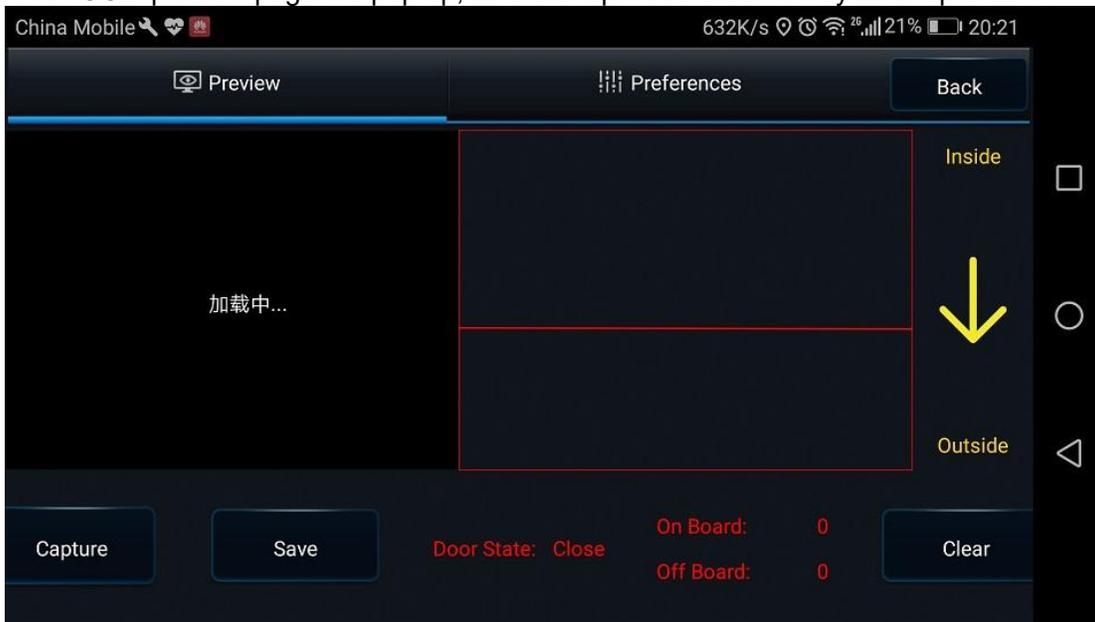
Connect Easycheck to MDVR, run Easycheck APP and login MDVR. Setup to [Preference]->[Passenger counter]



Click "debug" button

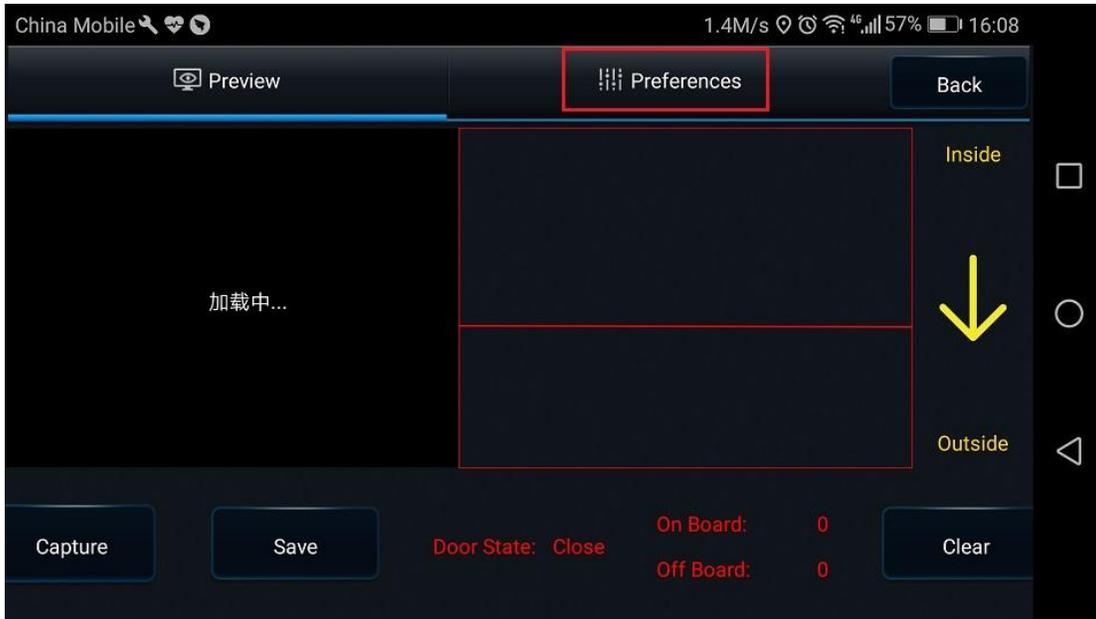


MDVR-PCC2 preview page will pop up, do the snapshot the same way as chapter 2.1.1



2.2.2 Parameter configuration

Click "Preference" button, and do the configuration as the same way in chapter 2.1.2



2.2.3 Other features

Configure as the same way in chapter 2.1.3.

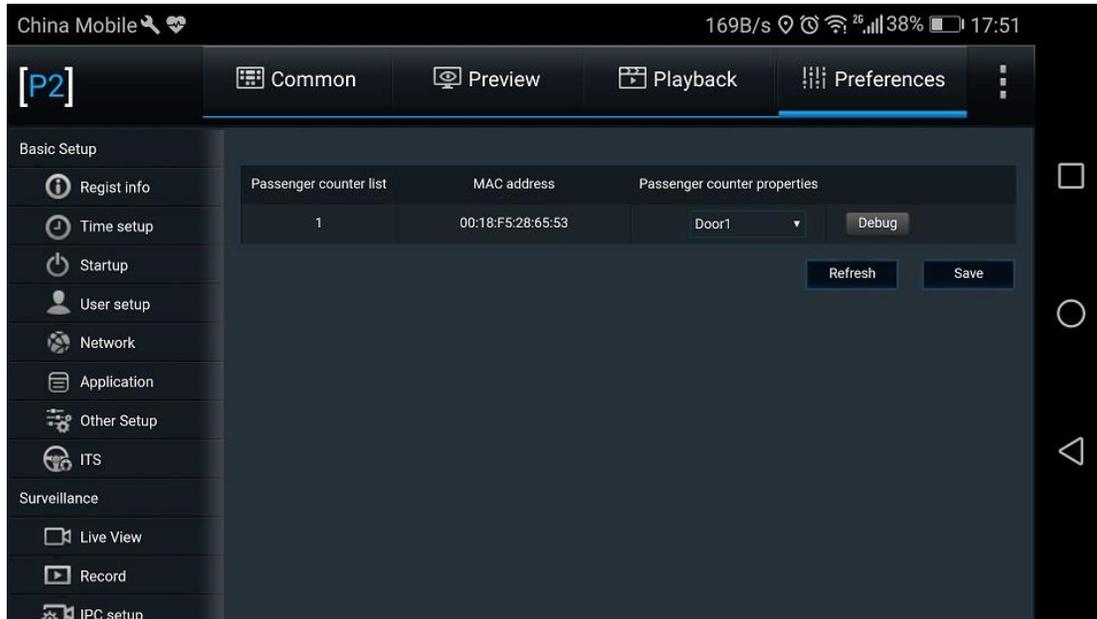
3. MDVR configuration

Tips: Configuration below shows how to configure passenger counter to MDVR from Easycheck.

3.1. MDVR configuration

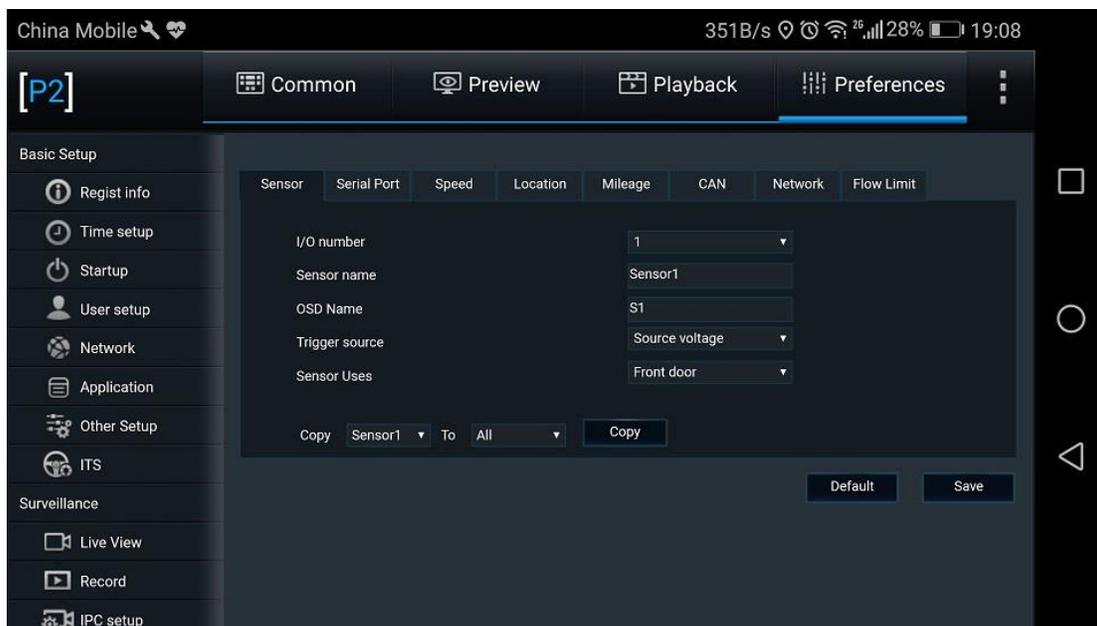
3.1.1 Communication configuration between MDVR and MDVR-PCC2

Click **Preferences** -> **Collection** -> **Passenger counter**, it shows MDVR-PCC2 connection status, picture below means MDVR-PCC2 connected normally to MDVR.



3.1.2 Door open/close configuration

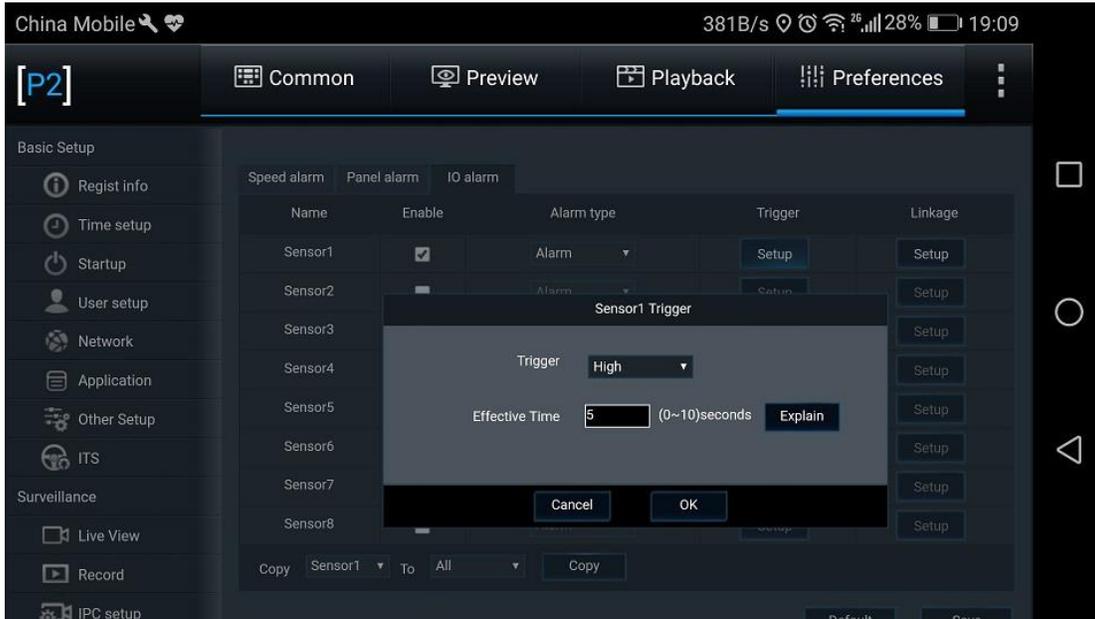
① If door signal is voltage
click **Preferences** -> **Collection** -> **General** -> **Sensor**, select the correct door sensor, select "Source voltage" as trigger source, "Front door" as Sensor use. (Tips: Front door is just an example, please select the specific door where MDVR-PCC2 is installed, middle door, rear door, etc.)



Then click **Alarm** -> **Base** -> **IO alarm**, enable the same sensor as steps above, set



“Alarm type” to Alarm, click “Trigger” and select trigger as “High” and set Effective time to 5 seconds.

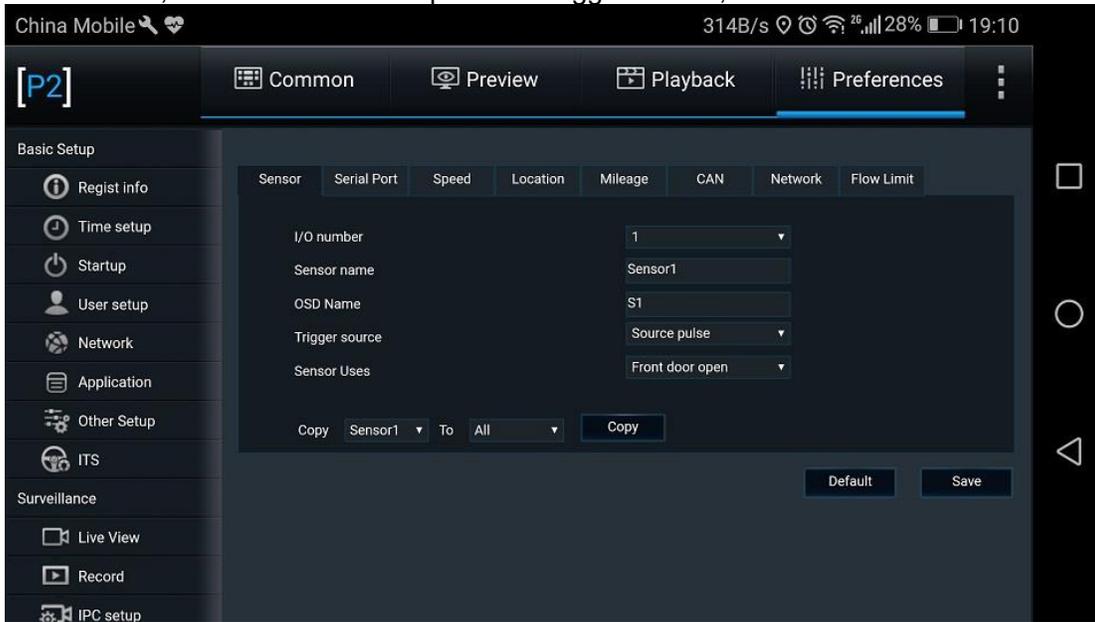


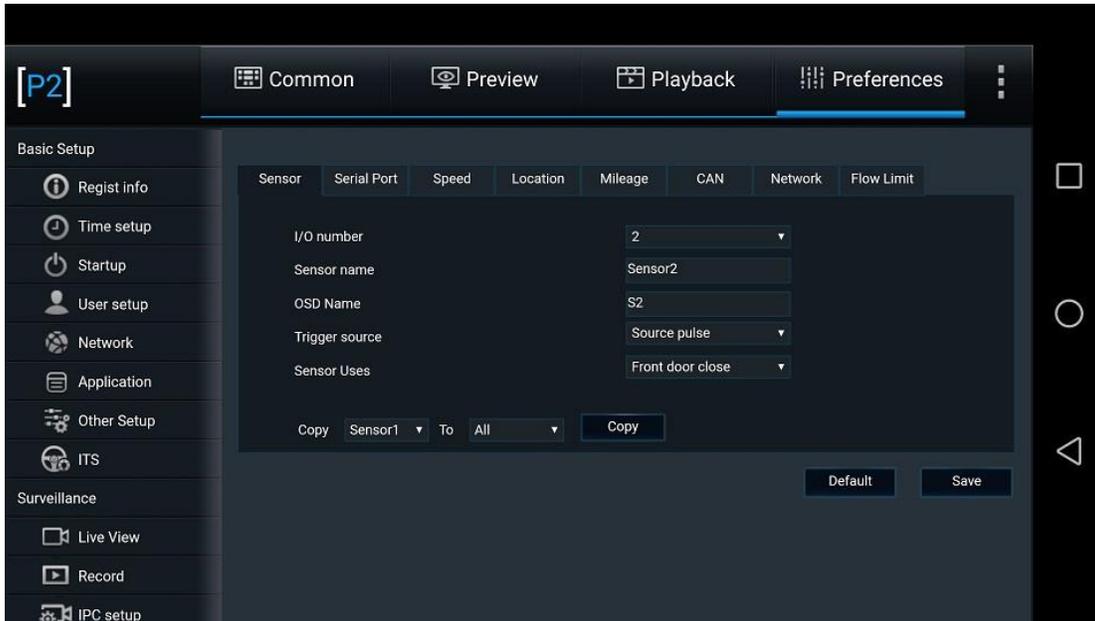
② If door signal is pulse

Tips: When door open/close signal is pulse, usually need 1 sensor to get door open pulse signal and the other sensor to get door close signal. Example below is use sensor 1 as door open signal and sensor 2 as door close signal.

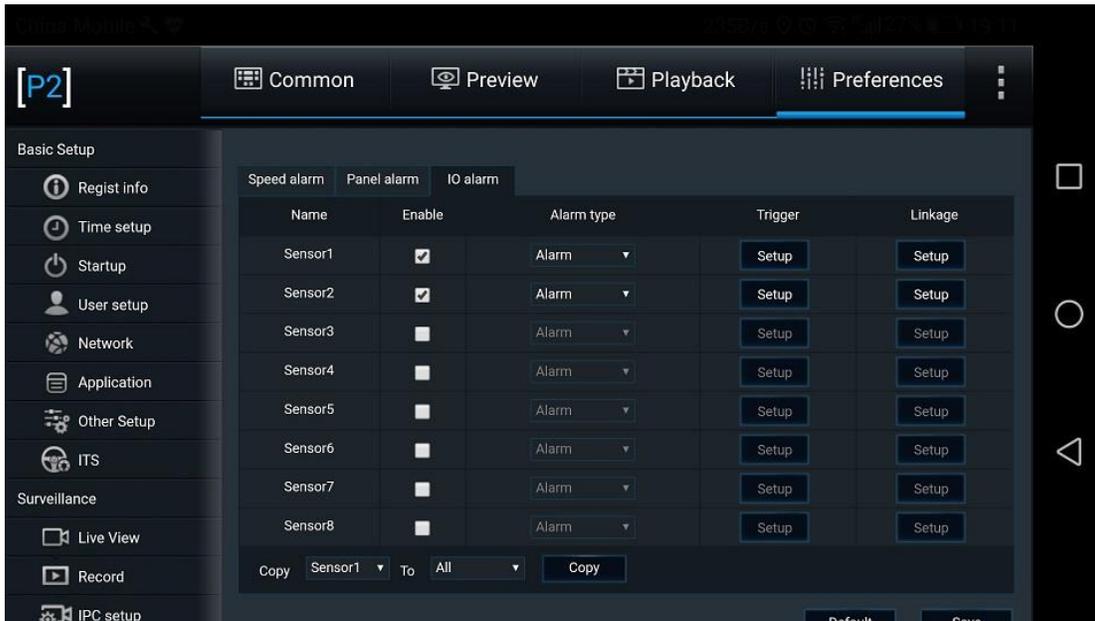
Click **Preferences** -> **Collection** -> **General** -> **Sensor**.

Select sensor 1, and choose “Source pulse” as trigger source, “Front door open” as Sensor use. Select sensor 2, and choose “Source pulse” as trigger source, “Front door close” as Sensor use.



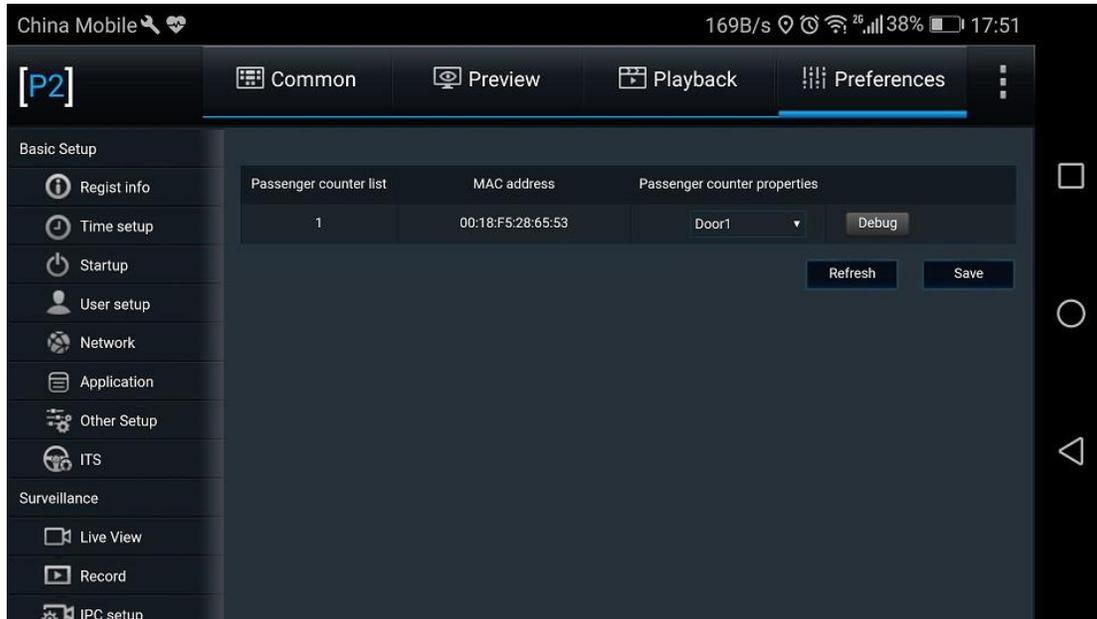


Then click **Alarm** -> **Base** -> **IO alarm**, enable the same sensor as steps above, set "Alarm type" to Alarm, click "Trigger" and select trigger as "High" and set Effective time to 5 seconds.

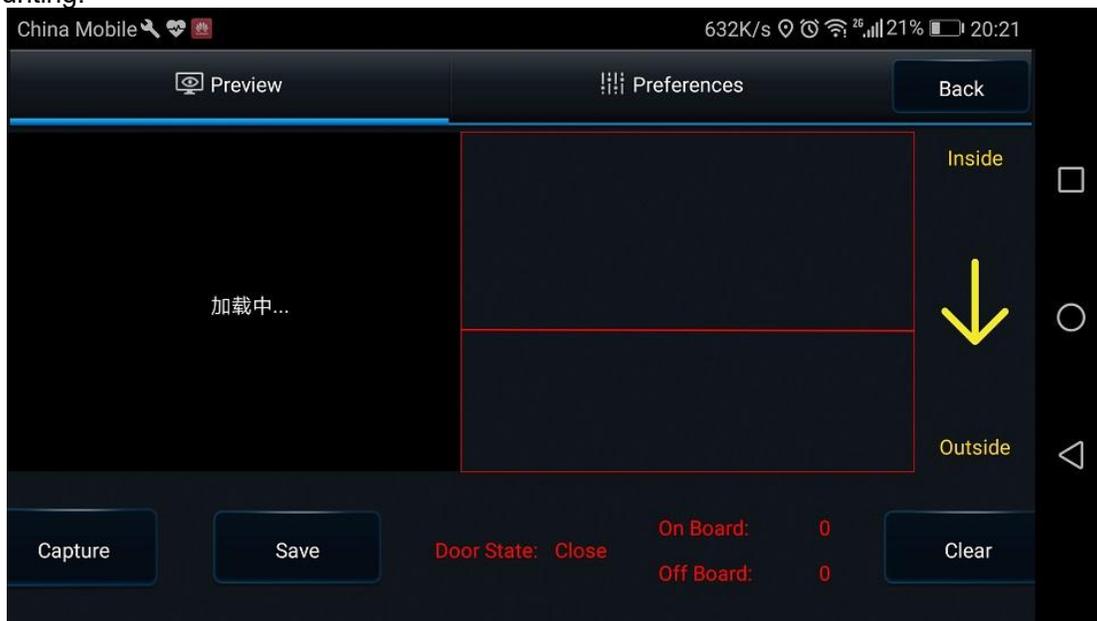


3.2. MDVR-PCC2 configuration

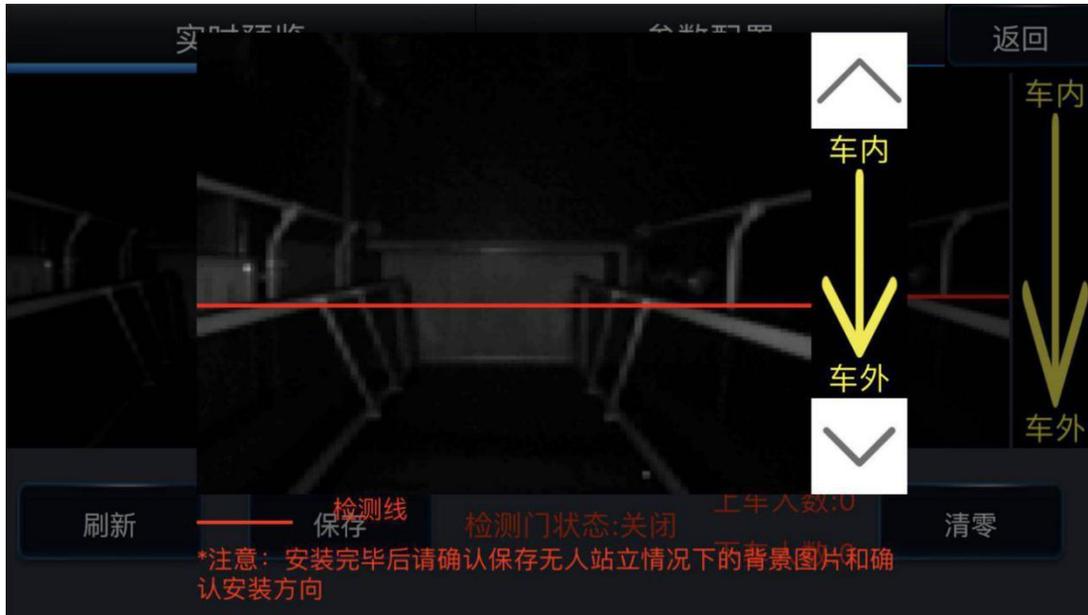
- 1) Click **Preferences** -> **Collection** -> **Passenger counter**, MDVR-PCC2 basic information will be shown as below, click "Debug" button on the right side.



Window below will pop up after click “Debug” button, Click “Capture” button on bottom left to capture the background image, this step is important, it will affect the accuracy of passenger counting.



Click background image will enlarge it, then press the red detection line and move it until to the middle of the foot step area(this will make MDVR-PCC2 more accurate), then adjust the direction of the yellow arrow direction, make sure it matched the real inside/outside direction of vehicle, if yellow arrow direction is opposite to the real direction, then click the arrow to adjust it.



Click any side area of the pop up window, screen will back to the debug page, then click “Save” button on bottom left to save the settings. This will finish the debug setup.

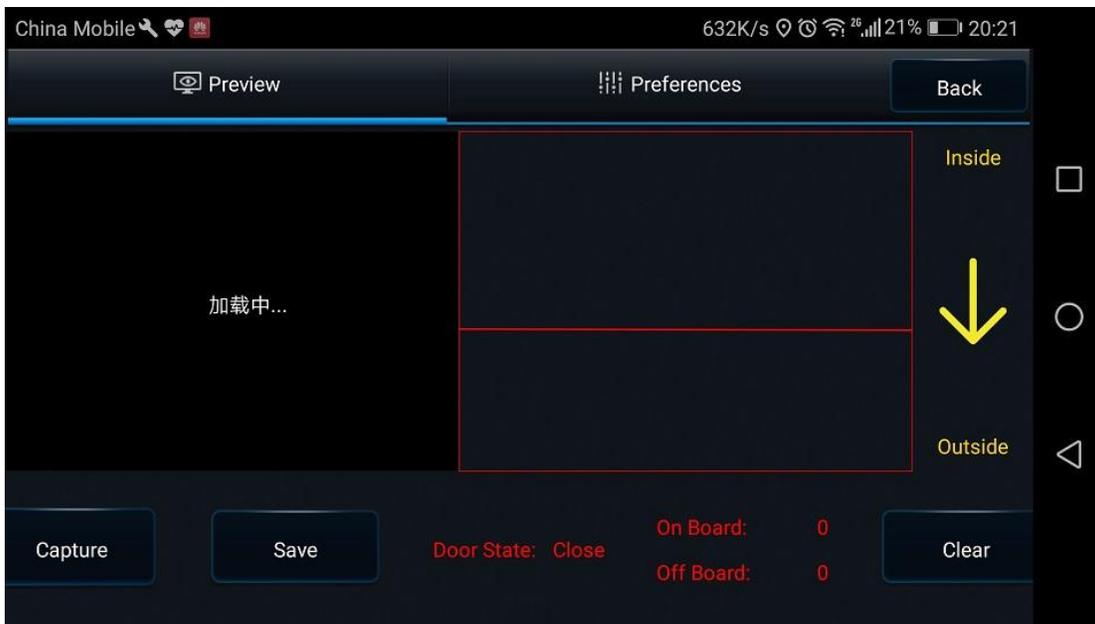
Check door open/close signal and passenger counter accuracy

Check door open/close signal

Try to open and close the door and check the door status on the bottom of “debug” page, as picture shows below, normally, “Door state” will show open when door is open, “Door state” will show close when door is closed.

Check passenger counter accuracy

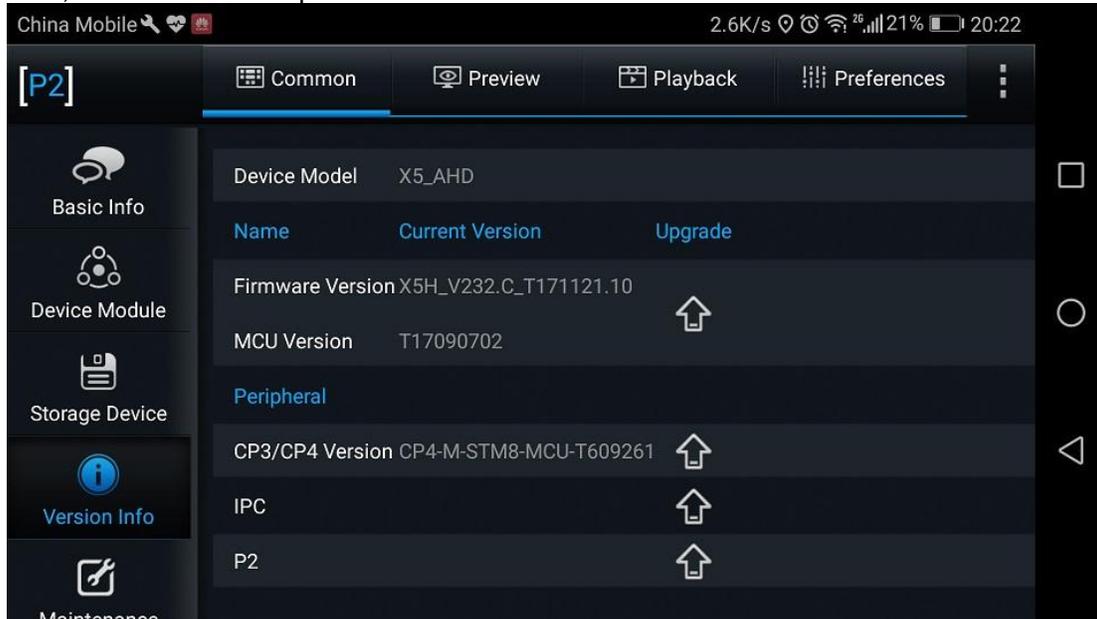
Get on and get off the bus for several times (as many as possible), then check the “on board” and “off board” counting on the bottom of “debug” page, as picture shows below.





3.3. Update MDVR-PCC2 firmware

Click Common->Version info->MDVR-PCC2 , it will show the current MDVR-PCC2 firmware version, firmware can be updated here.



4. FAQ

When MDVR-PCC2 is not accurate.

- 1) Open the door on the vehicle and check the door status on Easycheck "Debug" page, "Door state" must show "open", close the door and check the state again, "Door state" must show "close". Make sure door state shown on debug page match the door open/close status.
- 2) Recheck the cable connection and all steps above, make sure everything is correct.
- 3) Send back the log and export the record from SD card in MDVR-PCC2 to us, we will analysis and address the issue.