Milesight-Troubleshooting

Radar AI LPR Setting

Ⅰ、About Milesight Radar AI LPR Camera

For Milesight, the Radar AI LPR Network Camera not only supports the embedded LPR algorithm, but also the deep learning algorithm based on the AI platform, which can achieve higher detection accuracy and richer intelligent functions. With the higher added value brought by the application of radar technology, Milesight Radar AI LPR Network Camera is definitely an industry-leading innovative product in the market.

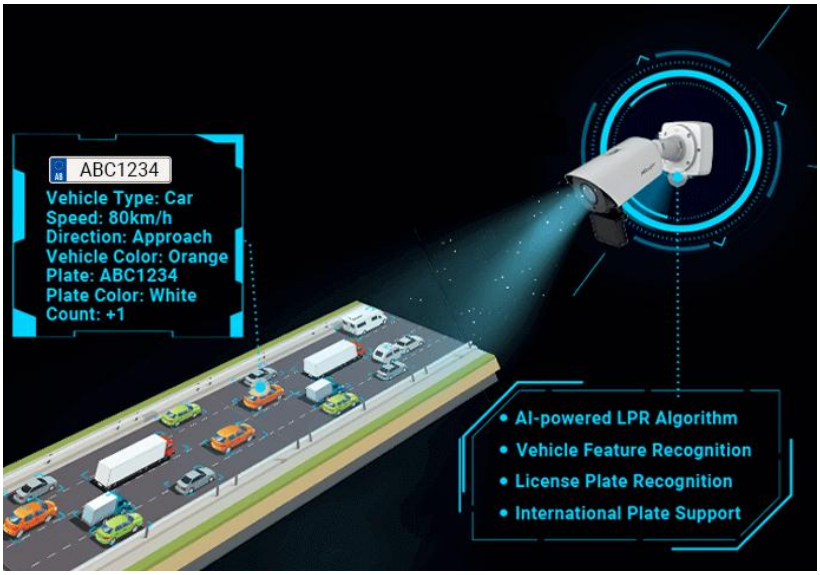


Figure 1 Radar AI LPR Network Camera

- **Related Model**

Radar AI LPR 4X/12X Pro Bullet Plus Network Camera

Ⅱ、Installation Considerations

To increase the accuracy of license plate recognition and Radar detection, be sure to install the Radar LPR cameras properly to capture the license plates with the correct image size, lighting conditions and camera angle. The following highlights are the tips for camera installation:

A. Recommended installing the camera in front of the vehicle:

It is recommended to install the camera in gantry or mounting bracket rather than at the roadside to ensure the camera can capture the full view of the vehicle.

Notes

It is recommended that the road within the live view be straight rather than in the corner for better accuracy.

B. Recommended installation height:

To avoid capturing unnecessary contents in the image, the Radar AI LPR camera should be installed in a higher position, and the recommended installation height of the camera (from the ground) is from 3 to 6 meters.

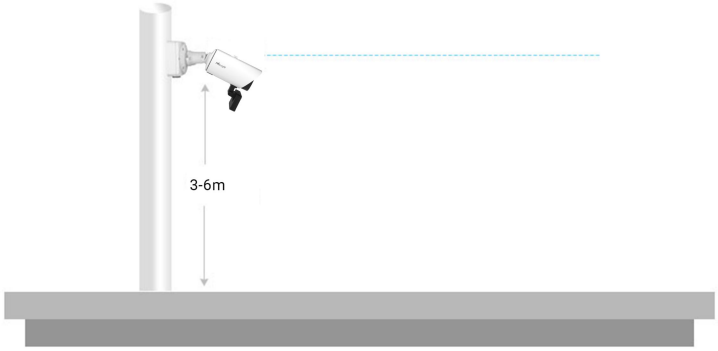


Figure 2 Installation Height

C. Recommended installation angle:

Install the camera at a suitable angle (Vertical angle is less than 30°; Horizontal angle is no more than 30°; Tilt angle is less than 5°) to capture the front of the vehicle.

Figure 3 Installation Angle

D. Instructions for use of radar module:

①:The radar board is used to transmit and receive radar waves, and the angle can be adjusted. We recommend that you keep it vertical to the horizontal field of view of the camera when using it. The angle of the radar board can be adjusted from -20° to 90°, the recommended angle range is 0° to 15°.

②:The detection range of the radar module is vertical angle 17°, left and right 56°. Keep the detection range of the radar board unobstructed and cover the detection target;

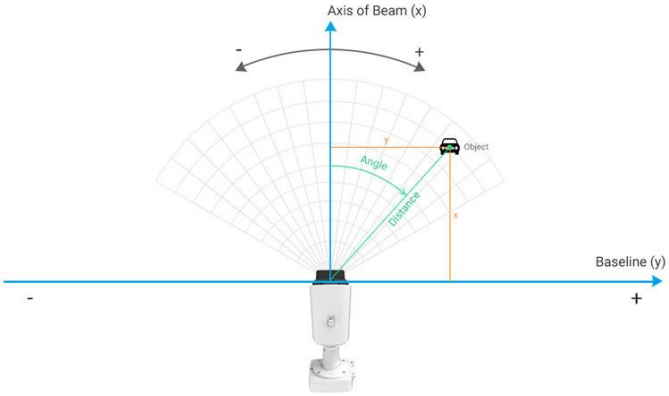


Figure 4 Detection Range of the Radar Module

③:The detection distance of the radar module is up to 90m. Please ensure that the detection target is within the detection range.

Notes

In order to ensure the stable use and high accuracy of the radar detection function, you need to pay attention to:

①:Keep away from other signal antennas when installing;

②:The surface of the radar antenna should be kept as flat as possible to avoid scratches. Any slight bend will have a great influence on the detection result;

③:The radar module must be fully protected against static electricity during transportation, stor age, use and handling.

E. Detection performance of radar module:

Milesight Radar AI LPR Camera uses 60GHz millimeter wave radar, which is a medium-range radar. It can detect target distance, speed and angle information by receiving radar reflections.

Function	Description
3D Radar	1～4 lanes vehicle detection, lane recognition rate ≥ 95%
Detection Distance Range	Up to 90m
Distance Detection Accuracy	±0.4m
Speed Detection Range	Up to 200km/h
Speed Detection Accuracy	±0.36km/h
Multi-target Detection	32
Target Detection Rate	≥99%, More than 95% of traffic jams

After successfully installing the camera, to use the Radar AI LPR related functions, you also need to set the necessary web page configurations. For the relevant settings of the LPR function, please refer to the manual for operation. The following steps are relevant settings for the application of Radar technology.

Ⅲ、How to Set Radar AI LPR Camera

(1) Settings

Step1: Adjust the Zoom length of the lens.

It is recommended to adjust the zoom length to just cover the range of the road to be detected, as shown below.

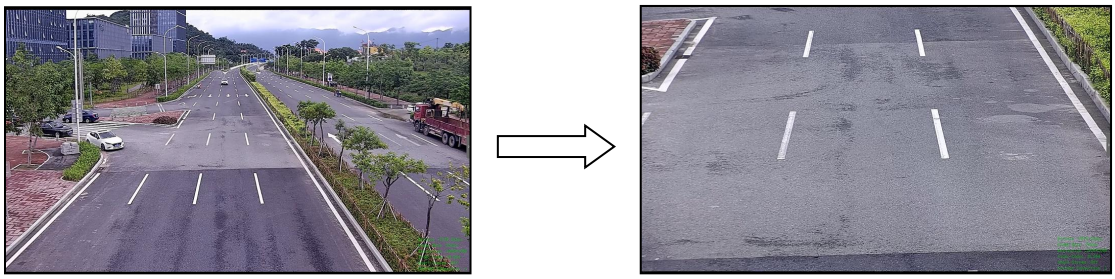


Figure 5 Adjust the Zoom Length

Step2: Configure LPR General Settings.

After logging in to the web, go to "**LPR**" → "**Settings**" → "**General**".

Check the checkbox "**Enable LPR**", and the LPR detection areas can be drawn on the screen, which is shown in the blue box as below.

Please draw the LPR detection areas that match the number of lanes. For more information about the detection areas, please refer to Trigger Distance.

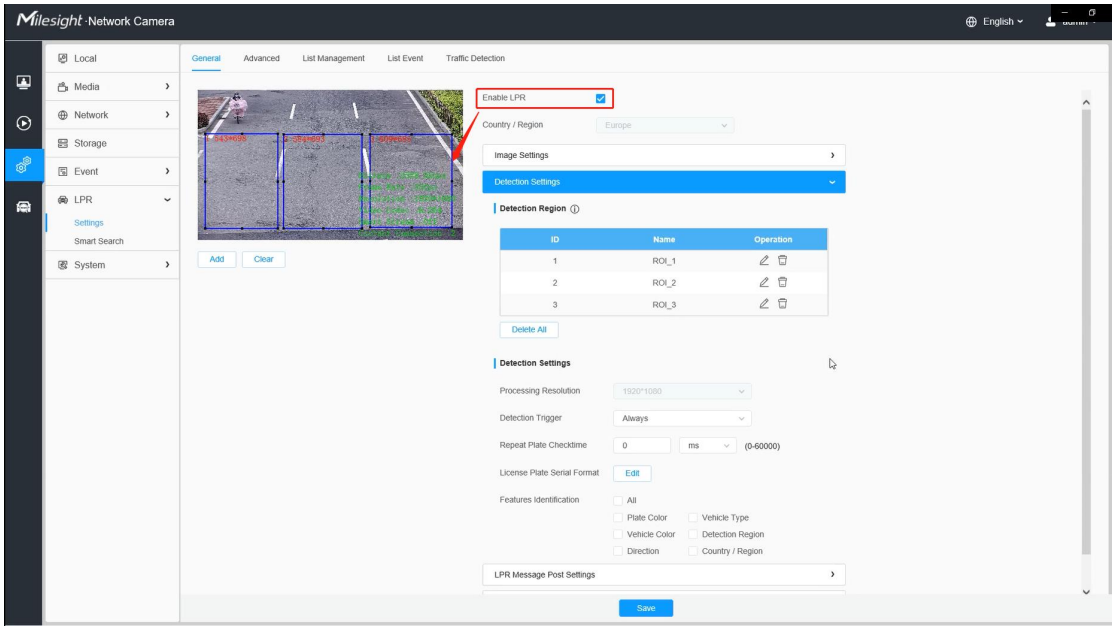


Figure 6 LPR - Settings page

Notes

①:It is recommended that the LPR area be drawn at a distance of more than 30 meters from the Radar AI LPR Camera. Do not place the detection area too large to avoid the situation where it can contain multiple vehicles in front and behind;

②:Complete other LPR related settings, for the relevant settings of the LPR function, please refer to the **User Manual** for operation. The following focus steps on the relevant settings for the application of Radar technology;

③:If you do not need to use the radar function, please **turn off the radar function** so as not to affect the detection of LPR.

Step3: Enable Traffic Detection.

Go to the "**LPR**" → "**Settings**" → "**Traffic Detection**", check the checkbox to enable Traffic Detection.

Then adjust the detection sensitivity of the radar module, levels 1~4 are available. The higher the sensitivity, the easier the target is to be detected. Users can adjust the detection sensitivity as needed to avoid some missing or false detection, such as false detection caused by rain hitting the radar board.

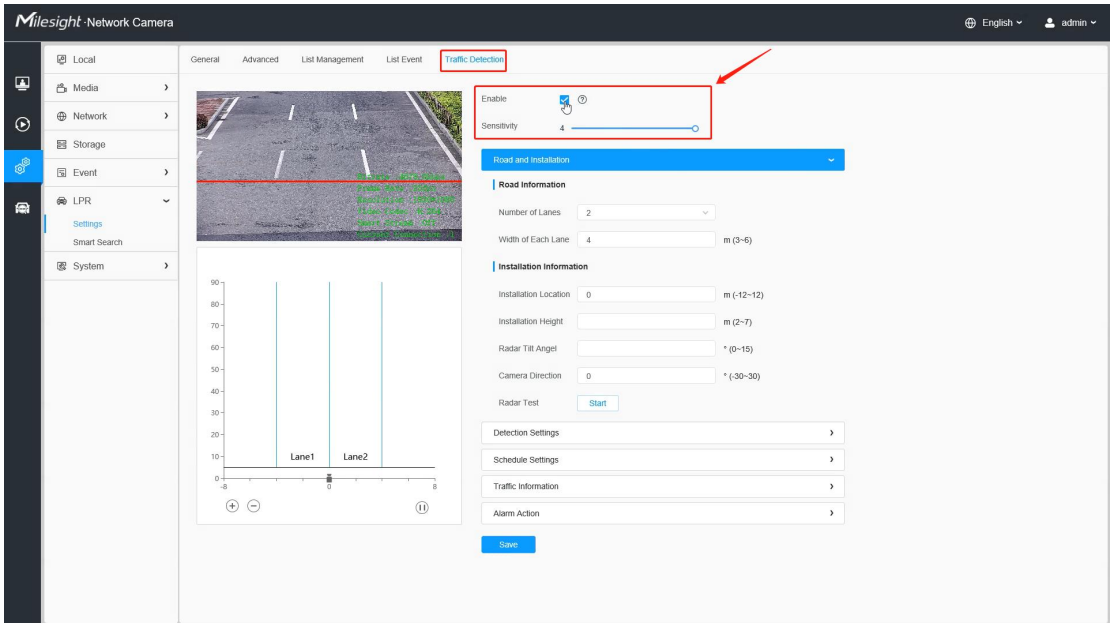
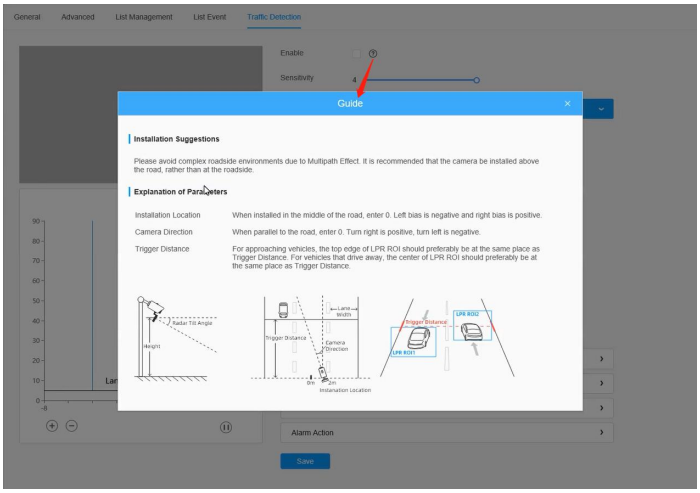


Figure 7 LPR - Traffic Detection Page

Notes

For users who are using the Radar AI LPR Camera for the first time, we recommend clicking the icon on the right to get the quick start guide.



Step3: Fill in the road and installation information as shown below.

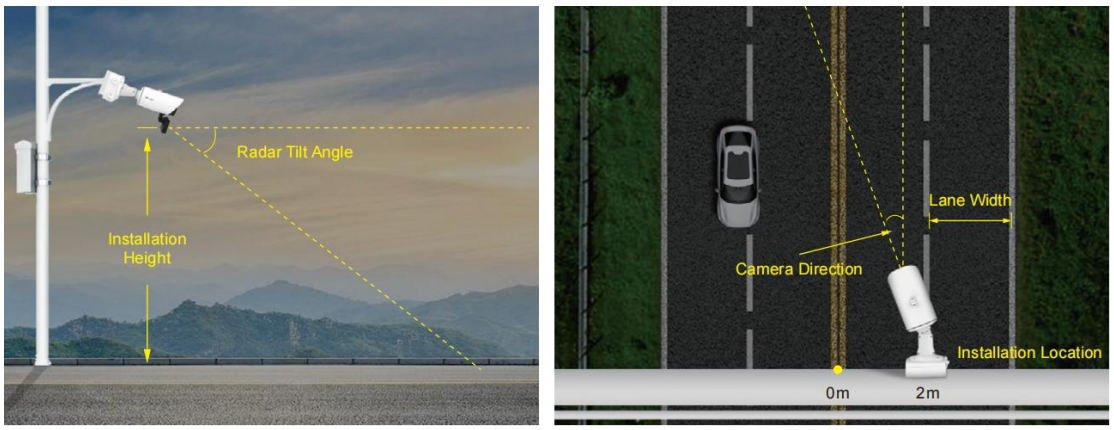


Figure 8 Road&Installation Information

[Number of Lanes] & [Width of Each Lane]: Please fill in the number of lanes and the width of each lane according to the actual scene. It supports up to 4 lanes, and the width range of each lane is from 3 to 6 meters.

As an example, the scene in Figure 7 includes three lanes and each lane is 3 meters wide.

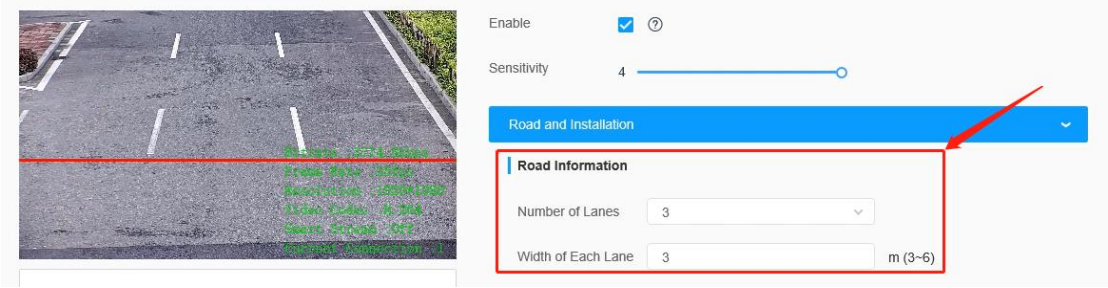


Figure 9 Road Information

[Installation Location]: Please fill in the installation position of the camera on the road, the range is -12 to 12 meters, and the default is 0.

If the camera is installed in the middle of the road, fill in 0, otherwise, fill in the corresponding offset distance. It should be noted that the installation position needs to be confirmed as a positive or negative number. With the center of the road as the zero point, if the camera is

installed on the left side of the road, it is defined as a negative number, and if it is on the right side, it is defined as a positive number.

Taking the scene in Figure 7 as an example, the camera is installed in the middle of the road, so fill in 0.

[Installation Height]: Please fill in the installation height according to the actual installation height of the camera, the range is 2 to 7 meters.

[Radar Tilt Angle]: Please fill in the Radar Tilt Angle according to the actual installation angle between the camera's field of view and the horizontal.

[Camera Direction]: Please fill in the angle between the direction of the camera installation and the road, the angel range is -30°~30°, and the default is 0°.

When the camera is parallel to the road, enter 0. Turn right is positive, turn left is negative as shown below.

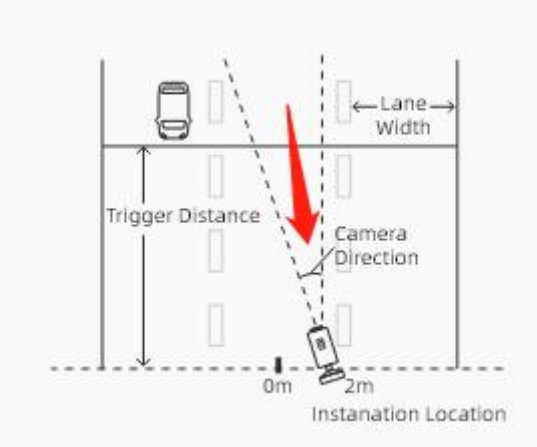


Figure 10 Camera Direction

[Radar Test]: After completing the above configuration, you can click the test button, then the above configuration will be automatically saved and the radar module will start to test with the maximum sensitivity and maximum detection range, which is not limited by the lane configuration. In this way, the user can flexibly adjust the configuration according to the position of the target in the coordinates to achieve the most matching configuration.

Figure 11 Radar Test

Notes

After 30 seconds of testing, the radar test function will be automatically turned off to prevent customers from forgetting to turn off the function.

Step4: Set Detection Settings.

[Trigger Distance]: As shown in the radar configuration page in the figure below, there will be a red line in the preview box of the configuration page. The red line is the position that can be adjusted up and down, and the Trigger Distance is the horizontal distance from the red line to the radar. When the license plate is detected in the LPR detection area, the recognized LPR detection result will match the radar data of the vehicle passing the trigger distance at the same time. Therefore, please ensure that the position of the red line in the video is the actual horizontal distance from the red line to the radar in the scene, to facilitate better matching between the LPR data and Radar data.

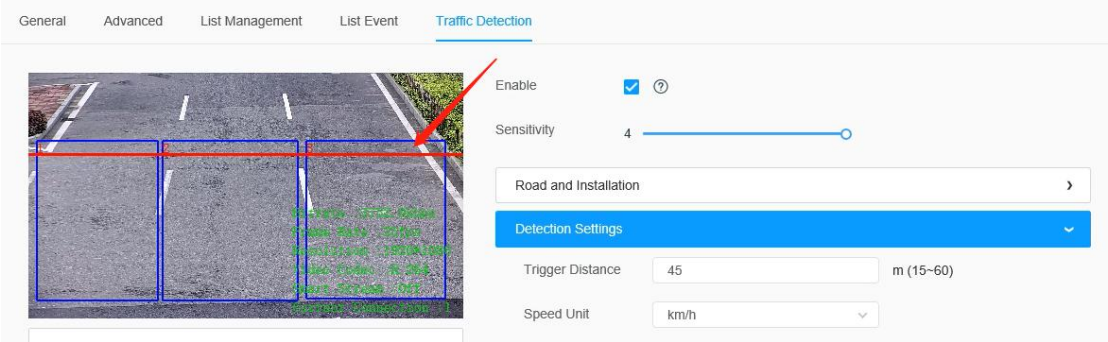
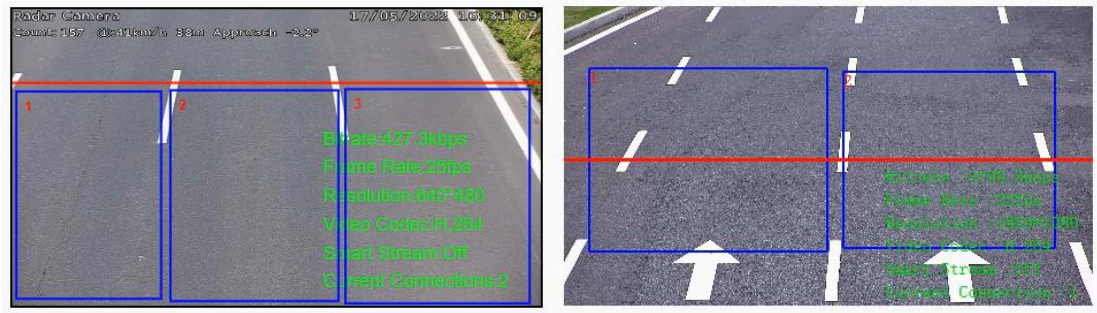


Figure 12 Trigger Distance Settings

Notes

In order to provide more accurate radar detection, for the approaching vehicles, we recommend setting the trigger line at the upper edge of the LPR detection area, and for the leaving away vehicles, we recommend setting the trigger line in the middle of the LPR detection area, as shown below.



For the Oncoming Vehicles For the Leaving Vehicles

To ensure relative accuracy, users need to fill in the trigger distance after actual measurement. Here we recommend three ways to get the trigger distance:

- Measure by the map software(Here takes Google Map as an example)

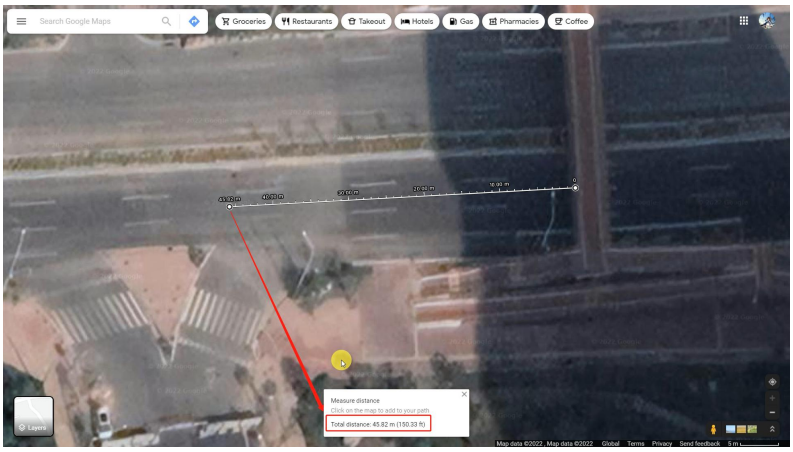
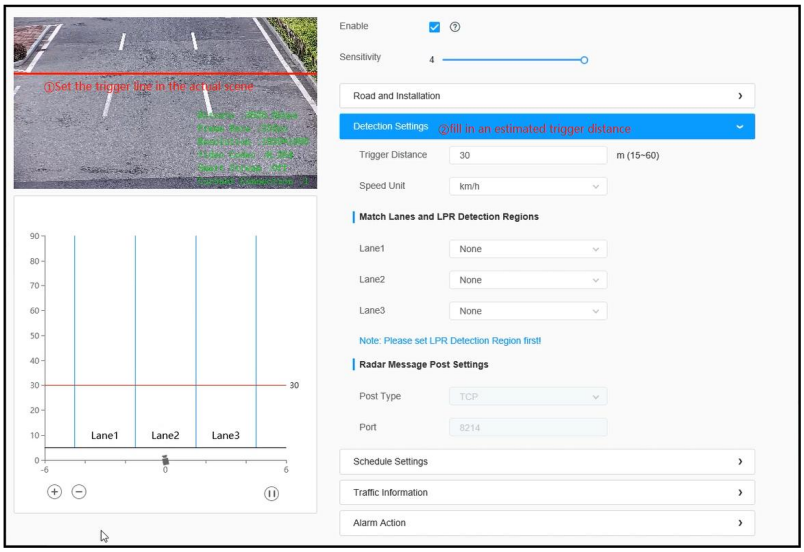
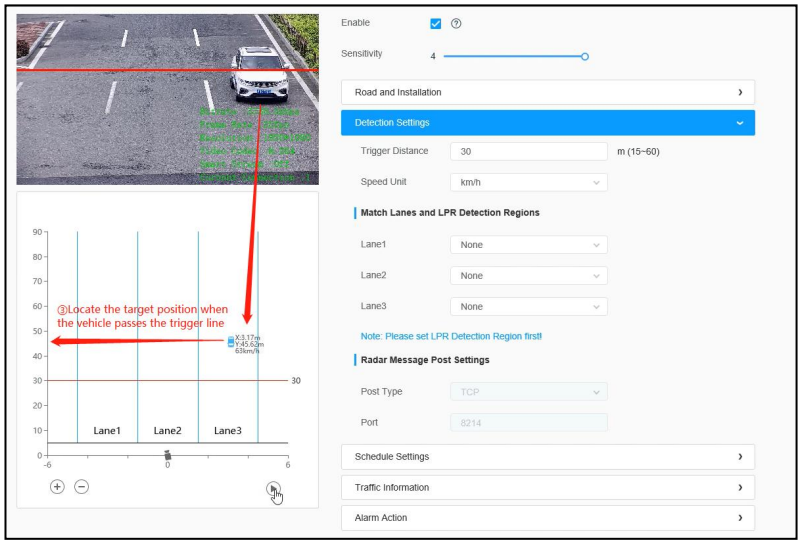


Figure 13 Measure by Google Map

- Measure by the radar coordinate map. After setting the trigger line in the actual scene, first fill in an estimated trigger distance. When the vehicle passes the trigger line, pause the radar coordinate map to locate the target position in the radar coordinate map, and then you can get the correct trigger distance.





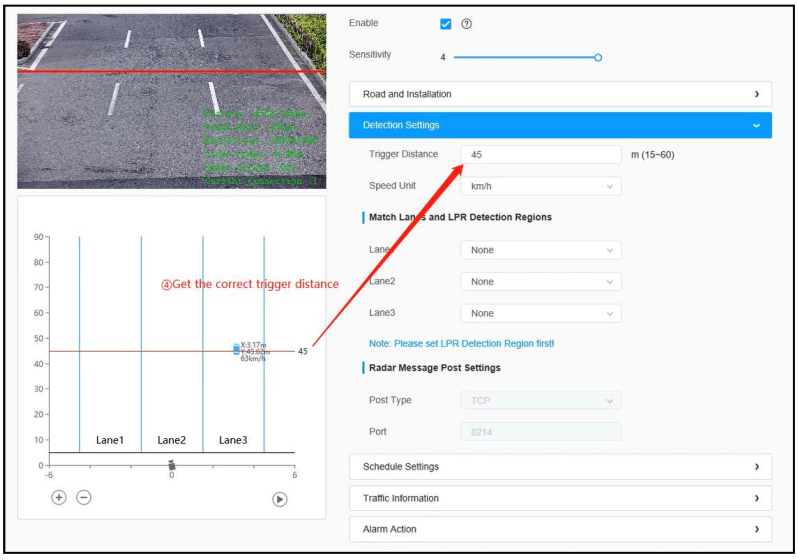


Figure 14 Measure by Radar Coordinate Map

- Measure by the tools manually.

[Speed Unit]: Select the speed unit as km/h or mph to meet the needs of customers in different regions.

[Match Lanes and LPR Detection Regions]: Please match the LPR detection region and lane one by one according to the actual scene.

[Radar Message Post Settings]: It supports the compatibility of radar data with back-end software via TCP, such as Milesight VMS Enterprise.

After completing the Road&Installation Settings and Detection Settings, these information will be dynamically matched with the coordinate map in the lower left corner, and the detected target will also be dynamically displayed on the coordinate map, which is convenient for users to view the detection results in real time.

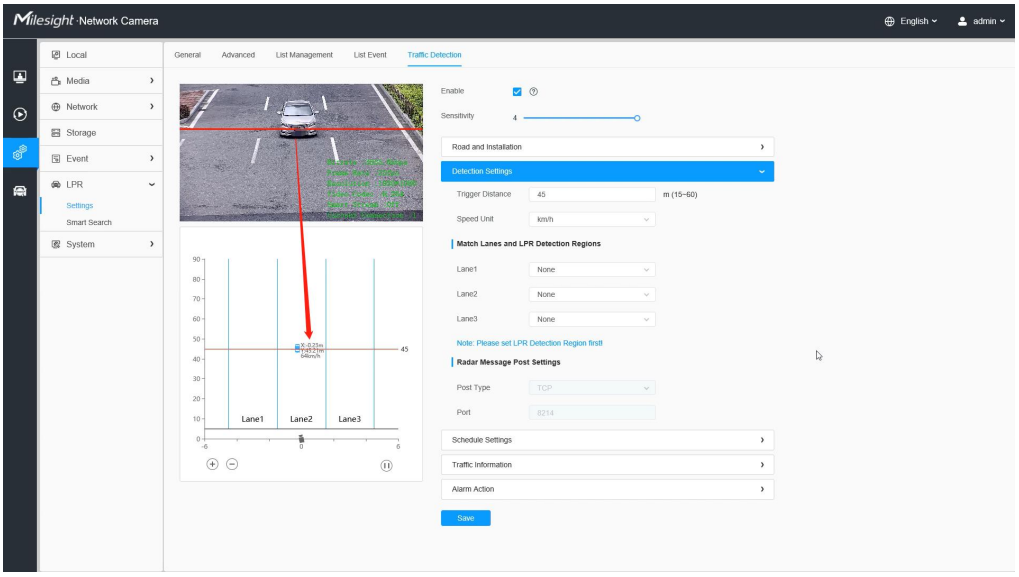


Figure 15 LPR - Traffic Detection page

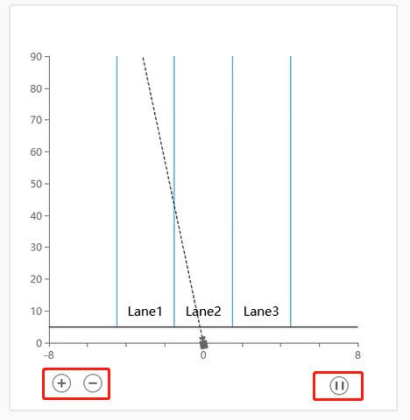
Please refer to the table below for the information contained in the coordinate map.

Item	Information Includes
Road&Installation Information	✓ Number of Lanes/Width of Each Lane ✓ Camera Position/Camera Direction Line ✓ Trigger Distance
Target Vehicle Information	✓ Vehicle Coordinates ✓ Vehicle Speed ✓ Vehicle Direction

Notes

①:After the vehicle has passed the trigger distance, click the button on the bottom right of the coordinates (as shown in the figure below) to pause the screen and watch the radar data of the vehicle at this time.

②:It can support adjusting the ratio of the coordinate axis by adjusting the "+" and "-" signs on the bottom left, which is convenient for customers to observe the vehicle position information in the observation range.



Step5: Schedule Settings.

Set the effective time of traffic detection.

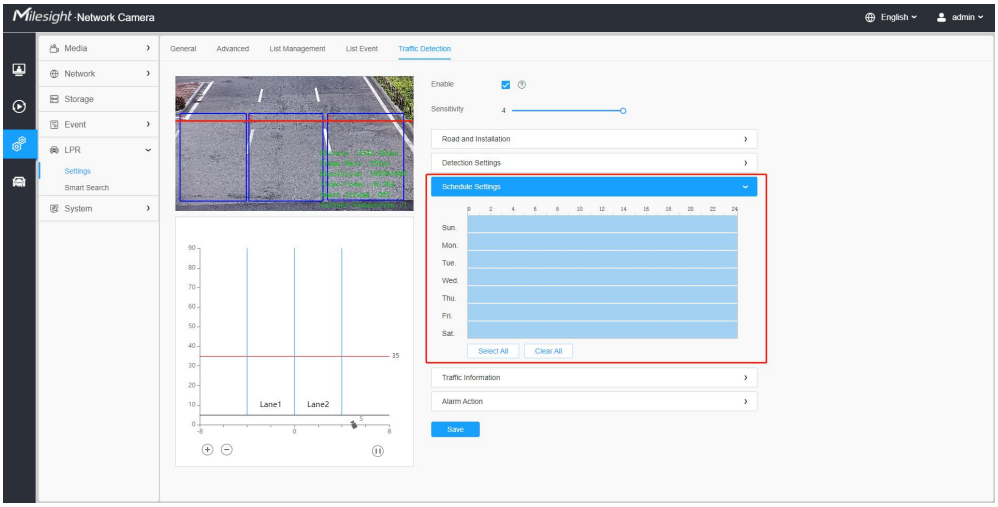


Figure 16 Schedule Settings

Step6: Traffic OSD Settings.

Customers can choose the information that needs to be displayed in Live Video and the display format, such as color, size, etc.

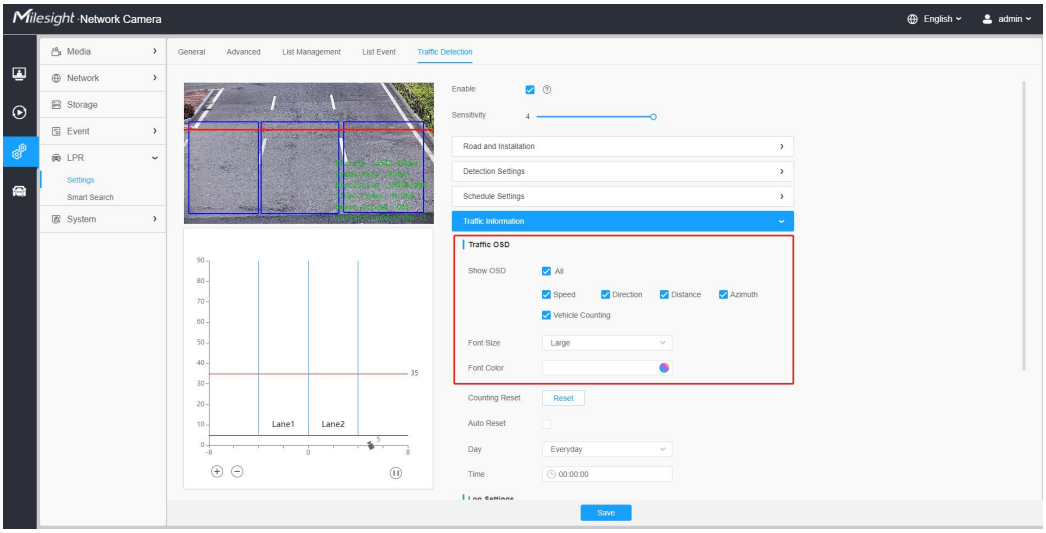


Figure 17 Traffic OSD Settings

[Show OSD]: Users can choose the information they want to display in Live Video, including Speed, Direction, Distance, Azimuth and Vehicle Counting.

[Font Size]&[Font Color]: The font size and color of the OSD display, the default size is Medium; When Speed, Direction, and Vehicle Counting are checked, the Live View interface is displayed as shown in the figure below:

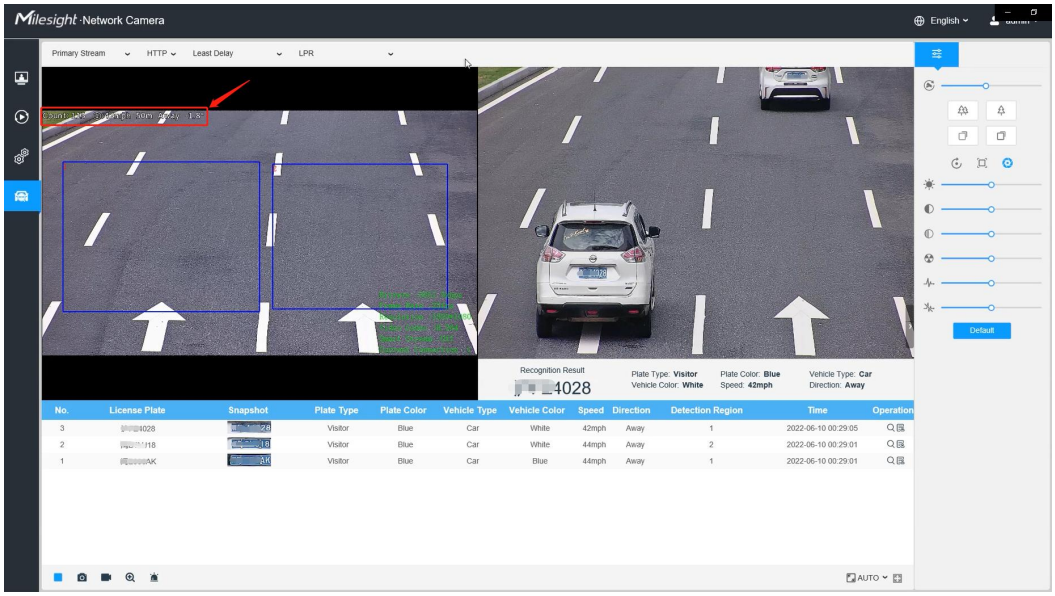


Figure 18 Live Video Interface

[Counting Reset]: Click the "Reset" button to manually reset the vehicle count.

[Enable Auto Reset]: It is used to automatically clear the vehicle count at regular intervals (Just reset the OSD count for Live Video). After it is enabled, the interface is as shown in the figure below, just follow the prompts to set it.

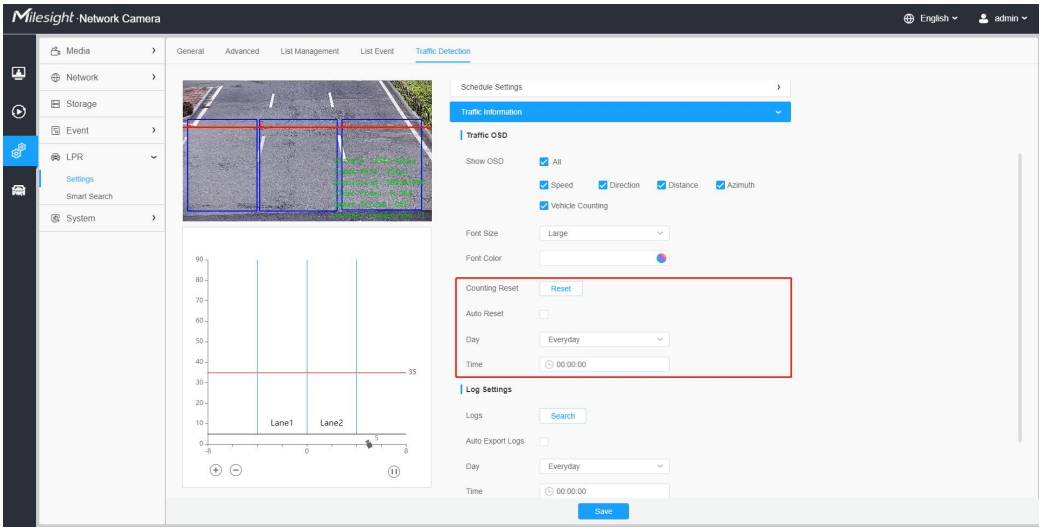


Figure 19 Traffic OSD Settings

Step7: Log Settings.

Click the "Edit" button, and a pop-up window as shown in the figure below (Figure 21) will appear, allowing users to search for various types of logs and supporting the log export function.

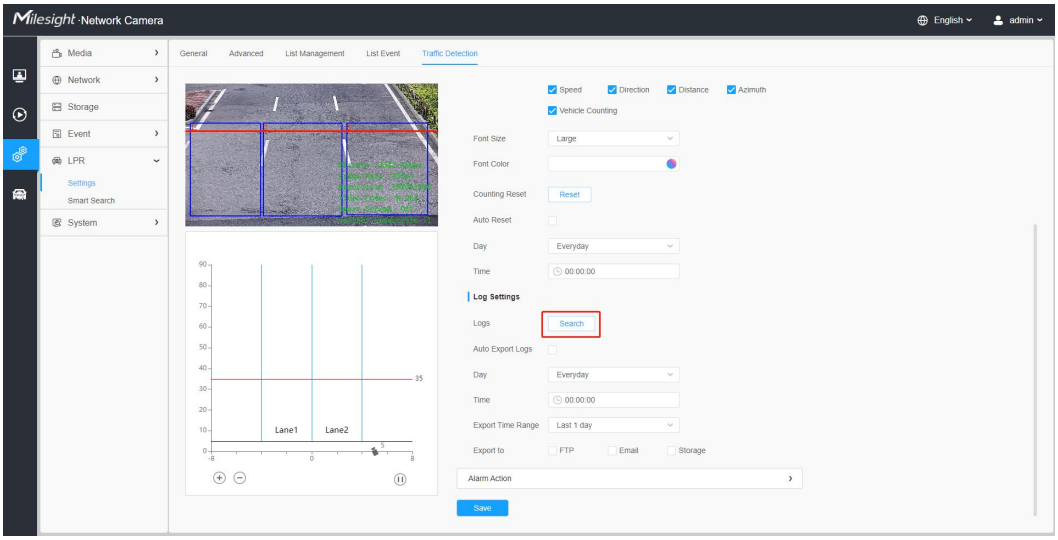


Figure 20 Log Settings

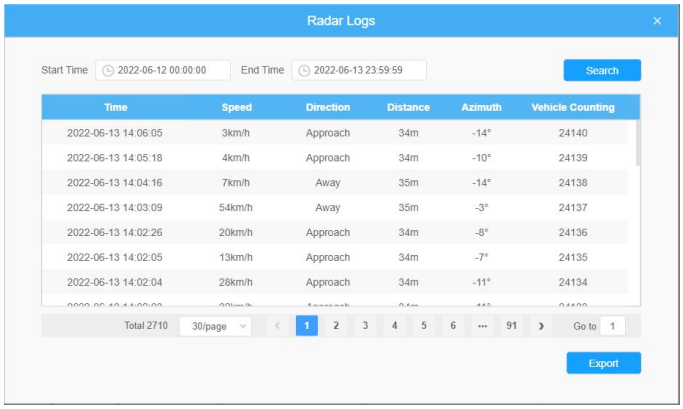


Figure 21 Logs Edit

[Enable Auto Export Logs]: Support regular automatic export of logs to FTP, Email and Storage.

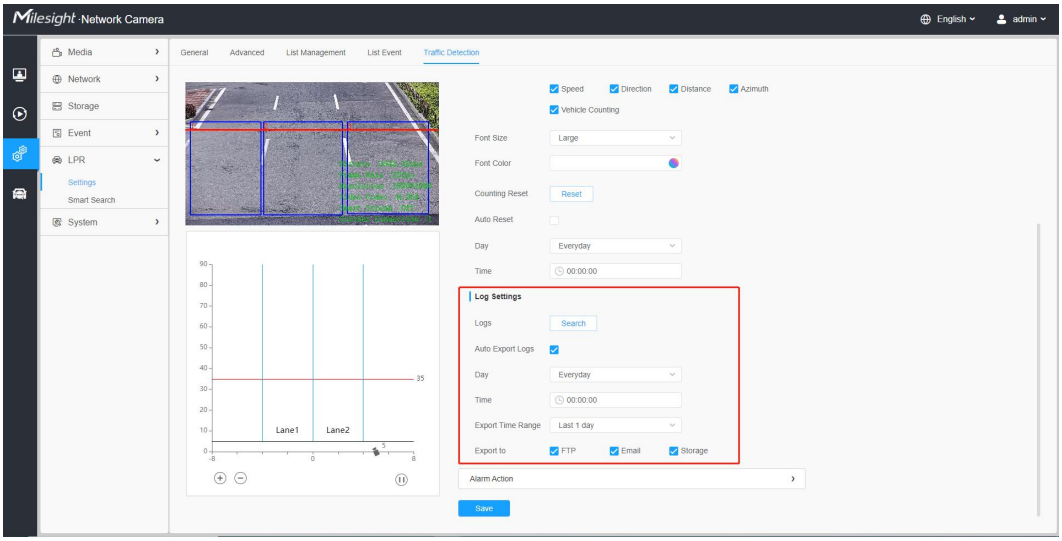


Figure 22 Logs Settings

Step8: Traffic Alarm Threshold.

Used to set traffic alarm thresholds, such as maximum and minimum speed limits, driving direction limits and vehicle counting limits.

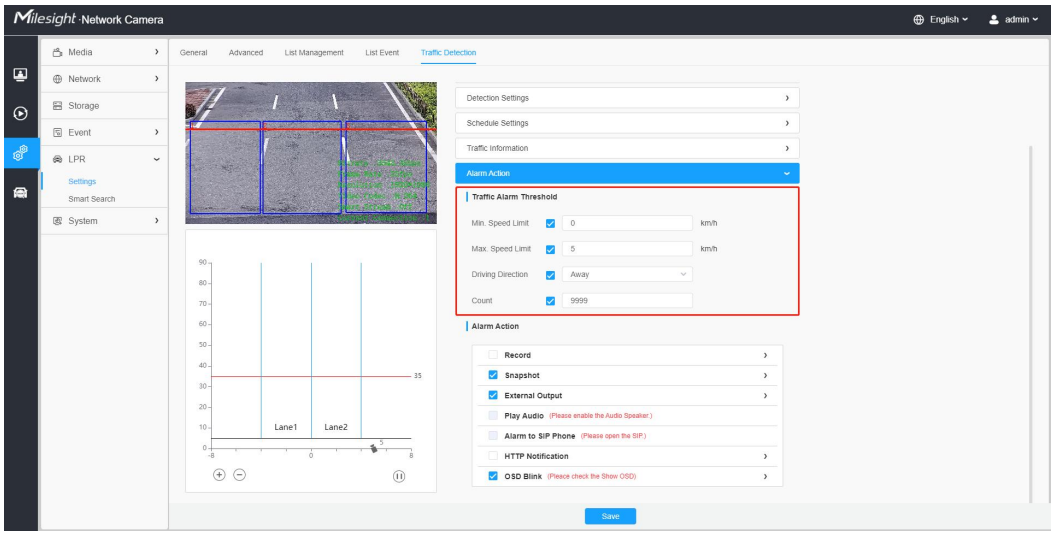


Figure 23 Traffic Alarm Threshold

Step9: Alarm Action & Alarm Settings.

This part is the same as the regular alarm settings. For details, please refer to the Milesight Network Camera User Manual. Here are two examples of alarm actions for your reference.

- OSD Blink

You need to enable the corresponding OSD first as shown in Figure 19. And then when an alarm is triggered, the OSD information will flash and alarm, and you can also set the duration of the OSD Blink Time, which supports 1~10s.

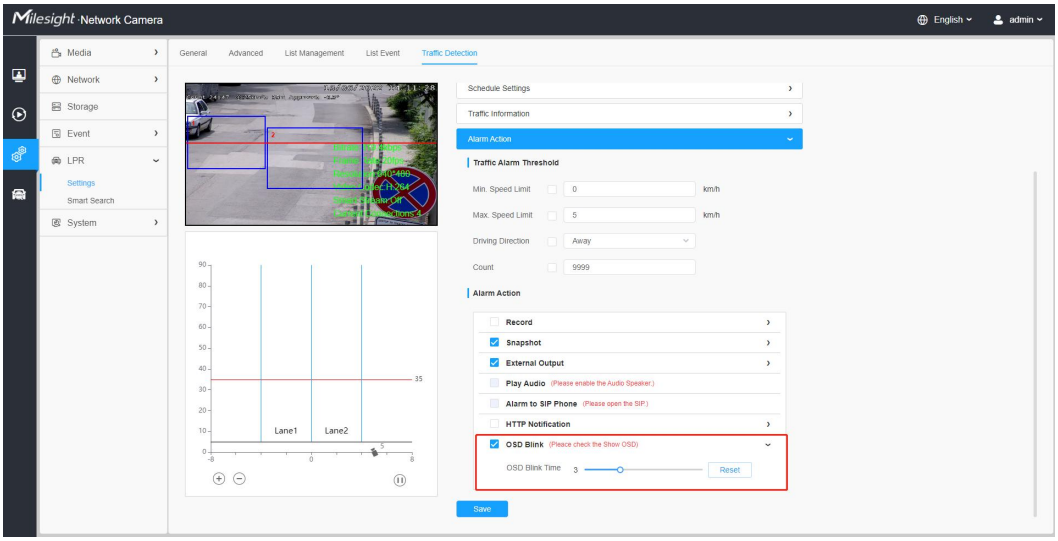


Figure 24 Alarm Action - OSD Blink

- Send Email

You need to configure the correct email information first. And then when an alarm is triggered, it will send the detection result to the corresponding email as shown below, including the license plate number, event type, vehicle speed, etc.

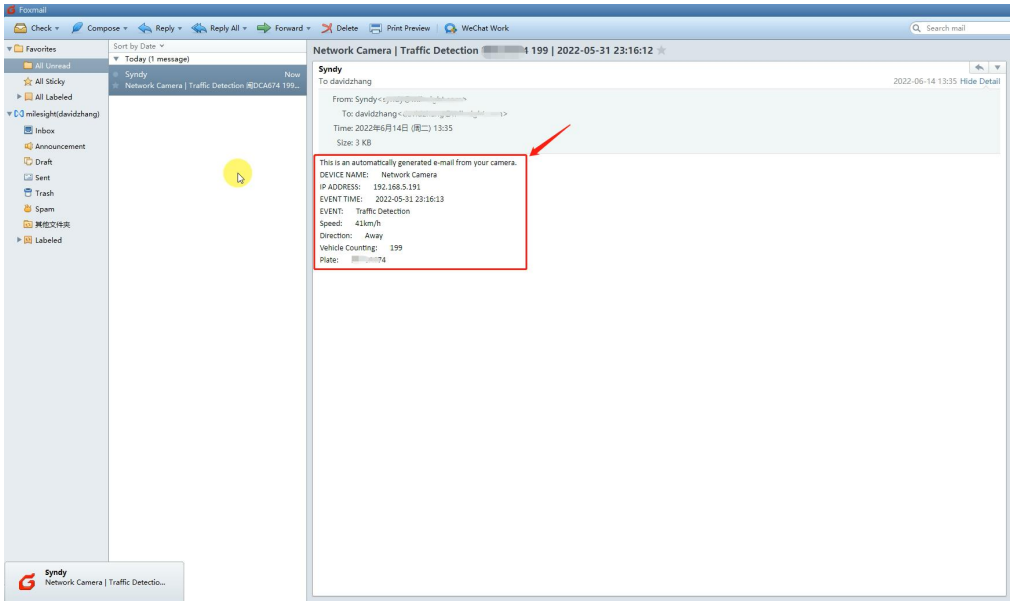


Figure 25 Alarm Action - Send Email

(2) Live View

After completing the LPR and Traffic Detection related settings, you can use the related functions of Radar AI LPR Camera normally. The following is the real-time display in the Live View interface:

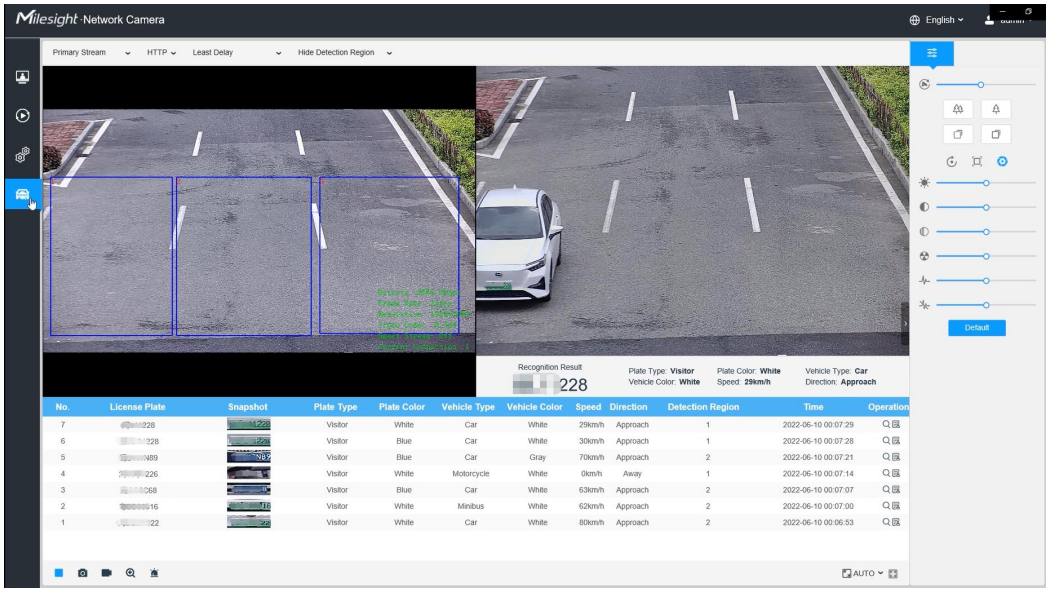


Figure 26 Live Video Interface

(3) Compatible with Milesight VMS Enterprise

Milesight VMS Enterprise can work well with Radar AI LPR Camera as shown below:

- ✓ Radar Data Integration & Traffic Detection Settings
- ✓ Get Intuitive Liveview and Accurate ANPR Results
- ✓ Search and Locate Vehicles Faster and Smarter
- ✓ Various Events & Alarm Actions
- ✓ Manage Lists Flexibly to Level up ANPR Management

And it integrates the radar data **via TCP** as shown in the following figure.

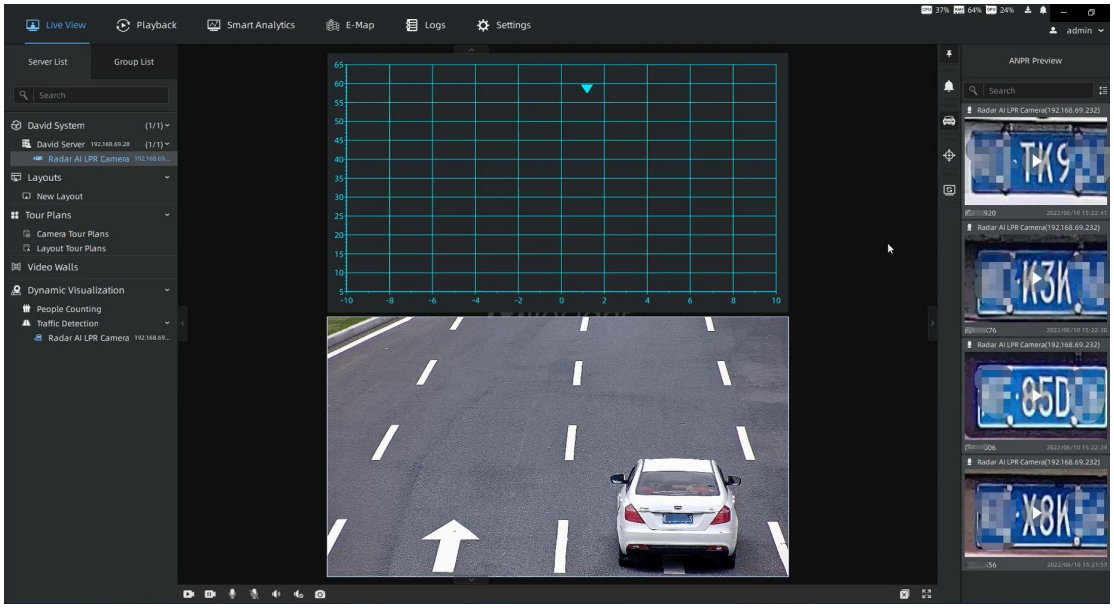


Figure 27 Radar Data Integration

For more information, please refer to the Milesight VMS Enterprise User Manual.