

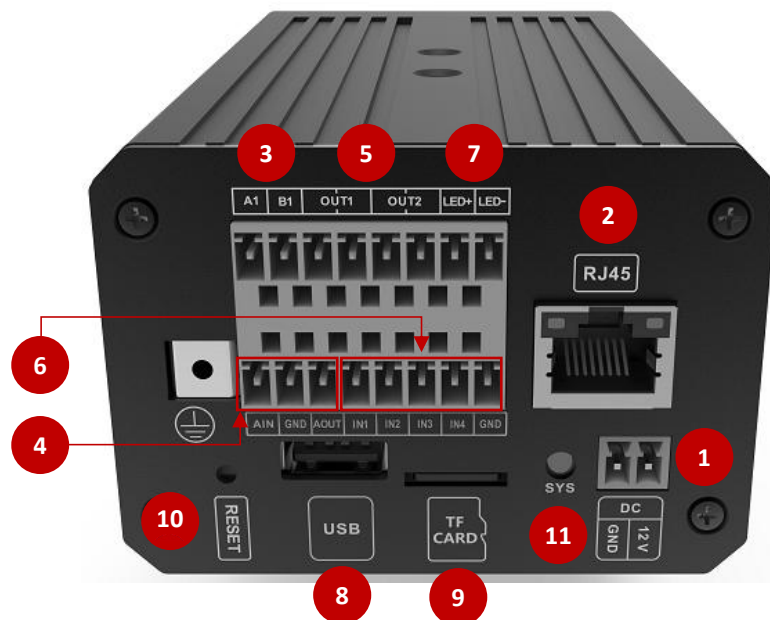
QUICK GUIDE



# SNP131 MAG License Plate Recognition



## Device Interface Description



No.	Function	Label	Description
1	Power	DV12V; GND	Standard 12V/2A
2	Network Interface	RJ45/LAN	Support 10/100Mbps Ethernet transmission
3	Serial Port (RS485)	A1/B1	Connect to LED Display
4	Audio	AIN\AOUT\GND	Audio input /output.
5	IO Output (Alarm Out)	OUT1/OUT2	Can be used for barrier gate opening
6	IO Input (Alarm In)	IN1/2/3/4 /GND	Used for external signal trigger
7	Light Interface	LED+/LED-	Used to power & control LED Camera
8	USB Interface	USB	USB Type A interface
9	SD Card Slot	TF-CARD	SD card slot, maximum 128GB
10	Reset	RESET	Press for 5 to 10 seconds for a long time, and the equipment will fully restore to factory configuration
11	Indicator Light	SYS (green)	Flashing means the system is currently working properly, whereas continuous on or off means starting or abnormal

## Equipment Installation

### LPR Camera Installation

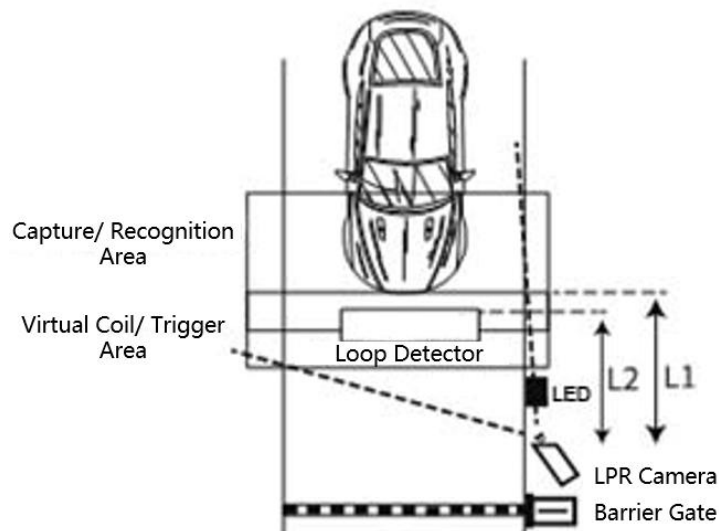


Fig. 1: Installation diagram of LPR Camera

Installation Requirements		Installation Height	
1、 Install in front of the barrier gate		- For frequent small car entry, the recommended height of camera is about 1.4m above the ground	
2、 About 3-6 meters from the virtual coil, L1.		- For frequent large truck entry, the recommended height of camera is about 1.6m above the ground	
3、 About 3-4 meters from loop detector, L2		- The angle of camera installed is recommended to be between 15°and 40° and as far as possible.	
No.	Effective identification distance, D (m)	Recommended installation height, H (m)	Corresponding angle (degree)
1	3	1.4	~20°
2	4	1.5	~20°
3	5	1.6	~20°

### LED Fill Light Installation

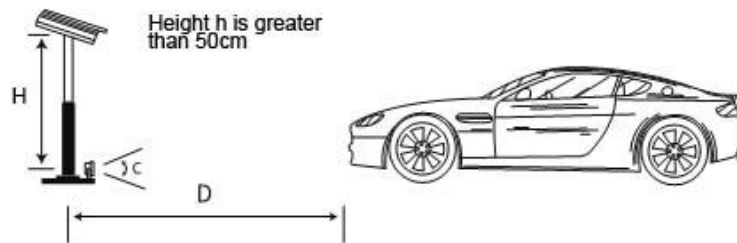


Fig. 2: Installation diagram of LED Fill Light

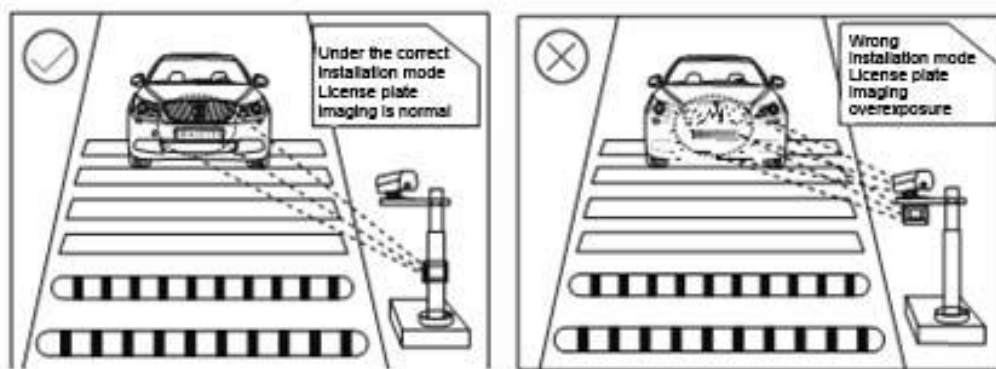


Fig. 3: Example of wrong installation of LED (overexposure)

### Installation Requirements:

- Distance, D: The recommended distance between the fill light and license plate is more than 2m and less than 6m
- Angle, C: The fill light should be angled so that it illuminates the license plate in the recognition area (around 15° - 45°) and avoids overexposure
- Vertical Height, H: The fill light should be kept at a vertical distance of 0.5m – 0.7m away from the LPR camera

### Typical Installation Scenario of LPR Camera



Ensure that car plate is kept close to horizontal line



Too large angle with horizontal line might lead to accuracy issues

## Setting Up SNP131

1. The factory default IP configuration for SNP131 is **192.168.1.100** (username: admin, Password: admin)
2. Before connecting to the camera, confirm whether the IP address of the current computer and the camera IP address are in the same network segment.
3. After powering up the LPR camera, open browser and input the IP address [http://192.168.1.100 /](http://192.168.1.100/)

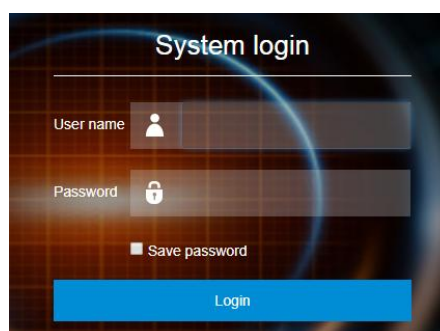


Fig. 4: Login Page

4. For first time setup using **Internet Explorer** browser, kindly install the plugin when the prompt pops up (not necessary for other browser types)



Fig. 5: Install plugin prompt (IE browser only)

5. Enter the default user name: admin, the default password admin, and click the login button to log in.

6. After logging in, the main interface is as shown below:

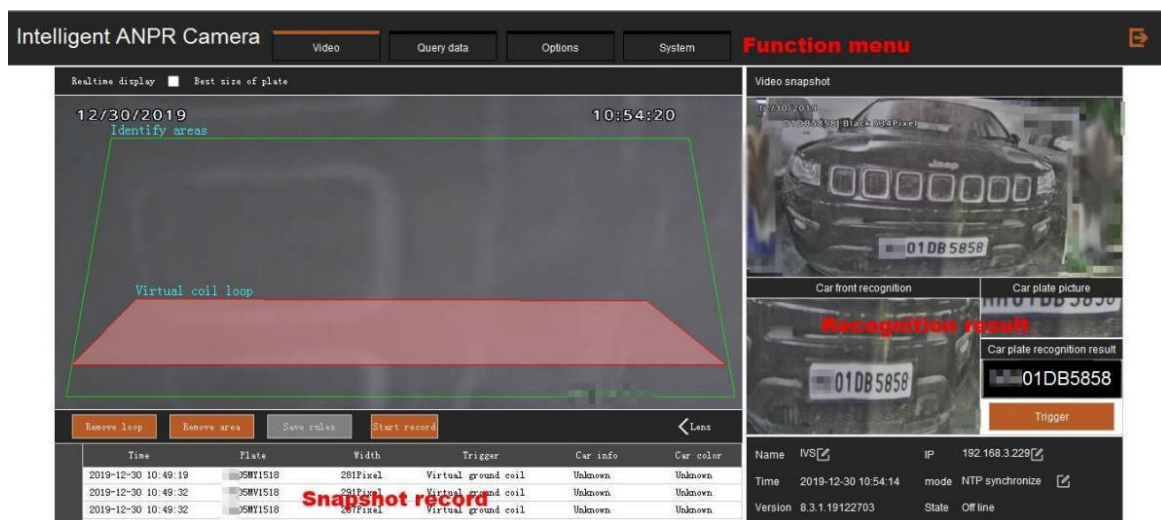


Fig. 6: Web Portal Main Page

7. In the real-time video display, the recognition area and virtual coil loop is marked by default.

8. To adjust both areas, use the red points on the vertex to adjust the shape and size of the recognition/identification area and the virtual coil loop area.

9. To add more red points for adjustment, double-click on the area to create a new red point.



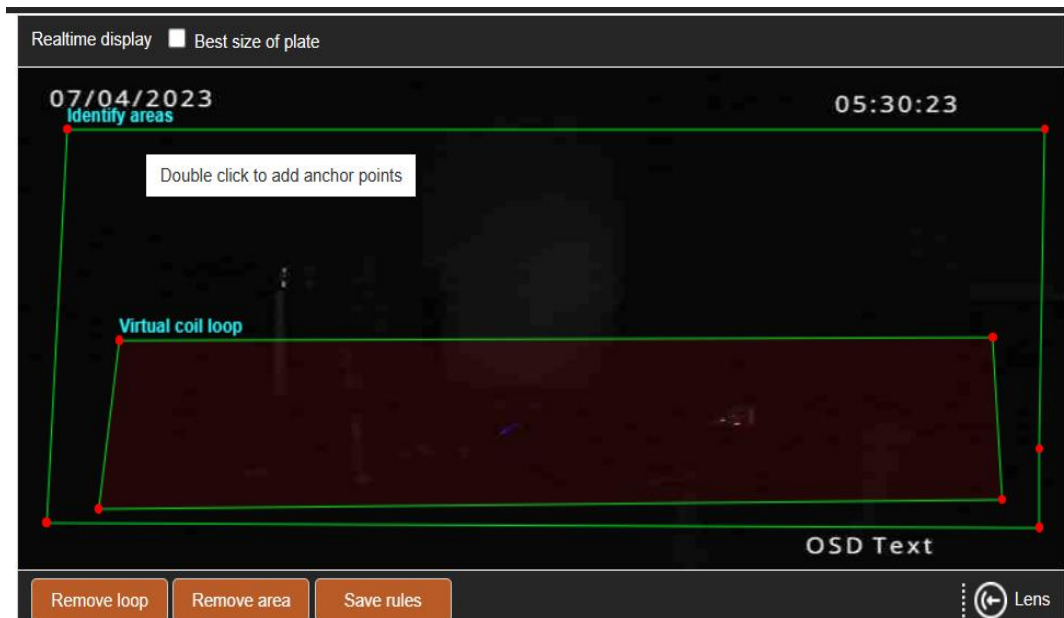


Fig. 7: Default Area Configuration of Recognition Area & Virtual Coil Loop

4. After completing the adjustment, click on “save rules” to save the configuration for both recognition area and virtual coil loop area.
5. To delete the drawn area, use the “remove loop” and “remove area” function to delete and redraw the areas
6. Use the Lens function to adjust the camera zoom according to site conditions.

### Important Note:

**Recognition/Identification Area:** When the vehicle enters the identification area, it will start to identify and analyse the license plate;

**Virtual Coil Loop:** When the vehicle enters the virtual coil loop area (trigger area), the recognition result of the license plate will be sent.

### Positioning of Virtual Coil Loop

1. When calibrating the recognition area and virtual coil loop area, you may separate the video screen into 3 segments. The Virtual Coil Loop should be positioned at the lower 3<sup>rd</sup> segment of the video height
2. Ensure that the left and right area of the Virtual Coil Loop is able to cover the car license plate.

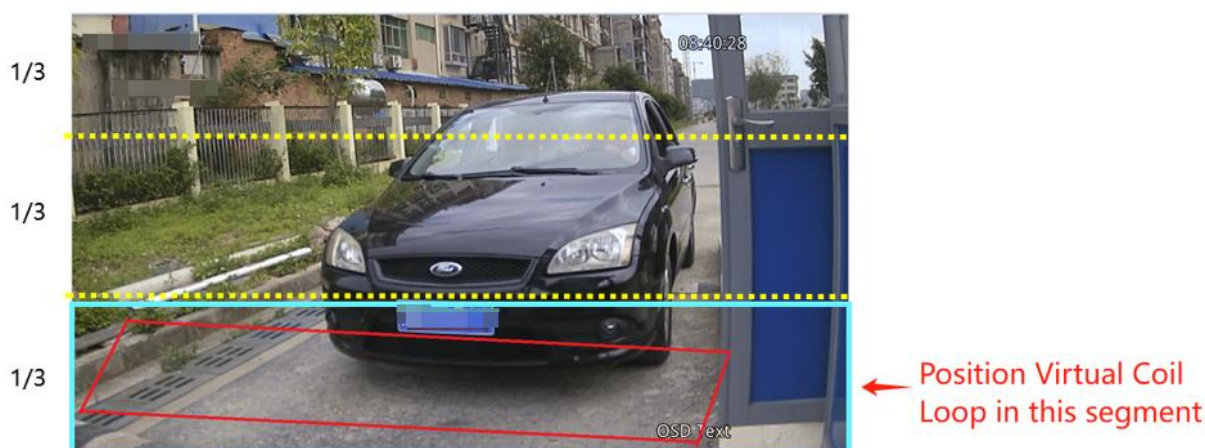


Fig. 8: Positioning of Virtual Coil Loop

### Recognition Area Full Coverage

1. When calibrating the recognition area, make sure to include the effective range of movement of the license plate on the screen

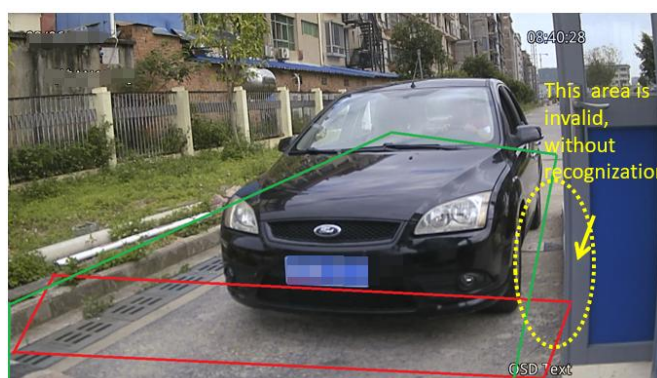


Fig. 9: Recognition Area Adjustment according to Site

2. When calibrating the recognition area, ensure more area is included for the vehicle to gain more video streams and more recognition frames for better accuracy



## Event Capture

1. After completing the LPR calibrations, incoming vehicle car plates will be captured automatically and the identified license plate number will be displayed on the right side



Fig. 10: Car Plate Identification Result

2. To manually trigger the car plate recognition, click on the “Trigger” button to manually capture a test image. The captured image will automatically display the close-up car image and the license plate, whereas the license plate number identified will be displayed on the right side.

3. Under the real-time display interface, there is a snapshot event history of all the car plates identified

Time	Plate	Width	Trigger	Car info	Car color
2019-12-30 10:49:19	05MY1518	281Pixel	Virtual ground coil	Unknown	Unknown
2019-12-30 10:49:32	05MV1518	291Pixel	Virtual ground coil	Unknown	Unknown
2019-12-30 10:49:32	05MY1518	287Pixel	Virtual ground coil	Unknown	Unknown
2019-12-30 10:51:27	01DB5858	483Pixel	Virtual ground coil	Unknown	Unknown
2019-12-30 10:51:54	01DB5858	600Pixel	Virtual ground coil	Unknown	Unknown
2019-12-30 10:52:43	01DB5858	534Pixel	Virtual ground coil	Unknown	Unknown

Fig. 11: Identified Car Plate Event Log

## Device Settings

At the top of the interface, click on Options to enter the advanced setting menu as shown below:

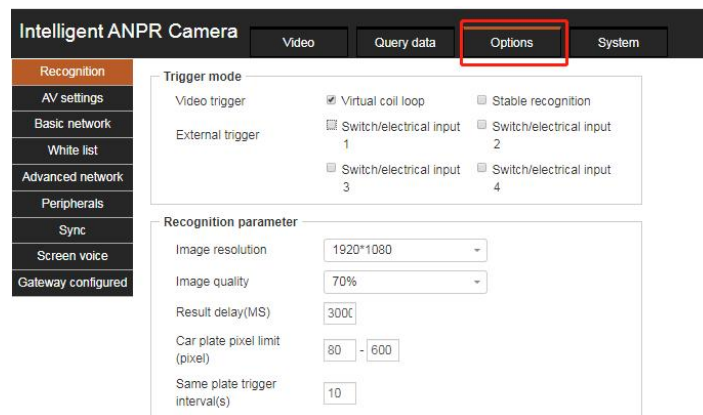


Fig. 11: Advance Setting Interface

## Recognition/ Identification Setting

1. Use the Trigger Mode to switch between different types of identification trigger.
2. Recognition parameters can be used to change image resolution, image quality, result delay, car plate pixel limit and same plate trigger intervals.

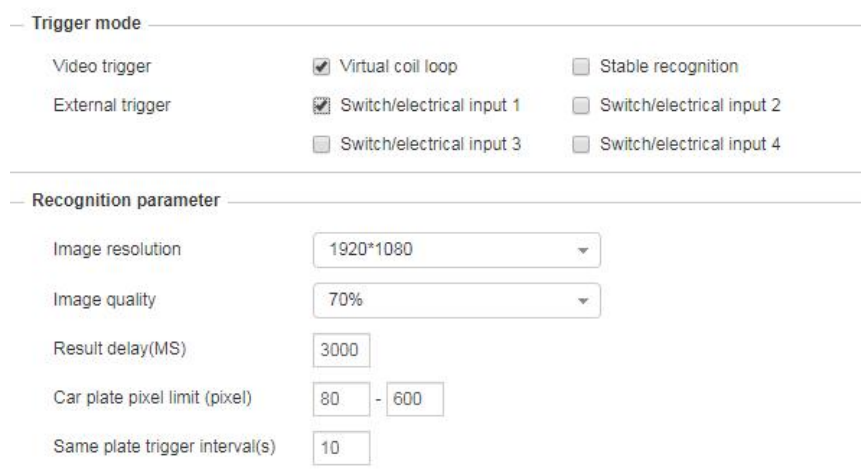
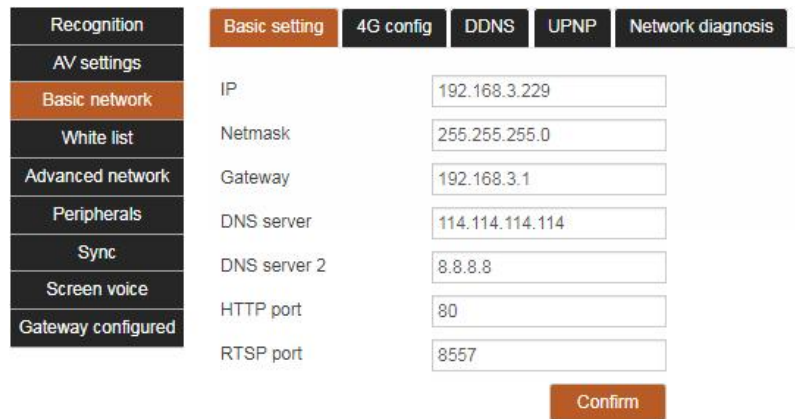


Fig. 12: Identification Setting Interface

## Basic Network Settings

1. In the basic setting tab, you may configure the basic network settings as follows:



Recognition	Basic setting	4G config	DDNS	UPNP	Network diagnosis
AV settings	IP				
Basic network	Netmask				
White list	Gateway				
Advanced network	DNS server				
Peripherals	DNS server 2				
Sync	HTTP port				
Screen voice	RTSP port				
Gateway configured					

Confirm

Fig. 13: Basic Network Settings

- **IP address:** To configure the network IP address.
- **Subnet mask:** To configure the subnet mask of the network.
- **Default gateway:** To configure the network default gateway. It should be in the same network segment as the IP address
- **DNS server:** To configure the DNS server of the network. After configuring the network parameters, click OK to take effect.
- **DNS server 2:** To configure the standby DNS server, and automatically switch to this DNS server when there is connection error in the default DNS server
- **HTTP port:** To configure the port number of HTTP protocol. The default is 80. Click OK to take effect.
- **RTSP port:** To configure the port number of RTSP video stream. The default is 8557. Click OK to take effect.

## White List

1. In the white list configuration tab, you may configure white list as follows:

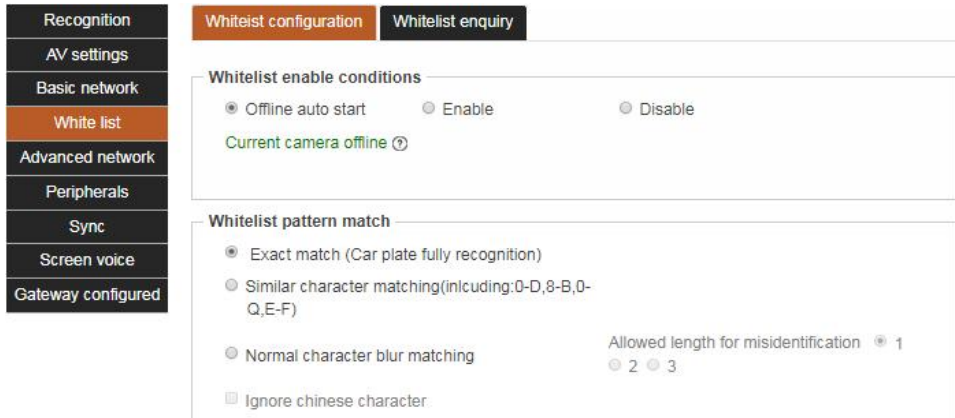
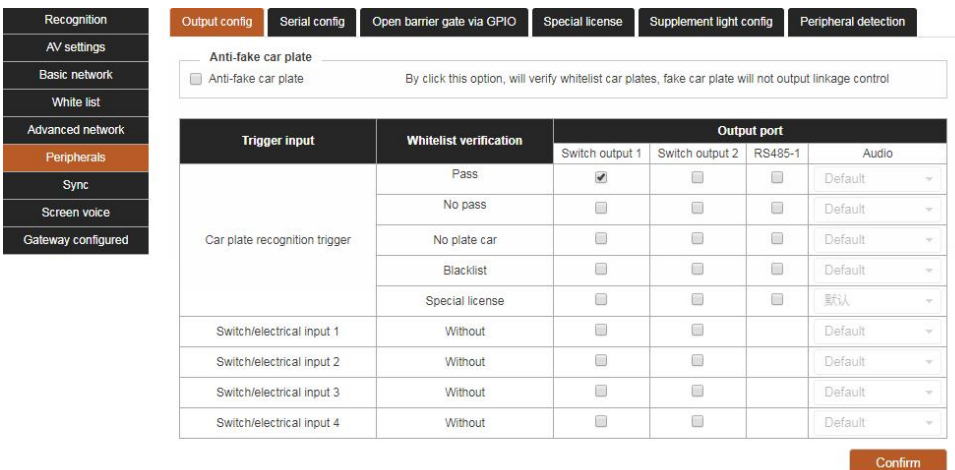


Fig. 14: Whitelist Configuration Settings

- **Whitelist enable conditions:** To set the working condition for car plate whitelist
- **Whitelist pattern match:** Car plate pattern match can be set according to actual use case.
- Please note, if SNP131 is using ME-ACS, all number plates will be uploaded to the whitelist using ME-ACS features. Similarly, if you want to delete a plate number from the whitelist, it may require the ME-ACS software

## Peripherals

1. In the peripheral settings, you may set the output configuration as below:



Trigger input	Whitelist verification	Output port			
		Switch output 1	Switch output 2	RS485-1	Audio
Car plate recognition trigger	Pass	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Default
	No pass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Default
	No plate car	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Default
	Blacklist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Default
	Special license	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	默认
Switch/electrical input 1	Without	<input type="checkbox"/>	<input type="checkbox"/>		Default
Switch/electrical input 2	Without	<input type="checkbox"/>	<input type="checkbox"/>		Default
Switch/electrical input 3	Without	<input type="checkbox"/>	<input type="checkbox"/>		Default
Switch/electrical input 4	Without	<input type="checkbox"/>	<input type="checkbox"/>		Default

Fig. 15: Output Configuration

- **Anti fake license plate:** When the opening function is enabled, the fake license plate will not trigger the output linkage control.
- When the license plate recognition is triggered, the user can configure the system to output signals at various ports according to the white list verification.
- Users can configure the system to trigger multiple (only partial output ports) output port signals when obtaining input port signals.

2. In the GPIO configuration tab, you may set the barrier gate settings as below:

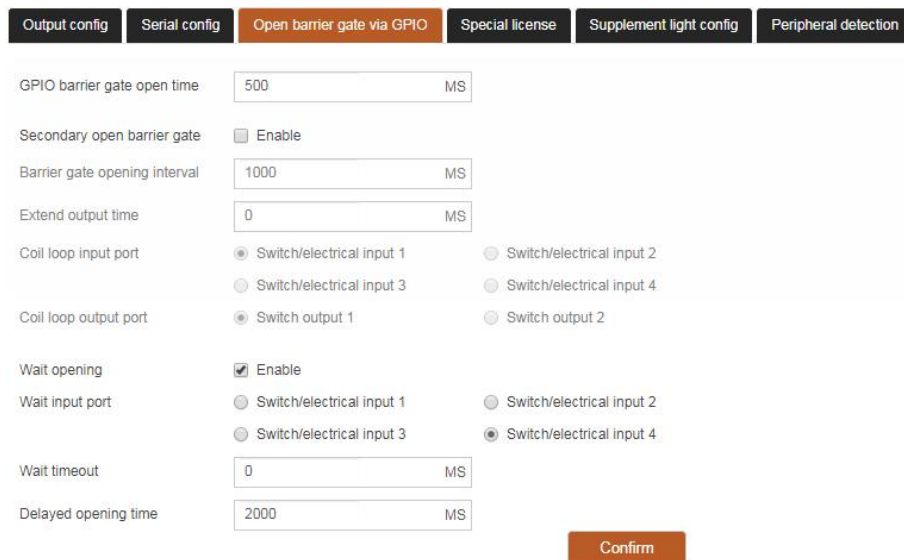
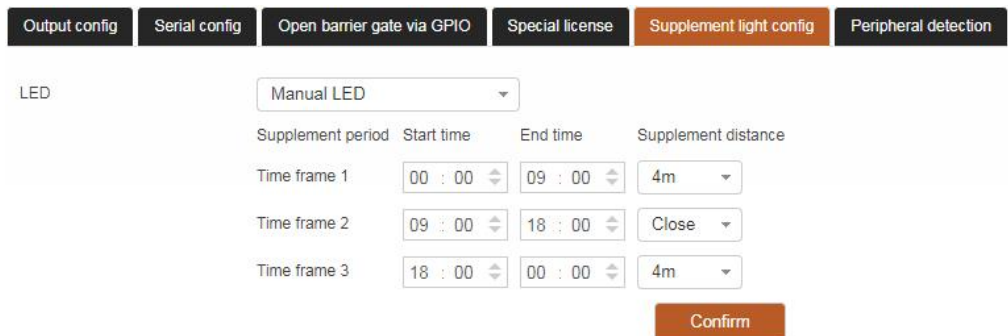


Fig. 16: GPIO Opening Configuration

- **Barrier Gate Opening Time:** By default, the opening time of GPIO is set
- **Enable the secondary opening:** After enabling, the vehicle unrecognized by the camera can be triggered to open the barrier gate through the ground induction coil.
- **Gate interval time:** To set the minimum interval time of opening the gate twice. Only when the front car passes and the gate falls, the gate can be opened for the rear car after the interval time.
- **Extend the output time:** To set the extension time of the ground induction coil to the output signal after the vehicle induction disappears.
- **Ground induction input port:** The port for receiving the ground induction coil signal.
- **Ground induction output port:** The port for outputting signal of the ground induction coil.



3. In the LED configuration tab, you may configure the LED fill light settings as below:



The screenshot shows the 'Supplement light config' tab selected. Under the 'LED' section, 'Manual LED' is selected from a dropdown. Below this, there are three rows for 'Time frame' configuration. Each row has columns for 'Supplement period', 'Start time', 'End time', and 'Supplement distance'. Time frame 1 has start 00:00, end 09:00, and distance 4m. Time frame 2 has start 09:00, end 18:00, and distance 'Close'. Time frame 3 has start 18:00, end 00:00, and distance 4m. A 'Confirm' button is at the bottom right.

Time frame	Supplement period	Start time	End time	Supplement distance
Time frame 1		00 : 00	09 : 00	4m
Time frame 2		09 : 00	18 : 00	Close
Time frame 3		18 : 00	00 : 00	4m

Fig. 17: LED Fill Light Configuration

- **Fill light mode:** Select the working state of fill light.
- You can set the LED fill light configuration in different time periods by adjusting the time periods and LED installation distance (refer to page 10 on LED installation)

4. After setting up all IO connections, you may use the peripheral detection tab to check the connection status of the ports as shown below:



The screenshot shows the 'Peripheral detection' tab. It contains a table with columns 'IO', 'Status', and 'Operation'. The first four rows are for 'Switch/electrical input' (1-4), all with status '1' and a 'Get' button. The next two rows are for 'Switch output' (1-2), both with status '0' and a dropdown menu showing '0'.

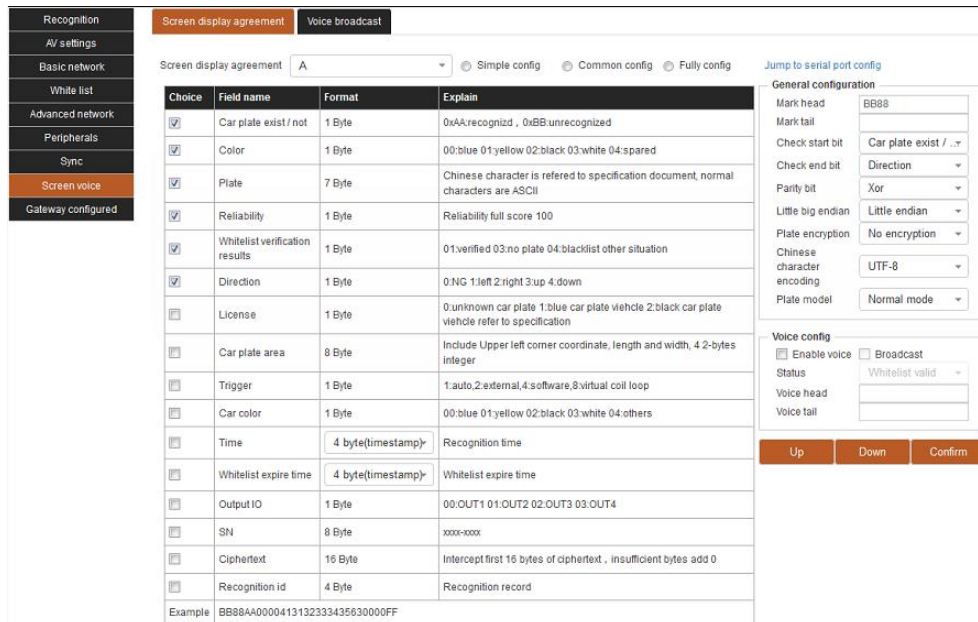
IO	Status	Operation
Switch/electrical input 1	1	Get
Switch/electrical input 2	1	Get
Switch/electrical input 3	1	Get
Switch/electrical input 4	1	Get
Switch output 1	0	0
Switch output 2	0	0

Fig. 18: Peripheral Detection

- In the input port section, click the get button to get the current port connectivity status.
- In the output port section, select the path/open option to set the current port status to on/off.

## LED Screen Display Setting

1. In the screen voice tab, you may configure the LED screen display as below:

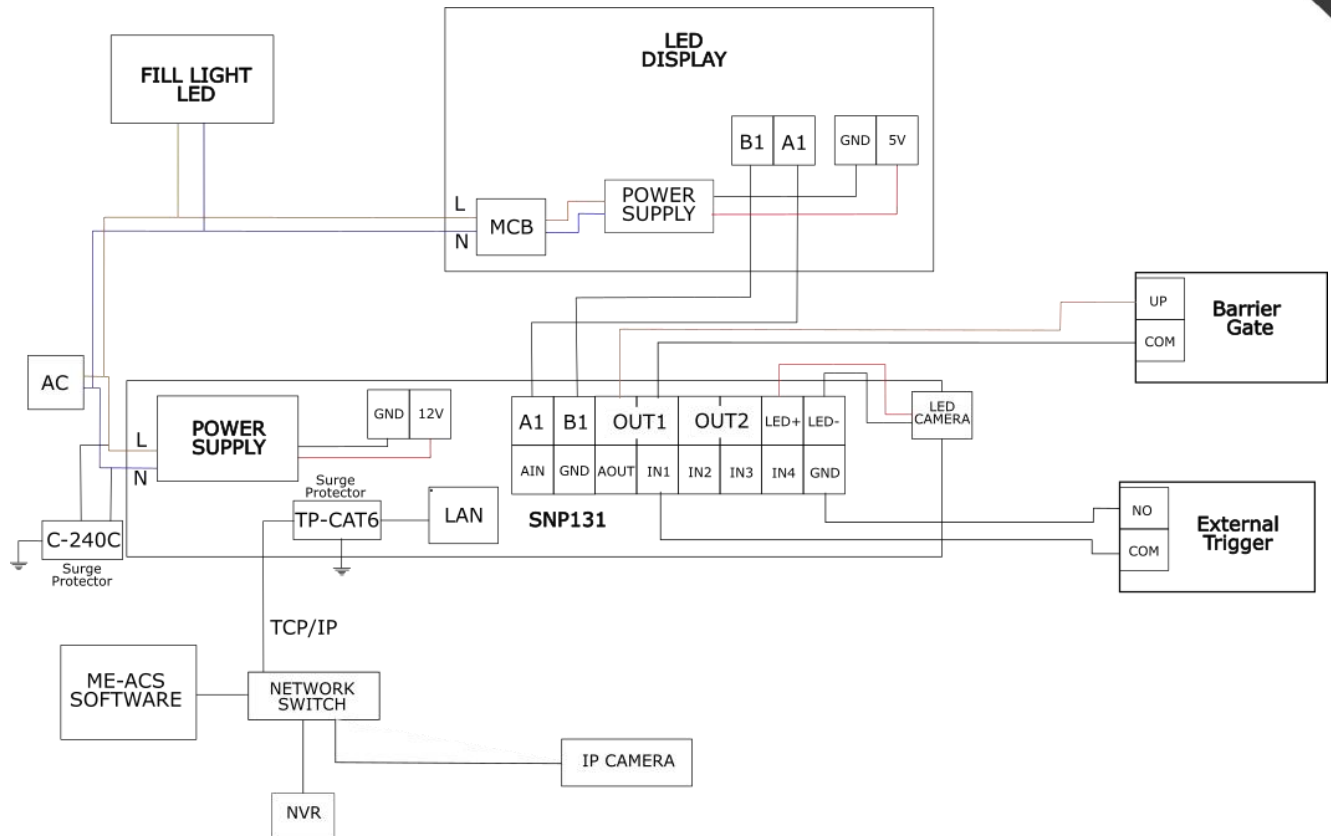


Choice	Field name	Format	Explain
<input checked="" type="checkbox"/>	Car plate exist / not	1 Byte	0xAA:recognized , 0xBB:unrecognized
<input checked="" type="checkbox"/>	Color	1 Byte	00:blue 01:yellow 02:black 03:white 04:spared
<input checked="" type="checkbox"/>	Plate	7 Byte	Chinese character is referred to specification document, normal characters are ASCII
<input checked="" type="checkbox"/>	Reliability	1 Byte	Reliability full score 100
<input checked="" type="checkbox"/>	Whitelist verification results	1 Byte	01:verified 03:no plate 04:blacklist other situation
<input checked="" type="checkbox"/>	Direction	1 Byte	0:NG 1:left 2:right 3:up 4:down
<input type="checkbox"/>	License	1 Byte	0:unknown car plate 1:blue car plate vehicle 2:black car plate vehicle refer to specification
<input type="checkbox"/>	Car plate area	8 Byte	Include Upper left corner coordinate, length and width, 4 2-bytes integer
<input type="checkbox"/>	Trigger	1 Byte	1:auto,2:external,4:software,8:virtual coil loop
<input type="checkbox"/>	Car color	1 Byte	00:blue 01:yellow 02:black 03:white 04:others
<input type="checkbox"/>	Time	4 byte(timestamp)-	Recognition time
<input type="checkbox"/>	Whitelist expire time	4 byte(timestamp)-	Whitelist expire time
<input type="checkbox"/>	Output IO	1 Byte	00:OUT1 01:OUT2 02:OUT3 03:OUT4
<input type="checkbox"/>	SN	8 Byte	xxxx-xxxx
<input type="checkbox"/>	Ciphertext	16 Byte	Intercept first 16 bytes of ciphertext , insufficient bytes add 0
<input type="checkbox"/>	Recognition id	4 Byte	Recognition record
Example BB88AA0000413132333435630000FF			

Fig. 19: LED Screen Display Configuration

- According to the screen display agreement, select the corresponding LED screen model. For SNP131-DSP , select model = L(ML\_IV)
- **Quick configuration:** You can quickly configure the screen output by selecting the corresponding fields to display.
- **Output format:** You can view the field output examples at the bottom of the table.
- **General configuration:** Used for integrity verification and encryption of output field information.
- **Voice configuration:** Used to enable/disable voice or license plate broadcasting.
- **Adjust field display position:** Select the field and click the move up / move down button to adjust the field position.
- Click the confirm button to save the configuration.

## Wiring Connection



### Important Notes:

- IP address SNP131 must be in the same network as ME-ACS
- LED Display SNP131-DSP, must be connected to A1 B1 accordingly and the model L(ML\_IV) is chosen to make sure the number plate capture is displayed correctly on the LED Display. Refer Page 15
- For SNP131 to control barrier gate, the connection OUT1 must be connected to the UP terminal on the Barrier Gate. OUT2 is an additional output from the NVR, please refer page 12.
- SNP131 can have an external trigger to capture the number plate. This is commonly used for Loop Coil Detectors.
- Surge protector is important to make sure the device is protected from surge

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