

ANPR Quick Guide via Web



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1 Introduction

Vehicle Detection is available for the road traffic monitoring. The vehicle detection detects passing vehicles and captures the license plates. The detection triggers a series of actions, such as notifying the surveillance center, uploading the captured picture to FTP server, etc.

2 Web Configuration

Login IPC via web browser and make sure the firmware version supports ANPR.

2.1 Detection Configuration

VCA resource can be efficiently allocated to get a better performance. Two modes
of VCA resource allocation are supported: Smart Event and Vehicle Detection.
Go to *Configuration->Advanced Configuration->System -> VCA Resource*Select *Vehicle Detection* for the VCA resource allocation. Reboot the device to
activate the new settings.

Note: When Smart Event is enabled, the Vehicle Detection function is disabled; When the Vehicle Detection is enabled, high frame rate, recording on SD card or NAS/CIFS, some certain smart events and people counting are not supported (see the actual operation interface for details).

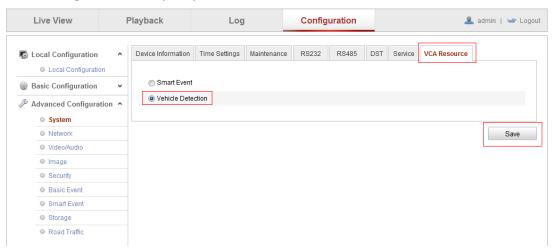


Fig.1 VCA Resource Allocation

2. Then go to *Advanced Configuration->Road Traffic* option. Select the detection type from the list and enable the selected detection function. *Vehicle Detection* can be selected.



| Live View | Playback | Log | | Configuration | | 💄 admin 🖙 Logout |
|---|-----------------|---|--------------|----------------------|-----------------------|--------------------|
| Local Configuration Local Configuration | Detection Confi | | Camera | Real-time LPR Result | Blacklist & Whitelist | |
| Basic Configuration | Detection Typ | e Vehic | le Detection | • | | |
| Advanced Configuration System | Area Settings | | | | | |
| Network | 05-06-20 | 15 Wed 16:36:15 | 1/10 | | | |
| Video/Audio | 4 48 | | 1411 | | | |
| Image | | | | | | |
| Security | | Line in the second s | | welkom | | |
| Basic Event | | | 日前 | | | |
| Smart Event | | | | 10 | | |
| © Storage | Aller Constants | Design Area 1 | | | | |
| Road Traffic | | | | unera 01 | | |

Fig.2 Enable Vehicle Detection

3. Then select the lane number and the region in the corresponding dropdown list. Up to 4 lanes and three kind of regions are selectable.

| - | Local Configuration A O Local Configuration | Detection Configuration | Picture | Camera | Real-time LPR Result | Blacklist & Whitelist | |
|---|---|--|------------------|------------------|----------------------|-----------------------|--|
| | Basic Configuration ~ | Detection Type | Vehicle | e Detection | • | | |
| Z | Advanced Configuration A | Enable Area Settings | | | | | |
| | Network | 05-06-2015 Wed 1 | 6.39 m | Mart | | | |
| | Video/Audio | | | 14 | | | |
| | © Image | | GEA | 744 | | | |
| | Security | | Lisence 6X | | | | |
| | Basic Event | | E | | | | |
| | Smart Event | | | | | | |
| | Storage | and the second s | on Area 1 | | | | |
| | Road Traffic | | N AVER | n Ca | inera Ol | | |
| | | Total Number of Lanes | 1 | | | | |
| | | Region | Europe | Region Region | | | |
| | | License Plate Settings | CIS Re EU & C | | | | |

Fig.3 Select Lanes Number and Region

4. Click and drag the lane line to set the position, or click and drag the line end to adjust the length and angle. The area surrounded by yellow and green lines stands for the detection area or the area of interest.

Note: Only 1 license plate can be captured at one time for each lane.

- 5. For high accuracy rate, it is necessary to set the maximum and minimum size of the license plate.
 - Get some snapshots manually when the license plate appears in the detection area, and measure the height pixels as Fig.4 shows.

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| @ 🗐 🤊 (* = | | night - Paint | | | - | | × |
|--------------------|------------------|-----------------|------|----------|----------------|----------|---|
| File Home View | | | | | | ^ | 0 |
| Paste Clipboard | | | Size | colors | Edit colors | | |
| | | | | | | | ^ |
| width pixel | | ZG 15 | FC | | | | |
| < | t⊑ 1920 × 1112px | ☐ Size: 131.9KB | | 100% (=) | -0 | · | |
| -1- 1-1 221x 40px | 1920 × 1112px | E 3126, 131,36D | | 100% = | Ų | T | |

Fig.4 Measure the Plate Width

• Set the parameters.

| License Plate Region Settings | | | | | | |
|------------------------------------|---------|---------|--|--|--|--|
| Enable License Plate Recognization | | | | | | |
| Plate Width | Min 130 | Max 350 | | | | |

Fig.5 License Plate Region Settings

For EU region:

Restrictions to plate width minimum acceptable width is 130 pixels, and 70px for a two-row plates. Max plate width should be at least 2*min plate width and not exceed 3*min plate width.

For CIS region:

Restrictions to plate width minimum acceptable width is 150 pixels, and 100px for a two-row plates. Max plate width should be at least 2*min plate width and not exceed 3*min plate width.

For Universal region (combining EU and CIS) :

Restrictions to plate width minimum acceptable width is 130 pixels, and 70px for a two-row plates. Max plate width should be at least 2*min plate width and not exceed 3*min plate width.

6. Select mode of vehicle detection in the dropdown list.



| License Plate | Settings | |
|---------------|---------------------------------------|-----------------------------|
| License Plate | Width Min. 130 Max. 500 | Enable Real-time LPR Result |
| Select Mode: | City Street City Street Entrance/Exit |] |
| Arming Sched | Custom | |

Fig.6 Vehicle Detection Mode Settings

City Street:

The license plate information will be uploaded after vehicle leaving the detection region.

Entrance/Exit:

The license plate information will be uploaded as soon as vehicle is detected.

Custom:

You can set the time interval between detecting vehicle and uploading of the license plate information. The interval should be in the range between 0ms to 15000ms.

| License Plate Settings | |
|--|--|
| License Plate Width Min. 130 Max. 500 | |
| Select Mode: Custom | |
| | |
| You can set the time interval between detecting vehicle and uploadin application scene. The interval should be in the range between 0 ms | |
| Time Interval: 5 ms | |

Fig.7 Time Interval Settings

7. (*Optional*) Arming Schedule is set into 24/7 by default and can be modified if necessary.



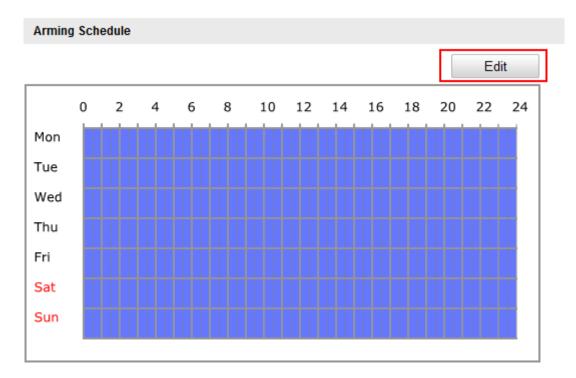


Fig.8 Arming Schedule Configuration

After setting the arming schedule, click the *Copy* button to copy the schedule to other days. Click the *OK* button to save the settings.

| Period | Start Time | | End Time | |
|--------|------------|------------|----------|----|
| 1 | 00: 00 | | 24: 00 | X |
| 2 | 00: 00 | 24 | : 00 | ŧ |
| 3 | 00: 00 | [1] | | ÷. |
| 4 | 00: 00 | 法 | 00: 00 | ÷. |
| 5 | 00: 00 | 法 | 00: 00 | ÷. |
| 6 | 00: 00 | 345 245 | 00: 00 | 3 |
| 7 | 00: 00 | | 00: 00 | 4 |
| 8 | 00: 00 | 迷 | 00: 00 | ÷. |

Fig.9 Copy the Arming Schedule

Note: The time of each period cannot be overlapped.

8. (*Optional*) Set the Linkage Method, for *Triggering Source*, "*All*" (including Whitelist, Blacklist and Other) is checked by default. You can also disable *All*, select corresponding source in the dropdown list.

| Linkage Method | | | |
|----------------------------|------------------------|---------------------|-----|
| Triggering Source 🔲 All | Whitelist Whitelist | • |] |
| Normal Linkage | Blacklist Other | | |
| Notify Surveillance Center | Trig | gger Alarm Output 📃 | All |
| Upload to FTP | | A->1 | |

Fig.10 Triggering Source Configuration

"Notify Surveillance Center" is checked by default, and other linkage methods such as "Upload to FTP" and "Trigger Alarm Output" is selectable.

| Linkage Method | | |
|----------------------------|-----------|----------------------------|
| Triggering Source 🛛 🗐 All | Whitelist | v |
| Normal Linkage | | Other Linkage |
| Notify Surveillance Center | | Trigger Alarm Output 🔲 All |
| Upload to FTP | | 🔲 A->1 |
| | | |

Fig.11 Notify Surveillance Configuration

Notify Surveillance Center:

Send an exception or alarm signal to remote management software when an event occurs.

9. Click the *Save* button to activate the settings.

2.2 Uploaded Picture Configuration

1. Set the picture quality

Either Picture Quality or Picture Size can be set to specify the picture quality.

2. (*Optional*) Enable and edit the text overlay on the uploaded picture.

You can set the font color and background color by clicking the desired color in the popup palette.

3. Select the information for the text overlay, including *Camera No.*, *Camera info*, *Device No.*, *Capture Time*, *Plate No.*. You can also click the up and down direction buttons to adjust the sequence of the text.



| Live View | Play | yback | Log | Configura | ation | 💄 admin 🖙 Logout |
|---|----------|------------------------|----------------------|----------------------|-----------------------|--------------------|
| Local Configuration | De | etection Configuratior | Picture Camera | Real-time LPR Result | Blacklist & Whitelist | |
| Basic Configuration | . | Picture Quality[| 1-100] | Q | = 60 | |
| Advanced Configuration | | Picture Size[64 | -2048k] 1024 | | | |
| Advanced configuration System | | Enable Text O | verlay | | | |
| System Network | | Font Color | | | | |
| Video/Audio | | Background Color | , | | | |
| Image | | Text Overlay | | | | |
| Security | | Text Overlay | | | | |
| Basic Event | | Camera No. | Camera Info. | Device No. | Capture Time | Plate No. |
| Smart Event | | | | | | |
| Storage | | | Туре | | | |
| Road Traffic | | | Camera No. | | <u></u> | |
| | | | Device No. | | | |
| | | | Capture Time | | <u>↑</u> | |
| | | | Plate No. | | | |
| | | Picture Name | | | | |
| | | 💽 Default 🛛 🔘 | Custom | | | |
| | | Example: IP_Char | nnel NoTime_Type.jpg | | | |
| | | | | | | |
| | | | | | | Save |

Fig.12 Uploaded Picture Configuration

4. (*Optional*) "*Default*" *Picture Name* is selected by default, you can select *Custom* to set the Picture Name, select the information for the text overlay, including *Capture Time*, *Plate No.*, *Alarm Type*, *Camera Name*. You can also click the up and down direction buttons to adjust the sequence of the text.

| Default O Custom | | | |
|--|------------|---------------|------|
| Capture Time IPlate No. Camera Name: LPR Camera | Alarm Type | 🖾 Camera Name | |
| Type Plate No. Camera Name | | | |
| Gamera Name | | | Save |

Fig.13 Picture Name Configuration

5. Click *Save* to save the *Picture* settings.

2.3 (Optional) Overlay Content Configuration

- 1. Edit the content of the *Device No.*, *Camera No.*, and *Camera Info.*, in the corresponding text filed.
- 2. Click the *Save* button to activate the settings.

| Live View | Playback | Log | Configuration | 🚨 admin 🛶 Logout |
|---|------------------------------------|-------------------------|------------------------------------|--------------------|
| Local Configuration | n | ration Picture Camera R | eal-time LPR Result Blacklist & WI | nitelist |
| Advanced Configur System | ation 💊 Camera No. Camera Info. | DS-2CD4026FV | /D-AP | |
| Network Video/Audio Image | | | | Save |
| SecurityBasic Event | | | | |
| Smart EventStorage | | | | |
| Road Traffic | | | | |

Fig.14 Overlay Content Configuration

2.4 Real-time LPR Result

Go to *Real-time LPR Result*, you can see real-time captured plate pictures and information, including *Capture Time*, *Plate No., Captured Picture, Country, Lane, Direction*.



Fig.15 Real-time LPR Result



2.5 Blacklist and Whitelist

| 1. | Edit the Blacklist and Whitelist file (e.g., | black-white.xls) | on computer as follows. |
|----|--|------------------|-------------------------|
| | | | |

| 1.1 | A | В | C |
|-----|----|-----------|-----------------------------------|
| 1 | No | Plate Num | Group(0 black list, 1 white list) |
| 2 | 1 | 02RTL3 | 0 |
| 3 | 2 | 32XBZZ | 1 |
| 4 | 3 | 38SB6 | 0 |
| 5 | 4 | 32XBZZ | 1 |
| 6 | 5 | 8STL42 | 0 |
| 7 | 6 | 5SFT88 | 1 |
| 8 | 7 | KLETP407 | 0 |
| 9 | 8 | 41SJT2 | 0 |
| 10 | 9 | 7VLP4F | 0 |
| 11 | 10 | 4VTG19 | 0 |
| 12 | 11 | 7558H | 0 |
| 13 | 12 | 8KNZ92 | 0 |
| 14 | 13 | 42NSNF | 0 |
| 15 | 14 | VF034P | 0 |
| 16 | 15 | 08BNBF | 0 |
| 17 | 16 | 50PFT | 0 |

Fig.16 Content of black-white.xls

2. Go to *Blacklist & Whitelist*, and import the Blacklist and Whitelist file.

| Live View | Playback | Log | Configuration | 🚨 admin 🛶 Logout |
|---|---------------------------------|-------------------|---|--------------------|
| Local Configuration Local Configuration Local Configuration Basic Configuration Advanced Configuration System Network Video/Audio Image | ation ^ Blacklist & V Status | klist & Whitelist | Blacklist & Whiteli Blacklist & Whiteli Browse Imp es in whitelist and blacklist in total. | |
| Security | Export Blac | klist & Whitelist | | |
| Basic Event Smart Event | Export | | | |
| © Storage | Blacklint & V | Vhitelist Content | | |
| Road Traffic | No. | Plate No. | Туре | Creation Time |

Fig.17 Blacklist & Whitelist Operation

3. *Export* the Blacklist and Whitelist. You can edit the file on computer.

3 Result Query

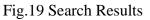
Go to *Playback->Download pictures*, and select *Vehicle Detection* option. You can search for the plate picture and information on the SD card.



| | D | s-2C | D4026FW | D | | | | | | | | | | ? |
|---|----------------|------|--------------|---------------------------------------|----------------------|----------------|------------|-----------|------------------|---------------|------|-----------|--------------|--------|
| | Live View | | Playback | Log | | Configuration | | | | | adn | nin | ن ې ا | .ogout |
| | | | | | | | | | | | | | | |
| | | | | | | | Status | - | | Jan | 20 | 15 | | • •• |
| | | | | | | | | Sun | Mon | Tue | Wed | Thu | Fri | Sat |
| | | | | | | | | 28 | | | | 1 | 2 | 3 |
| | | | | | | | | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | | | | | | | | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| | | | | | | | | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| | | | | | | | | 25 | 26 | 27 3 | 28 | 29 | 30 | 31 |
| | | | | | | | | 1 | 2 | | 4 | _ | 6 | 7 |
| | | | | | | | | | | ι α | Sear | ch | | |
| | | | | | | | | | | | | | | |
| | | | 1 2 🔾 | | | Q. 🖸 🦩 | | un la a d | imag | | | | | _ |
| 2 | 00 19;00 20;00 | 21: | 00 22:00 | 2015-01-1100:00:01 23:00 00:00 01: |) 10 02;00 | 03;00 04;00 | 05:00 06: | Se | i mag t piayo | es ack tir | me | | | |
| | | | | | Command | Schedule Alarr | n 🗆 Manual | 00 | 0 |) | 00 | | • | |

Fig.18 Search for License Plate Pictures





4 Parameter Recommendation

To get the best performance, you need to set the suitable image parameters. For ANPR, you can select the *Mounting Scenario* "*Road*" in the dropdown list to set the suitable ANPR parameters automatically.



| Live View | F | Playback | L | og | Config | uration | | 🤽 admin 🖙 Logo |
|---|------------|------------------|------------------------------|-----------------|--|--------------------------------------|------------|------------------|
| Local Configuration | ¢. | Display Settings | OSD Settings | Text Overlay | Privacy Mask | Picture Overlay | | |
| Basic Configuration | ~ · | Mounting Sco | | Road Normal | | | | |
| Advanced Configuratio System System Network Video/Audio | on 🏊 | 05-05-20 | 15 Tue 16:0 | Road 18 : 24 | | Switch D - Image Ac - Exposure | -50) | n 💌 |
| Image | | 170 | 015597 | | | ✓ Day/Nigh | t Switch | |
| Security | | | | | X | - Backligh | t Settings | |
| Basic Event | | . Lonine series | | | 1. A. C. | | | |
| Smart Event | | 1 1 1 1 1 1 | | A Standards | | V White Ba | alance | |
| Storage | | | | | | Y Image Er | nhancement | |
| Road Traffic | | 5 | | | Camera 01 | - Video Ad | ljustment | |
| | | | and an and the second of the | ALC - Child | · Santa | V Other | | |

Fig.20 Mounting Scenario Setting

You can also set the parameter manually. Here are some parameter recommendations.

4.1 Exposure Settings

| Iris Mode: Auto | | | |
|-----------------------------------|--------|---|----|
| Auto Iris Level: 50 | | | |
| Exposure Time: 1/1000 Gain: 20 | | | |
| • Exposure Settings | | | |
| Iris Mode | Auto | | |
| Auto Iris Level | | 0 | 50 |
| Exposure Time | 1/1000 | | • |
| Gain | | | 20 |

For *Exposure Time* (shutter time), too long exposure time may make the moving license plate fuzzy. Here are some recommended exposure time settings.

Entrance/Exit: Low speed (<30km/h). Exposure time: 1/150-1/200.

Street: Medium speed (30-60km/h). Exposure time: 1/250-1/500.

Road: High speed (>60km). Exposure time: 1/500-1/1000.

For *Gain*, to ensure high recognition rate when WDR OFF, gain level should be set less than 30, and when WDR ON, less than 50.

4.2 Day/Night Switch

| Ser Filt Sm | y/Night Switch: Auto nsitivity: 4 cering Time: 5 nart IR: ON ode: Auto | | | | |
|-------------------|--|------|---|---|--|
| ^ | Day/Night Switch | | | | |
| | Day/Night Switch | Auto | • | | |
| | Sensitivity | 4 | • | | |
| | Filtering Time | 9 | - | 5 | |
| | Smart IR | ON | • | | |
| | Mode | Auto | • | | |

For Day/Night Switch, users can select appropriate mode in the dropdown list according to the environment.

Day/Night Switch

| Day/Night Switch | Auto |
|------------------|--|
| Sensitivity | Day Night |
| Filterina Time | Auto Scheduled |
| Smart IR | Triggered by Alarm Input Triggered by Video |

Day: The camera stays at day mode.

Night: The camera stays at night mode.

Auto: The camera switches between the day mode and the night mode according to the illumination automatically.

Schedule: Set the start time and the end time to define the duration for day/night mode.

Triggered by alarm input: The mode is triggered by alarm input, and you can set the triggered mode to day or night.

Triggered by video: The camera switches between the day mode and the night mode according to the video brightness automatically.

4.3 Backlight Settings

BLC Area: OFF WDR: OFF

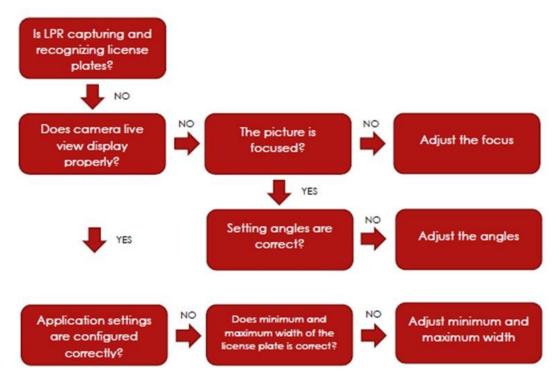


Backlight Settings

| BLC Area | OFF | • |
|----------|-----|---|
| WDR | OFF | |

5 FAQ

The troubleshooting flowchart is as following:





5.1 License plate tilt angle



Solution: Notice the license plate tilt angle. License plate tilt angle must be within +/-5 degrees.



5.2 Depth of focus



Solution: Notice the focus distance of the camera. Car with a green frame will be detected, and other cars will not. Adjust the focus distance to a proper degree.



For these examples, you can adjust the focus distance or shutter speed.

5.3 Lighting







Solution: License plate is overexposed, image parameters should be adjusted. You can ether adjust the shutter speed, or disable the IR-Led(for the night)

5.4 License plate width



Solution: It seems that LP is well lit and readable by eye. However, if we measure full frame in photoshop, we will see that ANPR width is under 90px which is not enough. License plate width in the frame should be increased and be at least 130 pixels.



5.5 Low sharpness



Analysis: With proper sharpness value, license plate number can be clear.

5.6 Insufficient light



Analysis: Recognition performance is degraded with insufficient light. The camera must be set to night mode and infrared light should be used.

5.7 High Exposure time



Solution: Set the exposure time to 1/250, 1/500 or 1/1000 depending on vehicle speed and lighting.



6 Appendices

Supported countries

| | | EU | region | | |
|----------------|------------------------|-----|--------|--------------------|-----|
| | Slovakia | SVK | | Portugal | PRT |
| | Italy | ITA | Ж | Macedonia | MKD |
| 2 | Spain | ESP | | Croatia | HRV |
| | France | FRA | + | Finland | FIN |
| | Germany | DEU | | United Kingdom | GBR |
| | Poland | POL | | Romania | ROU |
| | Czech Republic | CZE | | Serbia | SRB |
| | Netherlands | NLD | | Bulgaria | BGR |
| | Belgium | BEL | | Norway | NOR |
| + | Denmark | DNK | 0 | Israel | ISR |
| | Luxembourg | LUX | | Hungary | HUN |
| +== | Greece | GRC | | Austria | AUT |
| | Albania | ALB | * | Vatican city state | VAT |
| N | Bosnia and herzegowina | BIH | ۲ | Cyprus | CYP |
| | Ireland | IRL | | Iceland | ISL |
| * | Malta | MLT | 0 | Slovenia | SVN |
| - | Sweden | SWE | C+ | Turkey | TUR |
| + | Switzerland | CHE | | | |
| | | RU | region | | |
| | Azerbaijan | AZE | | Russian Federation | RUS |
| | Kazakhstan | KAZ | | Ukraine | UKR |
| | Lithuania | LTU | 8 | Moldova | MDA |
| : : | Georgia | GEO | | Belarus | BLR |
| | Estonia | EST | | Turkmenistan | TKM |
| | Latvia | LVA | | Uzbekistan | UZB |
| | Armenia | ARM | | | |



| | Univer | sal regi | on | |
|------------------------|--------|----------|--------------------|-----|
| Slovakia | SVK | | Portugal | PRT |
| Italy | ITA | ≫€ | Macedonia | MKD |
| Spain | ESP | -0 | Croatia | HRV |
| France | FRA | + | Finland | FIN |
| Germany | DEU | | United Kingdom | GBR |
| Poland | POL | | Romania | ROU |
| Czech Republic | CZE | | Serbia | SRB |
| Netherlands | NLD | | Bulgaria | BGR |
| Belgium | BEL | | Norway | NOR |
| Denmark | DNK | 0 | Israel | ISR |
| Luxembourg | LUX | | Hungary | HUN |
| Greece | GRC | | Austria | AUT |
| Albania | ALB | * | Vatican city state | VAT |
| Bosnia and herzegowina | BIH | ۲ | Cyprus | CYP |
| Ireland | IRL | - | Iceland | ISL |
| Malta | MLT | 2 | Slovenia | SVN |
| Sweden | SWE | C+ | Turkey | TUR |
| Switzerland | CHE | | Armenia | ARM |
| Azerbaijan | AZE | | Russian Federation | RUS |
| Kazakhstan | KAZ | | Ukraine | UKF |
| Lithuania | LTU | | Moldova | MD |
| Georgia | GEO | 2000 | Belarus | BLF |
| Estonia | EST | | Turkmenistan | TKN |
| Latvia | LVA | | Uzbekistan | UZE |
| | | | | |



7 Revision History

| Revision History | Description | Reviser | Date |
|-------------------------|--------------------------------|-------------|------------|
| Version 1.0 Revision 1 | Initial version | Shuixiu You | 2015-10-26 |
| Version 1.1 Revision 1 | Firmware Version: V5.3.8 | Shuixiu You | 2015-12-30 |
| | Add function configurations: | | |
| | (1)Mode select and time | | |
| | interval setting. | | |
| | (2) Triggering Source setting. | | |
| | (3) Set Picture Name. | | |
| | (4) Blacklist & Whitelist | | |
| | operation. | | |
| | (6) Set the suitable ANPR | | |
| | parameters automatically by | | |
| | Mounting Scenario setting. | | |



