

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).

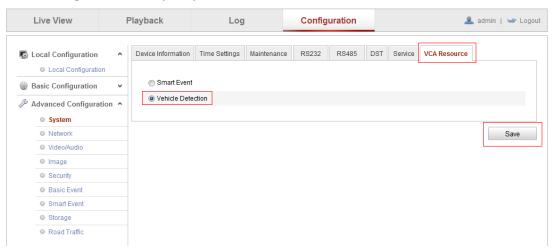


Fig.1 VCA Resource Allocation

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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-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.



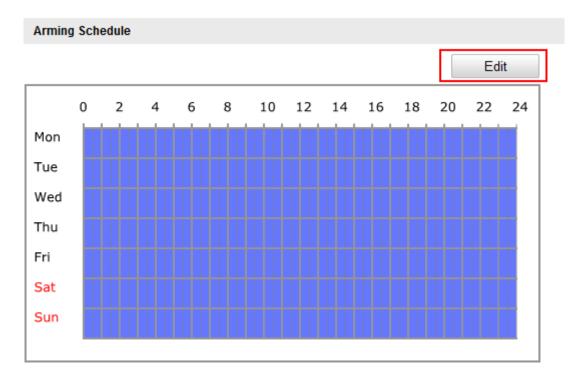


Fig.8 Arming Schedule Configuration

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.

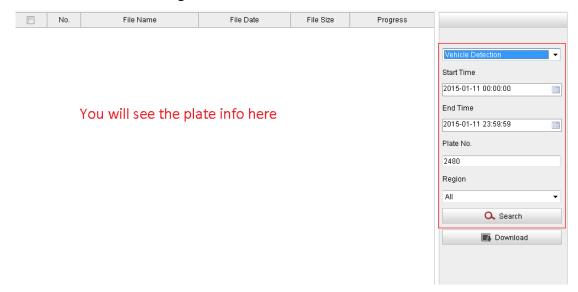
3 Result Query

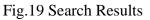
Go to *Playback->Download pictures*, and select *Vehicle Detection* option. You can search for the plate picture and information on the SD card.



	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		
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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

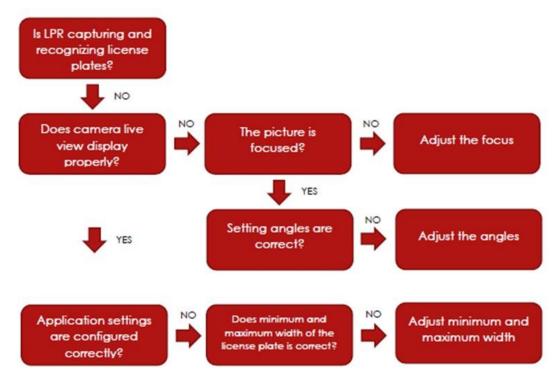


Backlight Settings

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.		



