PROVISION ISR®

Now you can see!

SMART PLATE

LICENSE PLATE RECOGNITION CAMERAS

INSTALLATION GUIDE

2MP
Resolution

I6-320LPR-MVF1

I6-320LPR-MVF2

	I6-320LPR-MVF1	I6-320LPR-MVF2
Image sensor	1 / 2.8" CMOS	1 / 2.8" CMOS
Effective Pixels	1920x1080	1920x1080
Frame rate	1-25/30FPS In Normal Mode 1-50/60FPS in HFR Mode***	1-25/30FPS In Normal Mode 1-50/60FPS in HFR Mode***
Day/night	ICR	ICR
Min. Illumination	Day: 0.1lux / Night: 0.005lux (@F1.6, AGC On) 0lux with IR on	Day: 0.1lux / Night: 0.005lux (@F1.6, AGC On) 0lux with IR on
Lens	2.8-12mm MVF(103.4°-32.4°)	7-22mm MVF (44°-17.6°)
IR distance	60m (4 High Power IR LED)	60m (4 High Power IR LED)
Image enhancement	True WDR(120dB), BLC, HLC, ROI	True WDR(120dB), BLC, HLC, ROI
Noise reduction	3D-DNR	3D-DNR
Privacy mask	Yes	Yes
Motion detection	Yes	Yes
Standard analytics	Camera Tampering	Camera Tampering
AI analytics	LPR: License plate recognition	LPR: License plate recognition
LPR database	10000 plates	10000 plates
LPR recognition speed	0-70 Km/h	0-70 Km/h
Max LPR recognition distance	15 m	26 m
Video compression	H.265S/H.264S*, H.265+/H.264+/H.265/H.264, MJPEG**	H.265S/H.264S*, H.265+/H.264+/H.265/H.264, MJPEG**
Streams	3	3
SD card	Event/Schedule based Main/Sub-Stream recording (Up to 128Gb)	Event/Schedule based Main/Sub-Stream recording (Up to 128Gb)
Audio	Two-way Audio	Two-way Audio
Alarm	1 IN + 1 OUT	1 IN + 1 OUT
Power supply	DC12V/~910mA / PoE/~11W	DC12V/~910mA / PoE/~11W
Working temperature	-30°C~60°C, 10%~90% Humidity	-30°C~60°C, 10%~90% Humidity
Protection	IP67	IP67
Dimensions	271.8x92.4x79.4mm	271.8x92.4x79.4mm
Junction box	PR-JB14IP66 - PR-JB14IP64	PR-JB14IP66 - PR-JB14IP64

*Main-Streams Only, **Sub-Streams Only, *** No true-WDR

SMART PLATE CAMERAS CAPABILITIES AND KEY STRENGTHS

- Industry leading accuracy (99% in optimal conditions)
- 50+ ABC - 123 — More than 50 international license plates supported
- ABC✱123 — Ability to distinguish relevant signs from irrelevant ones.
- Fast reading (2 license plates per second)
- Vehicle speed: 0-70 km/h / 40 Mp/h
- AI — On-board artificial intelligence based on deep learning algorithms
- SD — Built-in SD Card
- Excellent night performances
- SHOB P — Dedicated parking management software

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4MP
Resolution

I6-340LPRN-MVF1

I6-340LPRN-MVF2

	I6-340LPRN-MVF1	I6-340LPRN-MVF2
Image sensor	1 / 2.8" CMOS	1 / 2.8" CMOS
Effective Pixels	2592x1520	2592x1520
Frame rate	1-25/30FPS In Normal Mode 1-50/60FPS in HFR Mode***	1-25/30FPS In Normal Mode 1-50/60FPS in HFR Mode***
Day/night	ICR	ICR
Min. Illumination	Day: 0.1lux / Night: 0.005lux (@F1.6, AGC On) 0lux with IR on	Day: 0.1lux / Night: 0.005lux (@F1.6, AGC On) 0lux with IR on
Lens	2.8-12mm MVF(100.4°-49°)	8-32mm MVF (41°-15.5°)
IR distance	60m (4 High Power IR LED)	60m (4 High Power IR LED)
Image enhancement	True WDR(120dB), BLC, HLC, ROI	True WDR(120dB), BLC, HLC, ROI
Noise reduction	3D-DNR	3D-DNR
Privacy mask	Yes	Yes
Motion detection	Yes	Yes
Standard analytics	Camera Tampering	Camera Tampering
AI analytics	LPR: License plate recognition	LPR: License plate recognition
LPR database	10000 plates	10000 plates
LPR recognition speed	0-70 Km/h	0-70 Km/h
Max LPR recognition distance	15 m	30 m
Video compression	H.265S/H.264S*, H.265+/H.264+/H.265/H.264, MJPEG**	H.265S/H.264S*, H.265+/H.264+/H.265/H.264, MJPEG**
Streams	3	3
SD card	Event/Schedule based Main/Sub-Stream recording (Up to 128Gb)	Event/Schedule based Main/Sub-Stream recording (Up to 128Gb)
Audio	Two-way Audio	Two-way Audio
Alarm	1 IN + 1 OUT	1 IN + 1 OUT
Weigand Output	D0, D1, GND	D0, D1, GND
Power supply	DC12V/~910mA / PoE/~11W	DC12V/~910mA / PoE/~11W
Working temperature	-30°C~60°C, 10%~90% Humidity	-30°C~60°C, 10%~90% Humidity
Protection	IP67	IP67
Dimensions	271.8x92.4x79.4mm	271.8x92.4x79.4mm
Junction box	PR-JB14IP66 - PR-JB14IP64	PR-JB14IP66 - PR-JB14IP64

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SWL Security Wholesale Limited

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AUCKLAND | WELLINGTON | CHRISTCHURCH | WWW.SWL.CO.NZ

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INSTALLATION GUIDE

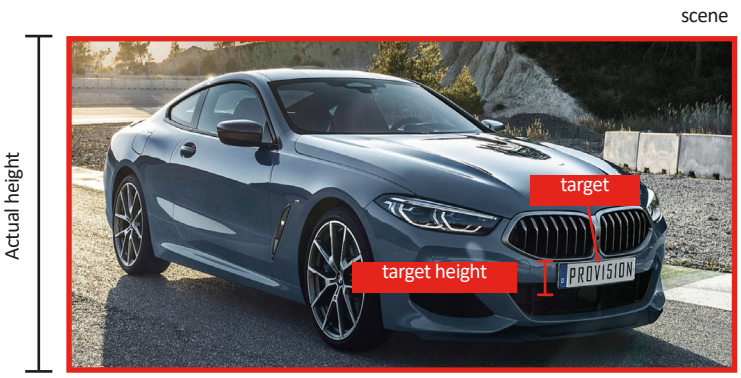
PLATE SIZE

Target Height should be:

- More than 10% of the scene
- Less than 50% of the scene

Overall Target Size should be:

- More than 6% of the scene
- Less than 50% of the scene



6% ≤ Plate Proportion ≤ 50%

3.4% (too far)

4,5% (too far)

6.3%

14.8%

24.0%

A thumb rule will be: “if you can read the plate, so can the camera”.
Use the table below to know where to install the camera distance-wise and to select a proper lens.

License plate Width (CM)	Lens	Max. Recognition Distance (Metres)	Min. Recognition Distance (Metres)
36 (Standard NZ Size)	2.8-12mm	10.24	1.05
36 (Standard NZ Size)	7-22mm	19.21	2.40
36 (Standard NZ Size)	8-32mm	26.88	3.36

These distances are approximations and should be used as guide.

License plate camera tilt angle should be within -5° ~ 5°

OK OK NO

Make sure there are no obstacles between the camera and license plate

Make sure the detection area is in focus

NO

OK

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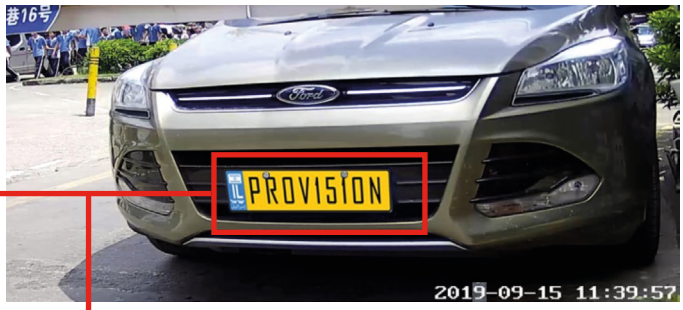
APPLICATION: GATE ENTRANCE/EXIT

INSTALLATION HEIGHT

Recommended Height: 1.2 M - 1.5 M (Parking Lots)

License plates proportions

The width of the license plate should be
between 6% to 50% of the screen width



Pan angle
15°-25°

Tilt angle
15°-25°

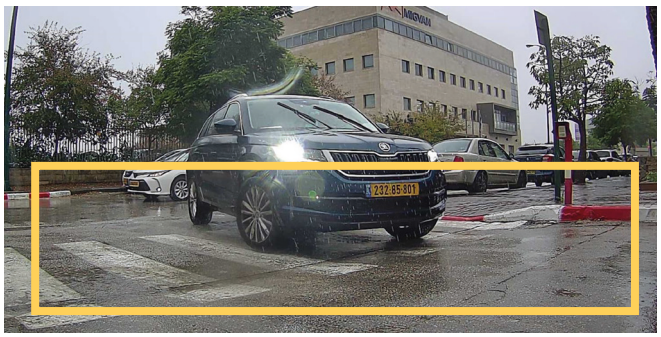
1.2m
1.5m

Recognition Distance = 1.5m-3m

Deceleration zone

DETECTION AREA (ROI)

When it comes of gate control, we recommend to draw the detection area where the vehicle slows down: near a speed bump, entrance gate, stop sign (etc..)



EXAMPLE OF GOOD AND BAD INSTALLATION

OK

NO

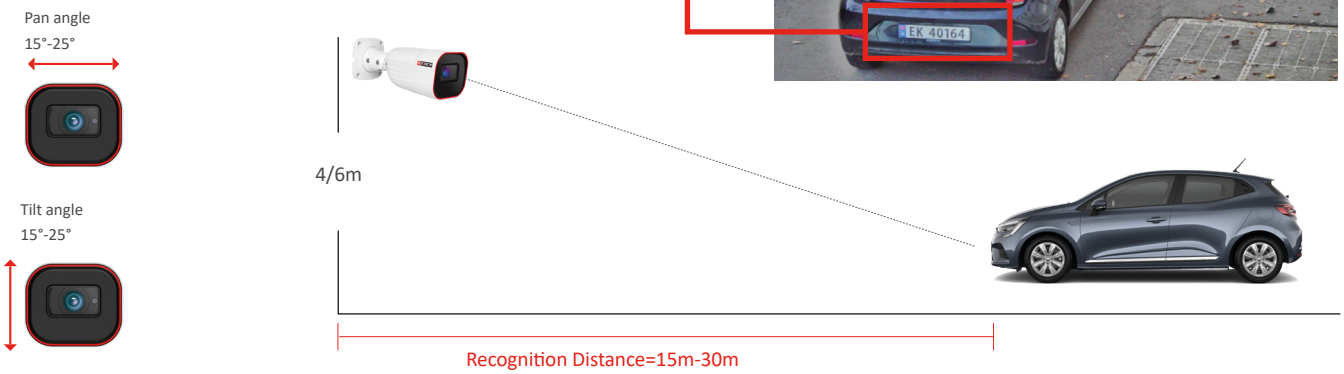
APPLICATION: STREET MONITORING

INSTALLATION HEIGHT

Recommended Height: 4m - 6m (Junctions Or Roads)

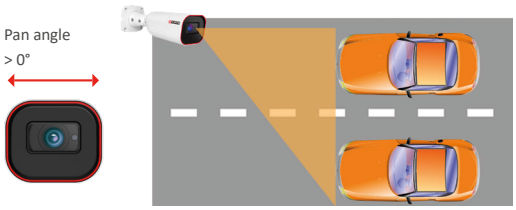
License plates proportions

The width of the license plate should be between 6% to 50% of the screen width

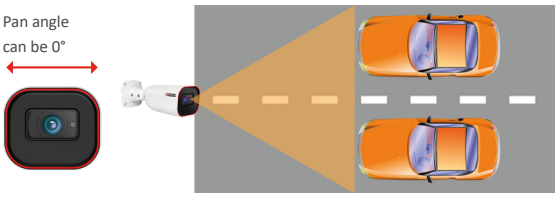


When it comes of street monitoring LPR cameras can be installed:

On the road side

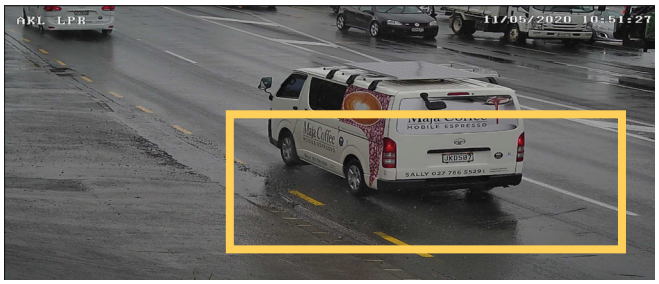


On the road middle



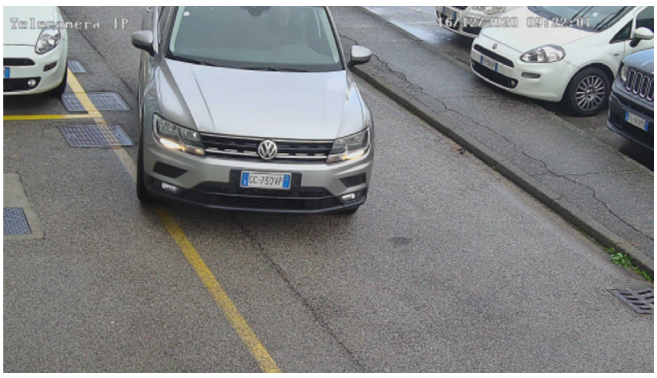
DETECTION AREA (ROI)

When it comes of street monitoring, we recommend to draw the detection area only in the closer lane, at the bottom of the screen, covering about one third of the area.



EXAMPLE OF GOOD AND BAD INSTALLATION

OK



NO

Main aspects to be considered before installing the LPR camera are:

Vehicle Speed

The speed of the vehicle is strictly connected to the camera exposure time: if the exposure time is not the right one, the images will be “blurred”.
Provision-ISR LPR cameras, recognize vehicle’s plates at a speed up to 70km/h and work with exposure times suitable for capturing clear images, without the typical “light trails” caused by the vehicle movement.

Environmental Conditions

The shooting conditions can significantly change during the 24 hours. The same location, can be clearly visible when lit by the low sun, or extremely dark at night, during a storm.
Provision-ISR LPR cameras relay on the most advanced image-processing technology able to provide the best results in a variety of environmental conditions.

External Interferences

By interferences we mean all those lighting sources that can affect the recognition process: from the front or rear headlights of the vehicle, to the license plate illuminator, passing through the lighting fittings along the street.

DAY & NIGHT

The best night results will be achieved when the camera is at night mode with IR ON.

This can be achieved by setting the camera to “Scheduled Day/Night” which will solve the following problems:

1) Headlights directly from the Vehicle will cause the image to switch from B/W mode to color mode.
2) Street-lights might cause the camera to stay in color mode while the LPR detection area is not well lit.

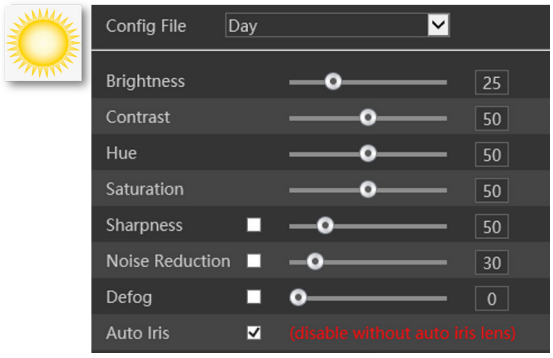
1

2

RECOMMENDED IMAGE SETTINGS FOR DAY & NIGHT

Go to a web broswer and enter the IP Address of the camera and log in. Then go to Config >Image > Display Settings

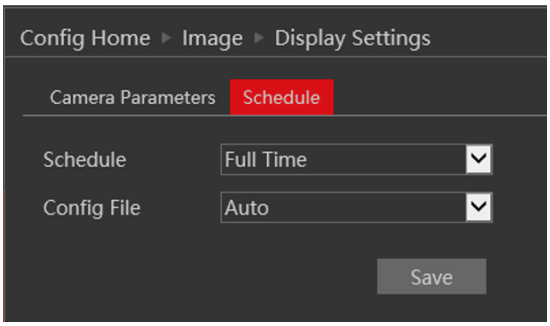
The image settings that work well during the day, won't necessarily work during the night as well. To solve the issue, it is recommended to use 2 sets of configurations:



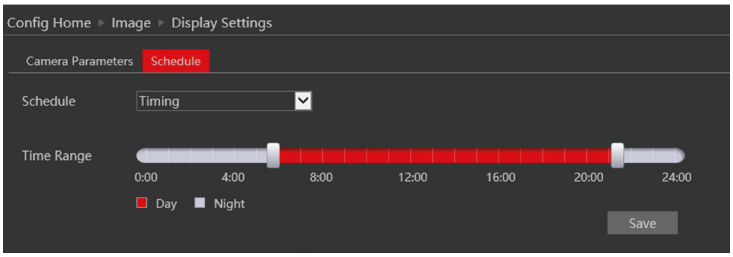
We have 2 ways to switch between day and night:

1. Automatically, if there isn't background lighting
2. By schedule, if the camera doesn't switch automatically

1

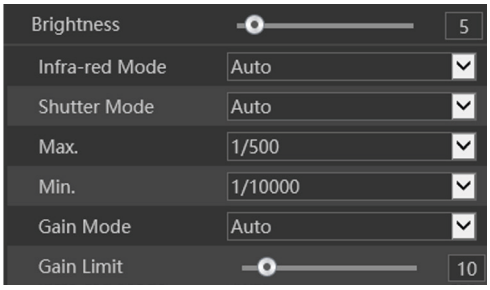


2



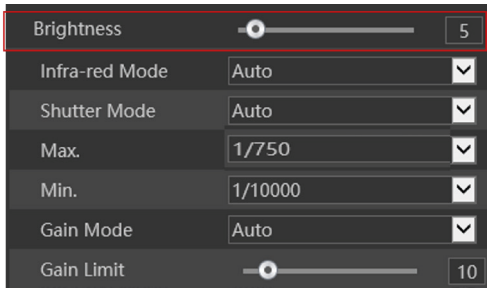
RECOMMENDED DAY MODE IMAGE SETTINGS

Brightness: Default value
Day/Night Mode: Day
Infra-Red Mode: Auto
Max. (Shutter): According to the live scene.
For static vehicles (gate) use ~1/100.
The faster the vehicle speed, the smaller the value needs to be set (~1/500)
Gain Mode: Auto
Gain Value: ~10



RECOMMENDED NIGHT MODE IMAGE SETTINGS

Brightness:
If the license plate is reflective, the brightness should be set to ~5. (General Image will be darker)
Day/Night Mode: Night
Infra-Red Mode: Auto
Max. (Shutter): According to the live scene. For static vehicles (gate) use ~1/100. The faster the vehicle speed, the smaller the value needs to be set (~1/750)
Gain Mode: Auto
Gain Value: ~10



The above recommened settings above are a guide only and may need changing slightly depending on the environment

BRIGHTNESS

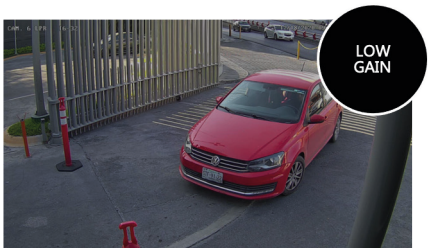
Setting a lower brightness to the camera (2) will cause the image to be darker overall, but it will be better for reflective license plates

1

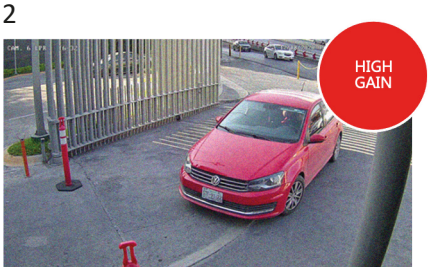
2

GAIN

Under insufficient light environments, Higher Gain values can improve the image brightness, but will create image noise



2



SHUTTER UPPER LIMIT

In the evening, the shutter values will start to increase to allow more light in the sensor.
Higher shutter limit results with blurrier image for moving objects, which can decrease recognition ability (1/25 is higher than 1/750)

1/25

More light enters the sensor, fast moving objects appear blurry

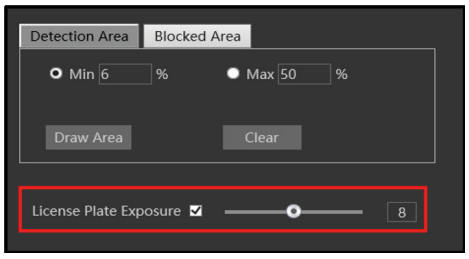
1/100

1/750

Less light enters the sensor, the image is generally sharper.

LICENSE PLATE EXPOSURE

This setting is used to perform automatic exposure based on the area marked for license plate recognition (detection area).
The idea is to get visible plate, with less consideration on other parts of the image.
Note: when the image is already too bright/dark, this feature won't be enough for capturing license plates. Repositioning the camera or changing the detection area might be needed.



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SETTING UP LICENCE PLATE RECOGNITION ON THE NVR

On the NVR go to Settings > Events and Analytics > Analtyics > LPR

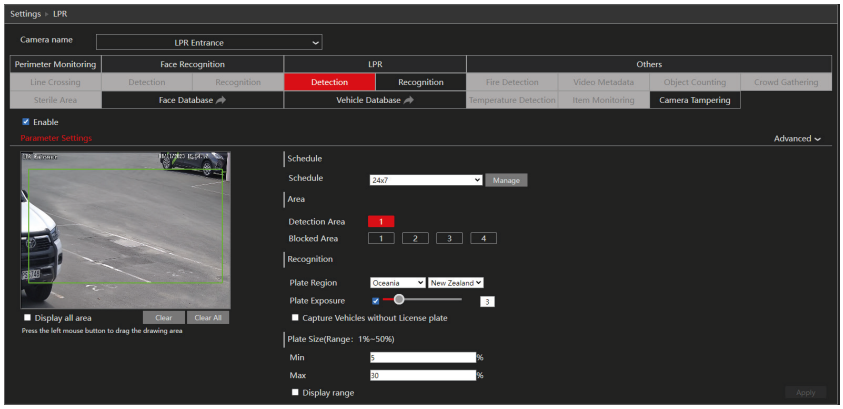
Click the tick box next to enable and set the schedule you would like to capture number plates.

Set the Detection Area required to capture the number plate and set the Plate Region to Oceania - New Zealand.

Set the plate expsoure to 3.

Set the Plate size between 1% to 50% however the recommended default for the most accurate results. Tick Display range to see how the minimum and maximum sizes to comapre.

It is advised to park a vehicle in the area whilst setting up the detection area of plate size so it is most accurate (if it is feasible to do so).



Click Apply.

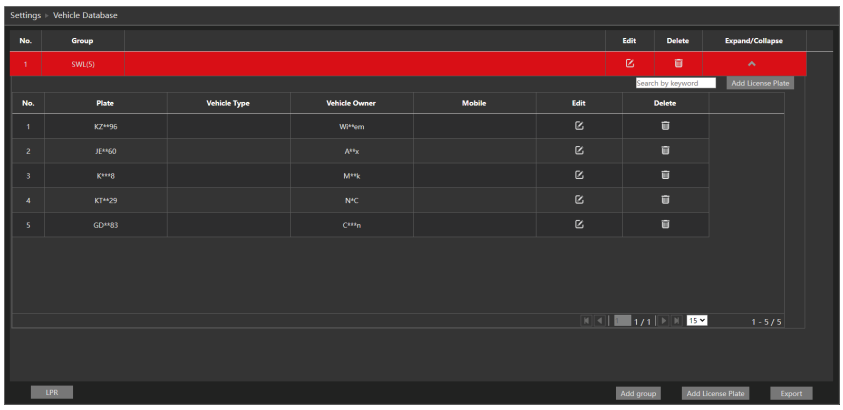
Click on Vehicle Database under LPR.

Add a Group and type the name of the group.

Add the Licence plate, type the plate, vehicle type, vehicle owner and select the group then click OK.

To add multiple number plates at once, click Add Licence Plate > Bulk Entry and upload the .CSV file. The format has to be:

Column A - (B1) Plate
Column B - (B2) Vehicle Owner
Column C - (B3) Mobile
Column D - (N1) Vehicle Type



See example:

	A	B	C	D
1	(B1)Plate	(B2)Vehicle Owner	(B3)Mobile	(N1)Vehicle Type
2				
3	ABC123	SWL	02123456789	Car
4				

Go back to LPR > Recongition.

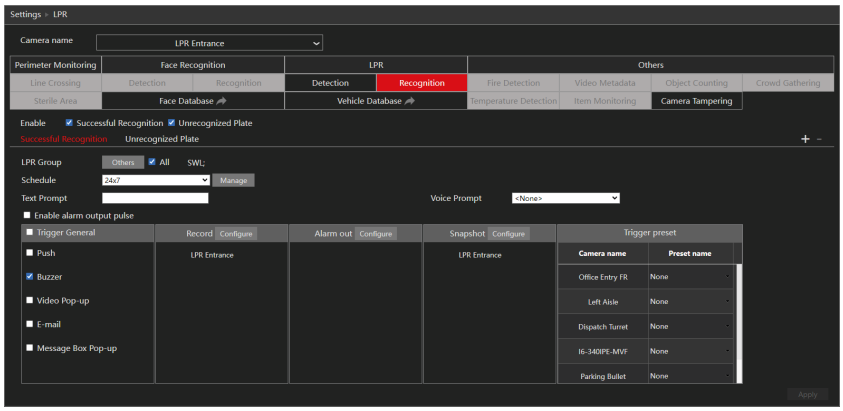
This menu tells the NVR what is to be done when a Number Plate matches or does not match the database.

Enable Successful Recongition and/or Unrecognised Plate and select the Number Plate Group

Enable the Triggers that need to be trigggered upon a matching plate

Make sure the camera is selected in Record, Enable Alarm out if you need to trigger a 3rd party device, and make sure snapshot is enabled.

If a PTZ is at site and it needs to go to a Preset position coving the LPR Camera, select the camera and the pre-set. The PTZ will then move upon LPR activation.



Click Apply

The recognition settings above are the same for Unrecognised Plate. The + symbol on the right is to create other triggers for other groups of number plates.

SEARCH FOR A NUMBER PLATE

On the NVR go to Analytics > Vehicle > By Event

Select the date to search

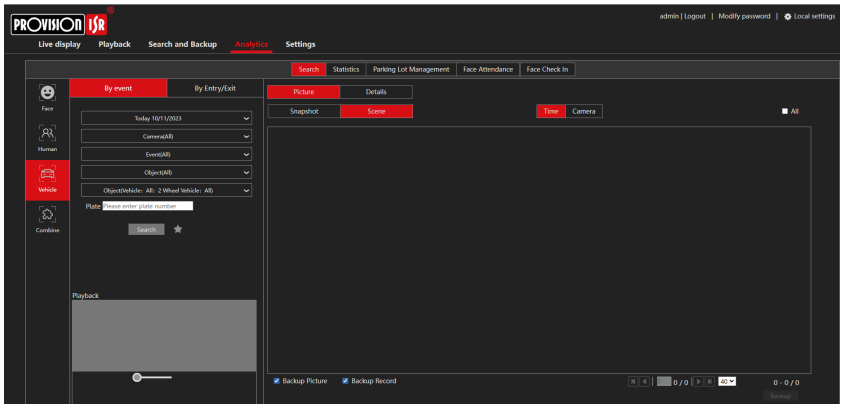
Select the LPR camera, Under Camera name.

Select Event and choose Plate Recognition - Successful Recognition and/or Plate Recognition-Unrecognised Plate.

Click Search

This will bring up all the Licence Plates the LPR camera has captured.

If you know the Licence Number Plate, type this is next to Plate then click search.



Once the NVR has completed the search, click on the number plate and this will play a short clip of the vehicle driving past the camera.

Click the 3 little dots in the top right corner of each plate and it will open up a screen.

Click Register to add the Licence Plate to the database or click playback to view the short video clip of the vehicle going past.

To backup the video select the number plate and click backup.