Hanwha Vision

WISENET Road AI
LPR/ANPR Cameras
INSTALLATION GUIDE

Color ● GRAY

Model HT230C

Brand HTV

Type SUV

LPN HT-777-WS

CONTENTS

1 OVERVIEW OF THE CAMERA

The TNO-7180RLP License Plate Recognition (LPR) camera system is a high-performance solution for those who don't want to miss license plates.

Equipped with an industry-leading image sensor and optical zoom, the TNO-9070RLP delivers unprecedented performance for accurate license plate and vehicle maker and model recognition.

A camera with a global shutter ensures clear image capture of license plates moving at speeds as fast as 200 kmh(124 mph). And a lens capable of up to 18x magnification means greater ability to scan vehicles both near and far.

Camera selections (Between various P-Series and T series)

P series and T series cameras are for License Plate Recognition, and the T series is optimized for recognizing license plates of high-speed vehicles up to 200 kmh(124 mph).

| LPR(ANPR) CAMERAS	TNO-7180RLP	PNV-A9081RLP	PNO-A9081RLP	PNB-A9001LP (* with 50mm lens)
LPR Usage Conditions	Highway	Community Traffic	Parking Application	City Traffic
Speed Description	High speed	Moderate speed	Low speed	Regular speed
Lane Coverage	Up to 2 lanes (5m/18ft Wide)	1 lane (3.6m/12ft Wide) (with built in IR)	1 lane (3.6m/12ft Wide) (with built in IR)	Up to 2 lanes (5m/18ft Wide)
Speed limit	Up to 200kmh (125mph)	Up to 70kmh (45mph)	Up to 40kmh (25mph)	Up to 100kmh (65mph)
Min. Forward Distance	27m (90ft)	12m (38ft)	10m (33ft)	16m (52ft)
Max. Forward Distance	46m (150ft)	12m (40ft)	13m (45ft)	36m (120ft) (with Ext. IR)
Max. Horizontal Angle	15°	25°	30°	25°
Max. Vertical Angle	15°	25°	30°	25°
Horizontal Offset	Up to 4m (12ft)	Up to 5m (18ft)	Up to 7m (24ft)	Up to 7m (24ft)
Camera Height	Up to 7m (24ft)	Up to 5m (18ft)	Up to 7m (24ft)	Up to 7m (24ft)
Vehicle Recognition	Make : 70+ Makes Model : 600+ models Color : 10 colors	Make : 70+ Makes Model : 600+ models Color : 11 colors	Make : 70+ Makes Model : 600+ models Color : 10 colors	Make : 70+ Makes Model : 600+ models Color : 11 colors

2

PRE-INSTALLATION

2.1 Choosing a Location

The LPR (License Plate Recognition)/ ANPR (Automatic Number Plate Recognition) Technology running on this camera will provide you with the best results when following the recommended installation constraints below.

Fig. 1
Camera shown from side

15° Maximum Vertical Angle

Minimum Forward Distance

Maximum Forward Distance
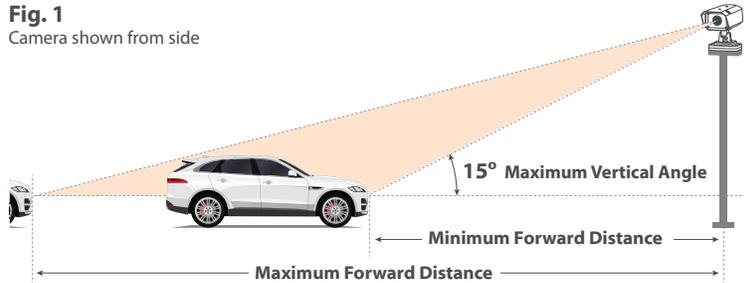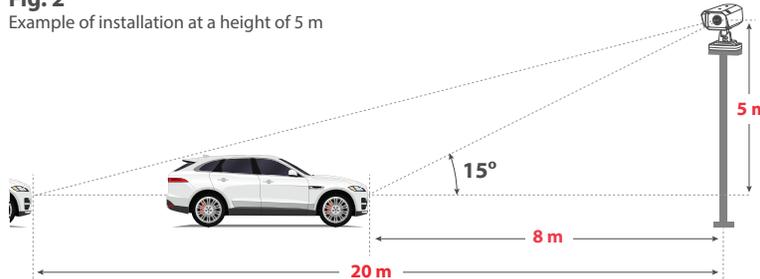
Recommended

30 degrees Maximum Vertical Angle

Maximum Forward Distance depends on lens zoom, however should not exceed **20 m / 65.6 ft** considering effective IR range (for PNO and PNV models). Please consider using external IR for ranges above 20 m / 65.6 ft.

Fig. 2
Example of installation at a height of 5 m

5 m

15°

8 m

20 m

2.1 Choosing a Location (Continued)

FORWARD DISTANCE TABLES

The orange dots on the tables below are recommended installation measurements.

It is based in low speed less than 30km.

Camera Height (m)	Forward Distance (m)						
	15 (49.2')	20 (65.6')	25 (82.0')	30 (98.4')	35 (114.8')	40 (131.2')	45 (147.6')
4 (13.1')	●	●	●	●	●	●	●
6 (19.6')		●	●	●	●	●	●
8 (26.2')				●	●	●	●
10 (32.8')					●	●	●
12 (39.3')							●

* Daytime condition with built in IR.

2.1 Choosing a Location (Continued)

Recommended

15 or 25 degrees Maximum Horizontal Angle

Fig. 3
Camera shown from top

Maximum Horizontal Angle
15° for highway
25° for city traffic observation

Fig. 4
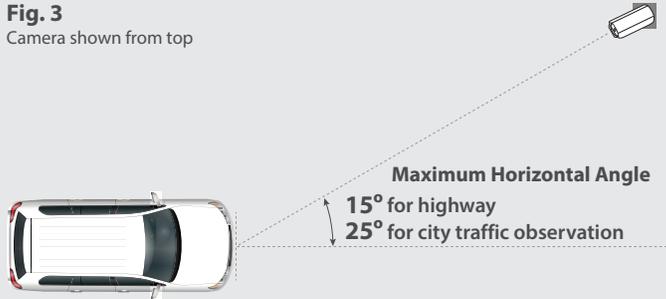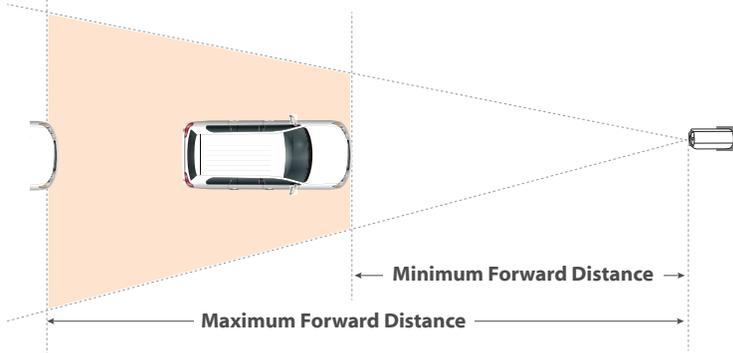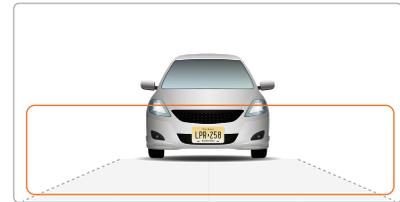
Minimum Forward Distance

Maximum Forward Distance

The 3MP mode can cover up to 2 lanes.

Normally, setting recognition zone (see orange frame below) in lower half of camera view is sufficient and favours app performance.

Best results are achieved when single row number plate width has fit the criteria. Greater width may affect performance.

All the license Plate that are meeting the pixel criteria as below will be recognized in the selected area.

- **130-300 pixels** for regular EU plates
- **80-300 pixels** for US plates without stacked symbols (small ones)
- **160-300 pixels** for US plates with stacked symbols

Color coded pixel counts are available in the settings section of Road AI.

2.2 Overhead mounting and Roadside mounting

In overhead mounting, the LPR camera is mounted directly above the vehicle path. Refer to the following table for the maximum mounting height and corresponding forward distance to license plate detection area for each LPR camera.
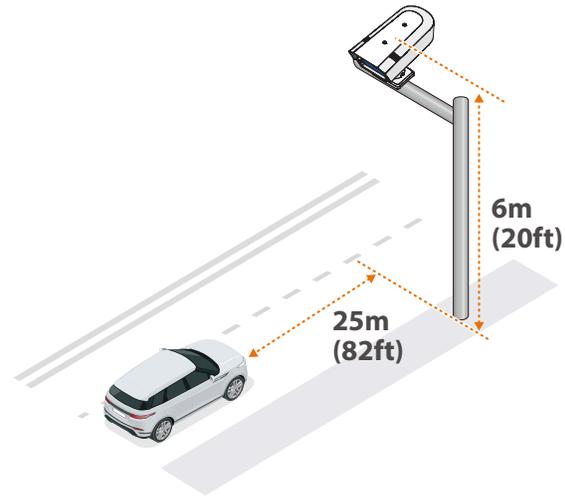
Improper Installation

2m/(7ft) Mounting Height
10m/(33ft) Forward Distance
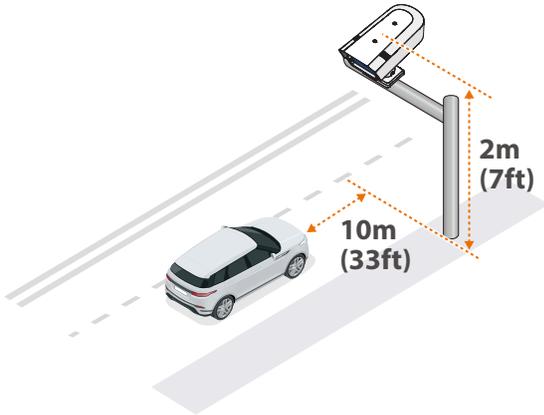
Proper Installation

6m/(20ft) Mounting Height
25m/(82ft) Forward Distance

2m (7ft)
**10m (33ft)**

6m (20ft)
25m (82ft)

2.2 Overhead mounting and Roadside mounting (Continued)

If overhead mounting is not possible, use roadside mounting. In roadside mounting, the LPR camera is most often mounted on a pole mount on the side of the road. Refer to the previous table for the maximum mounting height and forward distance from lane center for each LPR camera. For better results, choose the shortest target distance for your actual mounting location.
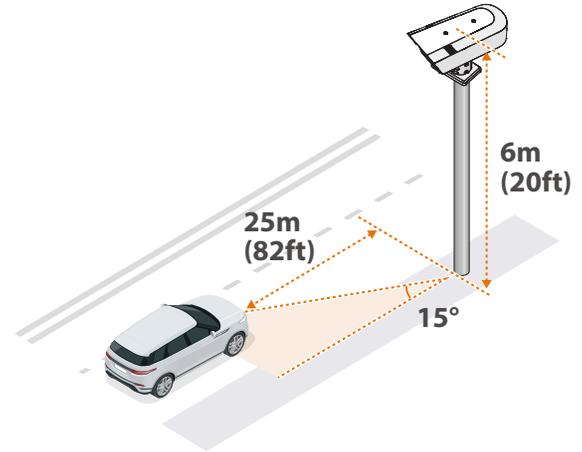
Improper Installation

2m/(7ft) Mounting Height
25m/(82ft) Forward Distance
45° Horizontal Angle
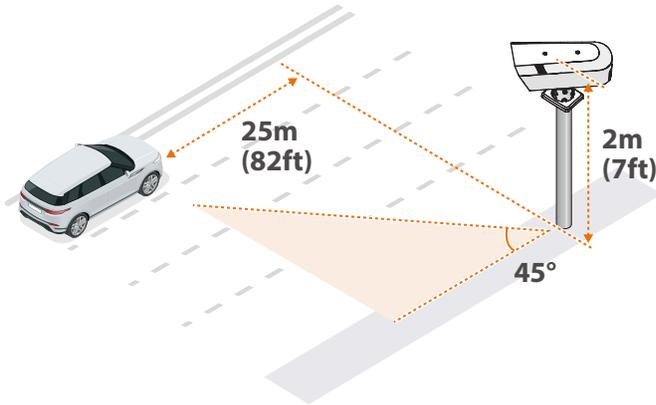
Proper Installation

6m/(20ft) Mounting Height
25m/(82ft) Forward Distance
15° Horizontal Angle

2.3 Vehicle speed considerations and number of lane coverage

RoadAI can support up to two lanes. If you want to recognize more lanes, please install additional **TNO-7180RLP**.
The vehicle speed at which the camera can recognize license plates is **up to 200 kmh(124 mph)**.

2.4 Day and Night time considerations

- **MMCR effect on day/night**

  In order to improve the accuracy of MMCR, you need external visual lights to provide sufficient illumination. Reliable MMCR results may not be provided in environments where sufficient illumination is not provided due to lack of a light source, such as at night or in an underground parking lot.

- **Accuracy considerations for plate reads in day vs night**

  External visible light is required to highlight non-reflective plates when camera is in Black and White mode (mostly in environment where not sufficient lighting). Plates should be clearly visible by human on the video.

- **Accuracy considerations due to headlight intensity or vehicle from opposite side**

  Usually light from the opposite side is diffused on the sides and not affecting much. However modern vehicles might have pretty powerful beam and may wash out plates which results loosing read accuracy.

- **Fog/heavy rain/sandstorm definitely decrease the accuracy and detection level**

2.5 Power considerations

POE and 12V DC can be used as a power source. PoE consumes 27W typical, 50W max. 12V DC typically draws 25W, max 47.5W. POE and AC/DC power supply is not included, please purchase separately.

2.6 Mounting Options

Wisenet Road AI Cameras have various accessory such as Wall, Table Top, Horizontal and Hanging mounts.

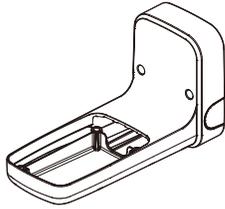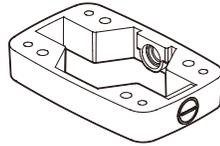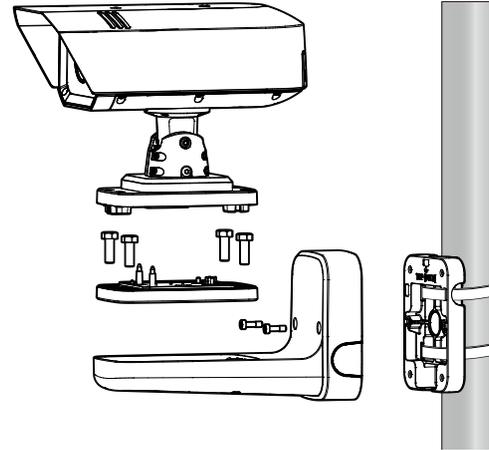| **Wall & Vertical Pole**	**Table Top**	**Pole Mounting Installation**
SBP-187WMW	SBP-300BW1	

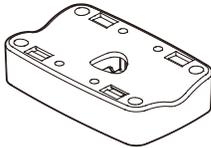**Horizontal Pole**

SBP-300PMW2

◊ *SBP-187WMW supports Wall and vertical pole installation. Steel strap sold separately (SBP-100S)*
◊ *SBP-300PMW2 include steel strap*
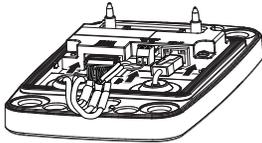
3 INSTALLING AND POSITIONING CAMERA

3.1 Camera Installation

NOTE: *Refer to TNO-7180RLP User Manual for more detail information.*
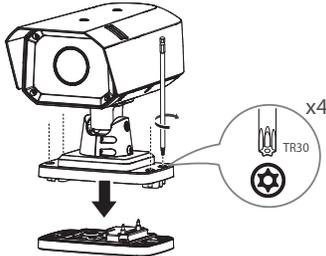
Installing the camera body

1. Connect the audio/alarm/RS-485/power/network cable to the installation base port.

> ▪ For power supply, connect the power cable to the provided terminal block and plug it in the port.
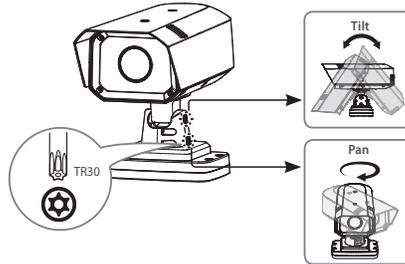
2. Use the provided driver bit to join the camera body to the installation base.

x4
TR30

> ▪ For assembly, use a torque of at least 10 Nm to tighten the screws.

3. Use the provided driver bit to loosen the camera screws so that you can adjust the surveillance direction. You can adjust panning and tilting of your camera.

Tilt

Pan

TR30

> ▪ Force to change the direction without loosening the screws might cause breakage or damage to the product.
> ▪ For assembly, use a torque of at least 10 Nm to tighten the screws.
> ▪ Do not use the screws on the right side.
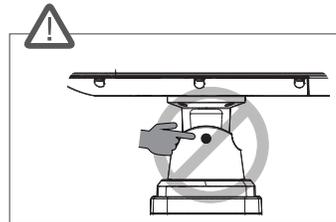
4. Once installation is complete, peel off the protective cover from the camera lens.
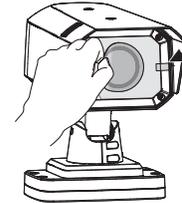
3.2 Adjust for Plate "Rotation" Angle

For best results, check the angle of your plate compared to the horizontal angle and rotate the camera to less than **5°** as shown below (Recommended Angle(s).

Recommended Angle(s)

Tilt

Pan

A190 RLP

A190 RLP **5°max**
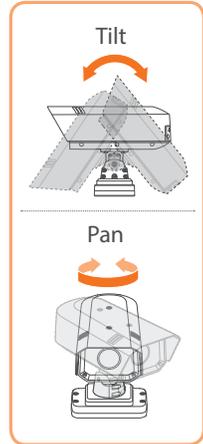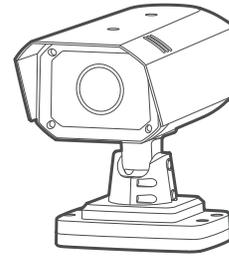
A190 RLP **>5°**

NOTE: *Refer to the "show plate grid" section available in Wisenet Road AI settings for assistance.*

4 CONFIGURING YOUR CAMERA

NOTE: *There is no default user name and password to access the camera setting, 1) Please make your own user name and password at the first instance when you access the camera settings.*
2) Make sure to set correct date and time for the camera before going in to any additional settings.

4.1 Field of View

The below steps you will perform in the Wisenet camera configuration webpage

1 Configure camera so left and right are correct, not mirrored.

2 Set camera zoom to capture license plate

3 Adjust camera view angle so plate passes through the middle of the image.

[Configure Initial Camera Settings]

For proper operations, please, check and set properly:

- **LPR setup** (▶page 15)

- **Camera Date Time** (▶page 21)

- **IP settings** (▶page 22)

- **SD card storage** (▶page 25)

- **Camera exposure and focus** (▶pages 26~27)

SSDR, WDR, DIS, Defog, AGC and anti-flickering features are good for human eye but affect computer vision performance and therefore setting these to the least possible effect or turning off strongly advised.

4.1 Field of View (Continued)

[LPR setup of Camera]

1 From the Video & Audio menu, select **LPR setup**.

2 Enter a camera's height between the camera and the ground, and distance between the camera and center of lane when installing an LPR (license plate recognition) camera, the optimal horizontal angle for the camera is suggested by calculating multiple values, which will make installation easier. You can also check the camera's vertical angle, horizontal angle, and roll angle on the web viewer in real time.

3 When you complete the configuration, click on the **Apply** button at the bottom of the page.

4.1 Field of View (Continued)

[LPR setup of Camera] (Continued)

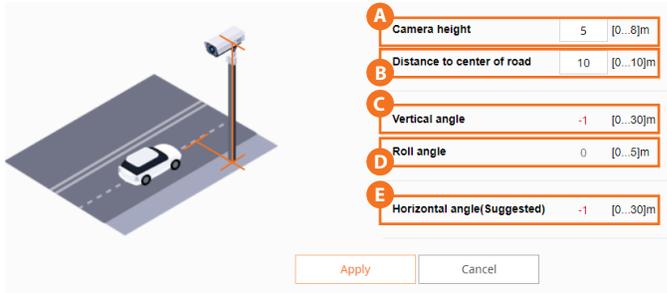**A** Camera height   5   [0...8]m

B Distance to center of road   10   [0...10]m

C Vertical angle   -1   [0...30]m

D Roll angle   0   [0...5]m

E Horizontal angle(Suggested)   -1   [0...30]m

Apply   Cancel

A You can enter the height of the camera from the ground. It is recommended to enter accurate values since the **Horizontal angle** is calculated based on the **Camera height** value, **Distance to center of road** value that are entered by the user, and other values.

B You can enter the distance from the center of the lane that the camera is recording to the installed camera. It is recommended to enter accurate values since the **Horizontal angle** is calculated based on the **Camera height** value, **Distance to center of road** value that are entered by the user, and other values.

C You can check the current vertical angle of the installed camera. In other words, the downward angle of the camera is displayed. If you change the vertical angle of the camera physically, the values change in real time.

D You can check the roll angle of the currently installed camera. If you change the roll angle of the camera physically, the values change in real time.

E You can check the optimal horizontal angle of the LPR camera that is being installed. In other words, it suggests the optimal horizontal angle of how much the camera should be adjusted from side to side. You can adjust the camera from side to side by following the suggested horizontal angle. The value is calculated based on the **Camera height** value, **Distance to center of road** value that are entered by the user, and other values.

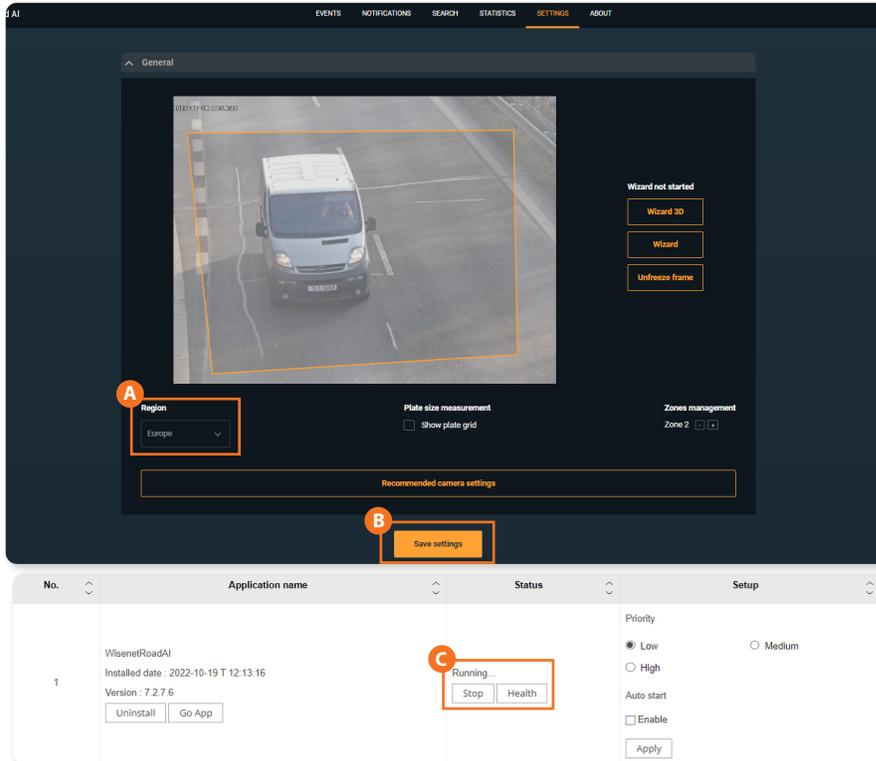## 4.1 Field of View (Continued)

[Setting up WisenetRoadAI]

Please go to App in camera open platform section.
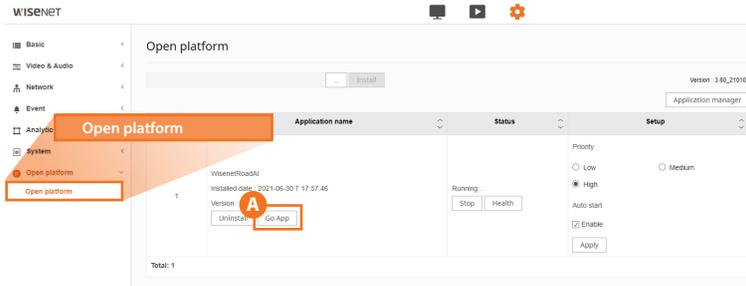
To run the Wisenet RoadAI app, select the **Open platform** menu and click the **(A)** **Go App** button in the **Application name** field.

4.1 Field of View (Continued)

[Setting up WisenetRoadAI] (Continued)

NOTE: *When searching, GCC regions can provide additional information.*

(A) The first option should be to define the **Region**.

1) As you go in to the settings menu, choose the correct region that matches your country/region. The default region given is Europe. If you are in any other region or country, use the pull down menu to choose the region/country that matches your geographical area.

2) **(B)** Save the settings.
Click the **Save settings**.
And you need to stop and start the application for the regions to take effect. It can be done from the web interface of the camera uder open platform settings.

3) Once you restart the application and come to the settings page continue with other settings as given next page.

NOTE: *You would need to go to the web menu of the camera �;Open Platform Area to* **(C)** *Stop and Re-start the application to take the Regional setting changes to be effective.*

4.1 Field of View (Continued)

[Setting up WisenetRoadAI] (Continued)
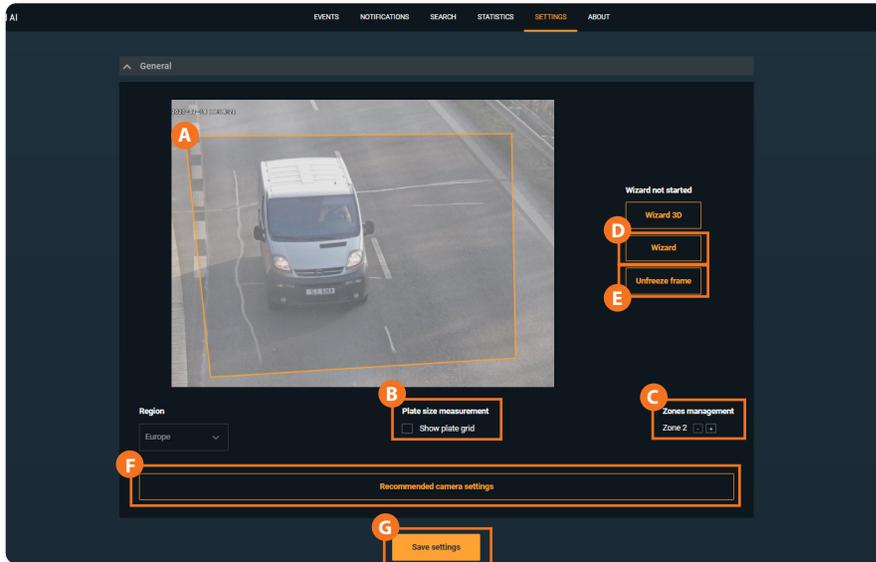
A The application settings allow the user to move the or resize the frame with in which the reading takes place.

B Switch on/off the Plate size measurement.

C Add License Plate Recognition Area.

D Set up with **Wizard** option

E Freeze the frame.

F Save the corresponding sections by clicking the **Recommended camera settings** button.

G Click **Save settings**.

H Please set the upper border of **A** the recognition area further from the edge of the frame.
This allows vehicle being fully visible during detection and improve MMCR results.

4.1 Field of View (Continued)

[Setting up WisenetRoadAI] (Continued)
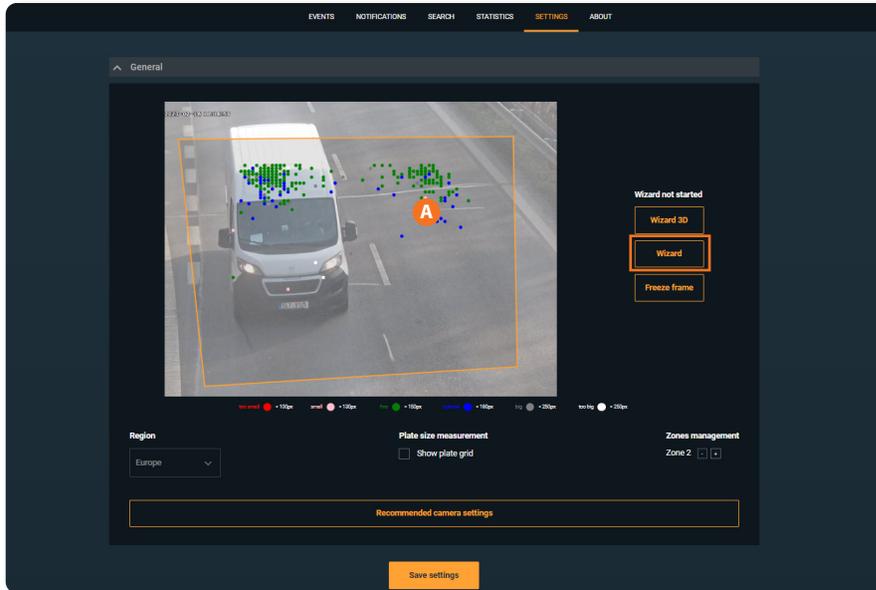
(A) **Wizard** tool displays the statistic of the latest 1000 recognized plates sizes.

Use it to adjust camera zooming and recognition area configuration.

Try to keep plates in **green** and **blue** range.

Users need to have at least **100** events to make feature displaying data.

NOTE: *Camera trying to capture every plate visible. However, errors during setup might result in multiple detection of the same plate with correct or even mistaken reads. Please, follow the installation recommendations and guide for plates size in the area of recognition.*

Please use Wizard and Plate Grid tools to check whether the plates are of the proper size. Adjust are of recognition, camera zoom or camera position to keep plates within recommended size range. This will increase the accuracy and reduce the chance of double detection.

4.2 Configure Initial Camera Settings

[Date and Time]

Choose **A** **Timezone** and set **Use daylight saving time** as appropriate.

Set **B** **date and time** or opt to **synchronize with your PC** or **NTP server**.

NOTE: *Wisenet Road AI app relies on these settings and if these are not set properly you may not see events in Wisenet Road AI app and events delivered to the outer systems may not contain proper timestamps.*

4.2 Configure Initial Camera Settings (Continued)

[IP, DNS, Ports]

Proper IP, DNS and ports setting are important for:

- NVR and other integrations
- outside LAN access if required

NOTE: *Reboot the camera whenever IP address gets changed.*

4.2 Configure Initial Camera Settings (Continued)

[Go to App]

Please go to App in camera open platform section.
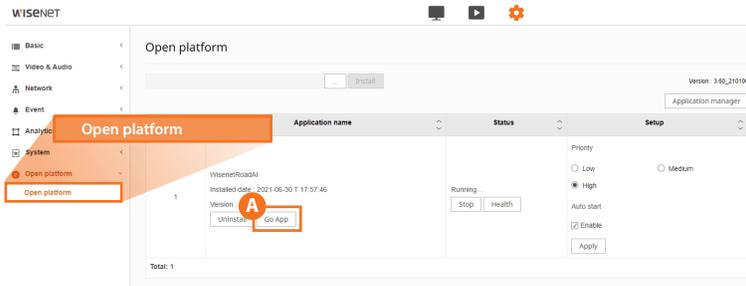
To run the Wisenet RoadAI app, select the **Open platform** menu and click the **A** **Go App** button in the **Application name** field.

4.2 Configure Initial Camera Settings (Continued)

[Go to App] (Continued)

Go to Wisenet Road AI application tab and select "Settings" from the pull down menu.
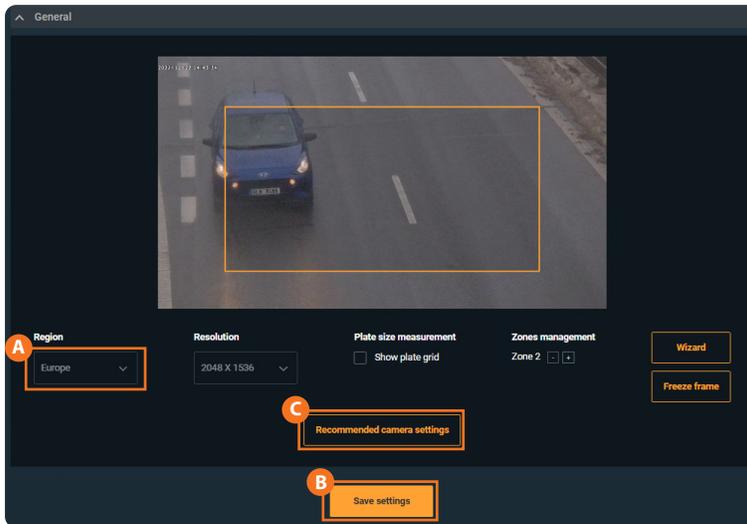
Select the **A** correct Region from the selection. Default settings will be "Europe". If you are in any other regions other than the default (Europe) region, pull down the option and select the correct region/country that matches your usage.

Click **B** to **save the settings.**

In the same "Settings" section, you can also choose to have the **C** Recommend setting applied.

Recommended setting is only for you as a guide which is based on stop and go settings. Most important settings are the shutter speed for fast/slow moving vehicles. Change the settings based on your install location.

4.2 Configure Initial Camera Settings (Continued)

[microSD card]

Your camera is supplied with micro SD card.
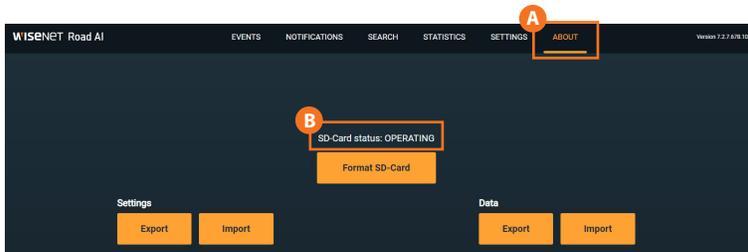
SD-card is managed by the Wisenet RoadAI application and no user interaction needed.

Please check the **B** SD-Card status in the **A** **ABOUT** section of the Wisenet RoadAI app.

Change the micro SD card if you see Error status.

4.2 Configure Initial Camera Settings (Continued)

[Exposure adjustments]

Use the recommended settings from the Wisenet Road AI application in most cases. But if you need to manually adjust here are the most common settings that affect the LPR performance.
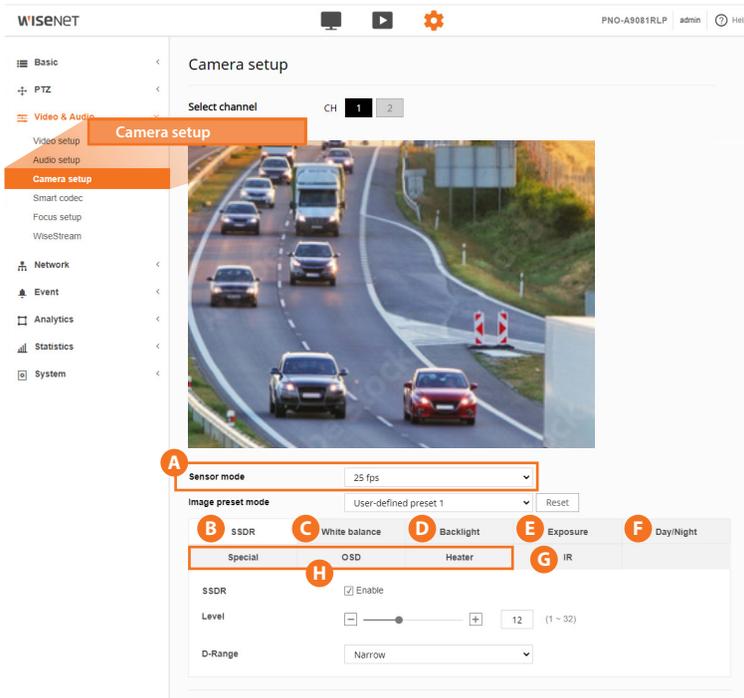
A Sensor: 25-30 fps

B SSDR: Off

C White balance: ATW

D Back light: Off
(try other backlight options only if camera gets blinded by headlights in the night)

E Exposure:
- minimum shutter speed : 1/1000
- maximum shutter speed : 1/12000
- preferred shutter speed : 1/1500
- Anti flicker : Off
- SSNR : Default
- AGC : Manual (AGC level: 10)

F Day/Night:
- Mode: Auto

G IR:
- Auto 1 for long distance
- Auto 2 for close installation

H Other settings: default

4.2 Configure Initial Camera Settings (Continued)

[Exposure adjustments-Automatic Gain Control]

AGC low, BW, IR on

AGC low, Color, IR on
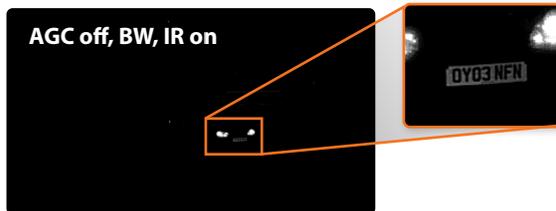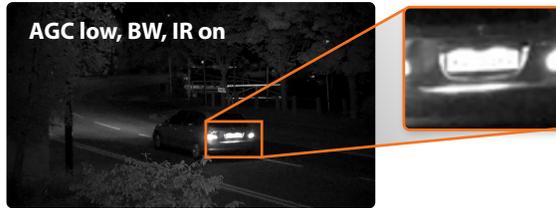
Automatic Gain Control can improve overall scene visibility notably. However, even at low setting AGC produces noise that can ruin license plate images, also lighter areas tend to bleach out. See illustrations to the left.

AGC off, BW, IR on

Start with turning AGC off. See the illustration to the left. Set AGC to low to improve plates visibility unless only other methods are helpful.

Adjust zoom so that real plate pixel width is at least 130px. Consider adjusting recognition zone so it is closer to the centre of the frame to avoid IR vignette effect.

NOTE: *Do not use WDR as it decrease the shutter speed and may blur the vehicles.*

4.3 Simple Focus on Plate Read Area

A unique feature of this camera allows you to select the plate area and hit a button to perform a "Simple Focus" on this plate area.

1 From the Video & Audio menu, select **Focus setup**.

2 Click and drag to draw an area of focus where the license plate is displayed.

3 Click the **Simple Focus** button to initiate a focus operation on the user-specified area.

NOTE:

The focus setting of PNB-A9001LP is related to the lens type, and manual focus is activated when using a manual varifocal lens.

The area indicated is not stored. If you need to perform a new Simple Focus, please draw a new area on-screen.

Set the focus to have plates in the proper pixel size.

- *130-300 pixels for regular EU plates*
- *80-300 pixels for US plates without stacked symbols (small ones)*
- *160-300 pixels for US plates with stacked symbols*
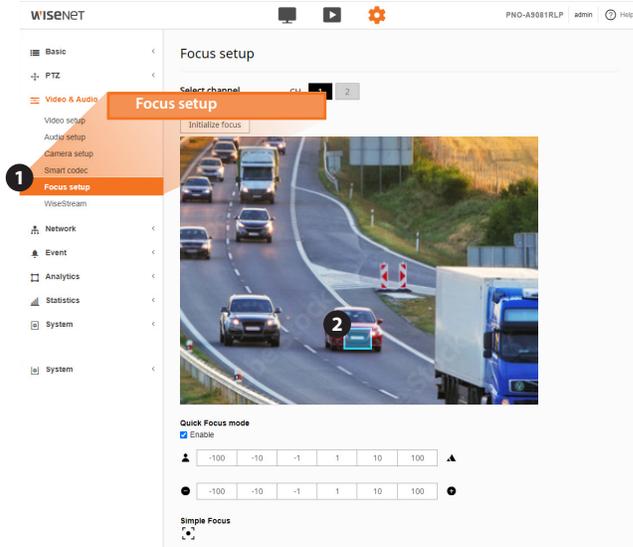
4.4 To measure pixel width of license/number plate

❶ Spread or move license/number plate (cars) across the scene (see illustration on the left below) and take snapshots using web viewer capturing feature (**Live → Capture**);

4.4 To measure pixel width of license/number plate (Continued)

② Use **Plate Grid** tool in the **Settings** tab of WisenetRoadAI and **Freeze Frame** feature to check whether plate fits the allowed range.

③ You can add an image from the Wisenet Road AI ➞ **Settings** ➞ Freeze frame to show the actual settings.
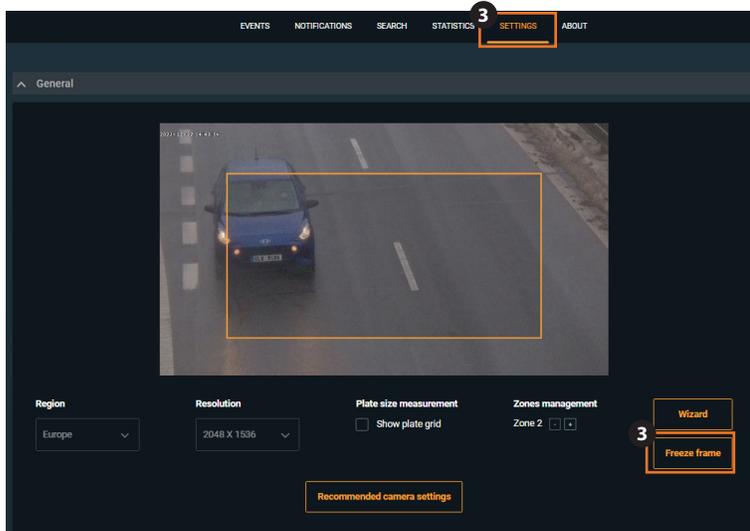
4.5 Examples of Proper and Improper Installation

SCENE REQUIREMENTS:

License/number plate is more than 130px in width

License/number plate is readable

Vertical angle is less than 15°

Tilt angle is less than 5°

Horizontal angle is less than 15°

Fig. 1
Daytime

- good proportion to the frame width
- well lit
- sufficient contrast
- acceptable tilt angle

Fig. 2
Night time
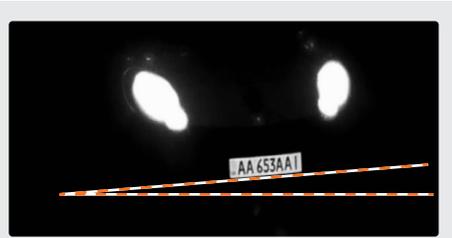
- good proportion to the frame width
- perfect IR power
- sufficient contrast
- critical yet acceptable tilt angle

4.5 Examples of Proper and Improper Installation (Continued)

POSSIBLE IR RESTRICTIONS:
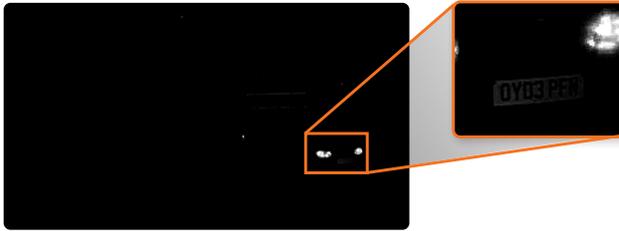
The license/number plate is quite close to the frame boundary.
You may notice a vignette effect.
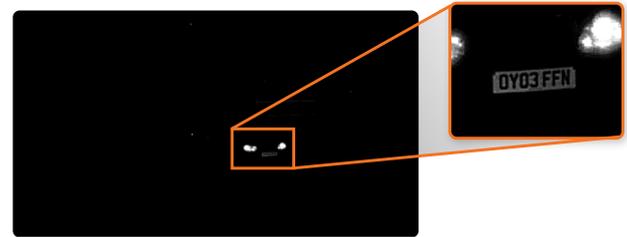
The license/number plate is closer to the centre of the frame.
The plate is lit much better.

Pay special attention to IR vignette effect (see illustration on the left) when setting up recognition zone. The closer to the center the more even lighting is.

Also in this particular case real pixel width of the license/number plate is critically small.

The Automatic Gain Control effect will be illustrated in camera exposure settings section.

4.5 Examples of Proper and Improper Installation (Continued)

Too small (less than 130px wide)
Tilt angle exceeds 5°

Focus and Shutter faults

Depth of field is insufficient to cover foreground license plates. Adjust the lens settings.

Improper focus settings. Adjust the lens.

Blurry image due to long exposure. Fix the shutter speed to obtain sharper picture.

4.5 Examples of Proper and Improper Installation (Continued)

[Exposure faults]

Too much light. Either adjust the iris or shutter speed.
Night time: dim the IR or set AGC to Low.

Insufficient light. Adjust exposure settings or provide
additional lighting.

CAMERA SPECIFICATION

Video

Imaging Device	1/1.8" 3MP CMOS
Resolution	3M: 2048x1536, 1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240 2M: 1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240
Max. Framerate	3M: H.265/H.264: Max. 55fps/50fps(55Hz/50Hz), MJPEG: Max. 5fps(55Hz/50Hz) 2M: H.265/H.264: Max. 60fps/50fps(60Hz/50Hz), MJPEG: Max. 5fps (60Hz/50Hz)
Min. Illumination	Color 0.1 Lux (1/30sec, gain 48dB)
Video Out	CVBS: 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P) for installation USB: Micro USB Type B, 1280x720 for installation

Lens

Focal Length (Zoom Ratio)	6.8~120mm(18x) motorized varifocal
Max. Aperture Ratio	F1.6(Wide)~F4.13(Tele)
Angular Field of View	H: 54.5º(Wide)~3.4º(Tele)/V: 42.3º(Wide)~2.5º(Tele)
Min. Object Distance	2m
Focus Control	Simple focus, Focus save
Lens Type	DC auto iris
Mount Type	Board in type

Pan / Tilt / Rotate

Operational

Camera Title	Displayed up to 85 characters
Day & Night	Auto(ICR)
Backlight Compensation	BLC, SSDR
Digital Noise Reduction	SSNR V
Digital Image Stabilization	Not Support
Defog	Not Support
Motion Detection	8ea, polygonal zones
Privacy Masking	6ea, Rectangle zones - Color: Grey/Green/Red/Blue/Black/White
Gain Control	Support
White Balance	ATW / AWC / Manual / Indoor / Outdoor
LDC	Not Support
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (1/25 ~ 1/12,000sec) / Double shutter mode
Video Rotation	Flip, Mirror
Analytics	Directional detection, Motion detection, Appear/Disappear, Enter/Exit, Loitering, Tampering, Virtual line
Serial Interface	RS-485/422(Samsung-T, Pelco-D/P, Panasonic, Bosch, AD, GE, Vicon, Honeywell)

Alarm I/O	Configurable 4 Port
Alarm Triggers	Analytics, Network disconnect, Alarm input
Alarm Events	File upload via FTP and e-mail Notification via e-mail NAS recording at event triggers Alarm output
Audio In	Selectable(mic in/line in) Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm
Audio Out	Line out, Max.output level: 1Vrms
IR Viewable Length	50m

Radiometry

Network

Ethernet	RJ-45(10/100/1000BASE-T)
Video Compression	H.265/H.264: Main/Baseline/High, MJPEG
Smart Codec	Manual(5ea area), WiseStream II
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR
Streaming	Unicast(20 users) / Multicast Multiple streaming (Up to 10 profiles)
Protocol	IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP,RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour, LLDP, SRTP

Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access log 802.1X Authentication(EAP-TLS, EAP-LEAP) Device Certificate(Hanwha Techwin root CA) Secue boot TPM
Application Programming Interface	ONVIF Profile S/G/T SUNAPI(HTTP API) Wisenet open platform v3.60

General

Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish,, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
Web Viewer	Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10, 10.11, 10.12 Recommended Browser: Google Chrome Supported Browser: MS Explore11, MS Edge, Mozilla Firefox(Window 64bit only), Apple Safari(Mac OS X only)
Edge Storage	Micro SD/SDHC/SDXC 1slot (256GB)
Memory	2048MB RAM, 256MB Flash

Environmental & Electrical

Operating Temperature / Humidity	Normal : -40℃~+55°(-40°F ~ +131°F) / Intermittent : -40℃~+60℃(-40°F ~ +140°F) Cold start : -40℃ Maximum Temperature based on NEMA-TS 2(2.2.7) : +74℃(+165°F) Less than 95% RH(Non-condensing)

Storage Temperature / Humidity	-50℃~+60℃ / Less than 95% RH(Non-dondensing)
Certification	IP66, IK10, NEMA 4X, NEMA TS 2(2.2.8, 2.2.9)
Input Voltage	HPoE, 12VDC
Power Consumption	PoE : Max 50W, Typical 27W 12VDC : Max 47.5W, Typical 25W

Mechanical	
Color / Material	White
RAL Code	RAL9003
Product Dimensions / Weight	W186.9 x D293.7 x H259.3 (mm) / 4.8kg

Wisenet Road AI LPR/ANPR/MMCR

Solution	City Traffic Observation	Highways
Speed Description	Regular Speed	High Speed
Lane Coverage	Up to 2 lanes	-
Speed limit	Up to 120kmh (75mph)	Up to 200kmh (125mph)
Min. Forward Distance	16m (52ft)	27m (90ft)
Max. Forward Distance	46m (150ft)	-
Max. Horizontal Angle	25°	15°
Max. Vertical Angle	25°	15°
Horizontal Offset	Up to 7m (24ft)	Up to 4m (12ft)
Camera Height	Up to 7m (24ft)	-
Vehicle Recognition	Make : 70+ Model : 600+ Color : 10	-

For more information visit us at

www.HanwhaVision.com

Hanwha Vision