



Installation Guide of Hikvision LPR cameras

1 Overview

To obtain the maximum license plate recognition accuracy, you need to install the LPR camera in the proper way to capture the qualified plate images. When you install the LPR camera, there are certain criteria to meet, including the plate size, the lighting condition and the angle of the camera. In this document, we provide the qualified image examples, and the unqualified image examples, which are generated when the LPR camera is set in an improper way. We also provide the easy installation instructions on how to fix those unqualified plate images.

2 Installation Requirements

2.1 Pixels Requirement

The width of the captured plate would minimum 130 pixels for EU1 region and 150 pix for RU region.

The qualified image examples

DAY

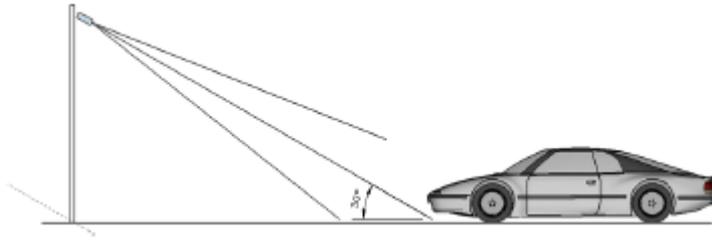


NIGHT

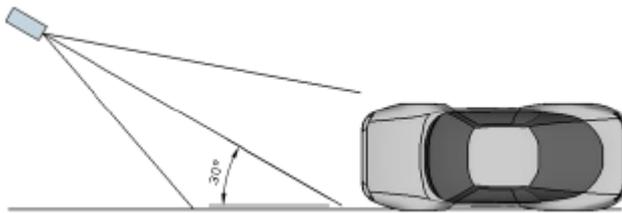


2.2 Camera Installation

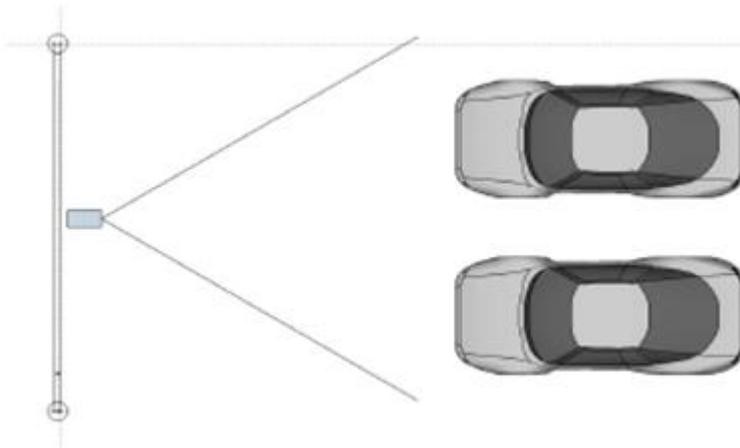
The view angle of the camera should be within 30 degrees to the ground. Based on the view angle and the IR distance of your camera, install the camera at a proper height and distance.



The view angle of the camera should be within 30 degrees to the path of movement.



Install the camera to the front of the vehicle (Recommended).



License plate tilt angle must be within +/-5 degrees.



3 Recommend Parameters

3.1 City

3.1.1 Mounting on pole (close to the road)

Road lanes (confident recognizing): 1-2

Pole height: 4 to 6m

Lens (F): 10

Shutter speed: min. 1/1000

Angle: 10 (4m height) to 15 (6m height)

ROI (recognition zone): Approx. 1300x800px. Adjust the ROI on live camera by situation.

Empty frame recognition time: 100ms.

Frame with car recognition time: 250-400ms.

Note:

Smaller ROI means faster recognition.

With calculated parameters, license plate will stay in ROI for at least 0.5s (average vehicle speed 50km/h). License plate width must be at least 130px.

3.1.2 Mounting in the middle of the road.

Road lanes (confident recognizing): **2**

Camera height: 4 to 6m

Lens (F): 10

Shutter speed: min. 1/1000

Angle: 10 (4m height) to 15 (6m height)

ROI (recognition zone): Approx. 1200x600px. Adjust the ROI on live camera by situation.

Empty frame recognition time: 90ms.

Frame with car recognition time: 250-400ms.

Note:

Smaller ROI means faster recognition.

With calculated parameters, license plate will stay in ROI for at least 0,5s (average vehicle speed 50km/h). License plate width must be at least 130px.

3.1.3 Mounting on tripod.

Road lanes (confident recognizing): 1

Tripod height: 1.5 to 2.5m

Lens (F): 10

Shutter speed: min. 1/1000

Angle: 5 (1.5m height) to 7 (2.5m height)

Recommended ROI (recognition zone): Approx. 750x250 px.

Empty frame recognition time: 50ms.

Frame with car recognition time: 200-350ms.

Note:

With calculated parameters, license plate will stay in ROI for at least 1s

(average vehicle speed 50km/h). License plate width must be at least 130px.

3.2 Parking

3.2.1 Normal Scene

Road lanes (confident recognizing): 2

Camera height: 3 to 4m

Lens (F): 10

Shutter speed: min. 1/1000

Angle: 10-15 degree

ROI (recognition zone): Approx. 1300x400px. Adjust the ROI on live camera by situation.

Empty frame recognition time: 90ms.

Frame with car recognition time: 250-400ms.

Note:

Smaller ROI means faster recognition.

With calculated parameters, license plate will stay in ROI for at least 1s (average vehicle speed 20km/h). License plate width must be at least 130px.

3.2.2 Mounting on ceiling (underground parking lot)

Road lanes (confident recognizing): 2

Camera height: 3 to 4m

Lens (F): 12

Shutter speed: min. 1/1000

Angle: 10 (4m height) to 15 (6m height)

ROI (recognition zone): Approx. 1600x430px. Adjust the ROI on live camera by situation.

Empty frame recognition time: 100ms.

Frame with car recognition time: 250-400ms.

Note:

Smaller ROI means faster recognition.

With calculated parameters, license plate will stay in ROI for at least 1s (average vehicle speed 20km/h). License plate width must be at least 130px.

4 FAQ

The troubleshooting flowchart is as follows, please refer to it for more details.



Examples:

1. Depth of focus



Solution: The camera is not enough depth of focus that would recognize the number for the entire frame. You must configure the zone recognition only where a clear image.

2. Lighting



Solution: License plate overexposed, image parameters should be adjusted.

3. License plate width



Solution: Width less than the permissible number plate and is ~ 65 pixels. License plate width in the frame should be increased and be at least 130 pixels.

4. Not enough sharpness



Solution: Sharpness must be configured correctly. Image license plate must be clear and readable.

5. Not enough illumination



Solution: Not sufficient light degrades recognition performance. The camera must be configured to night mode. Should be used an infrared light.

6. Not enough shutter speed



Solution: Not enough shutter speed of the camera. Should be reduced to 1/1000 or 1/2000 depending on vehicle speed and lighting.

5 Appendix

The supported countries list are as follows:

Stage I:

- Czech Republic CZE
- Germany DEU
- Spain ESP
- France FRA
- Italy ITA
- Netherlands NLD
- Poland POL
- Slovakia SVK
- Belarus BLR
- Moldova MDA
- Ukraine UKR

- Russia RUS

Stage II:

- Belgium BEL
- Bulgaria BGR
- Denmark DNK
- Finland FIN
- Great Britain GBR
- Greece GRC
- Croatia HRV
- Hungary HUN
- Israel ISR
- Luxembourg LUX
- Macedonia MKD
- Norway NOR
- Portugal PRT
- Romania ROU
- Serbia SRB
- Azerbaijan AZE
- Georgia GEO
- Kazakhstan KAZ
- Lithuania LTU