LPR Camera Installation Guidelines

Article ID: GV29-12-11-07-t

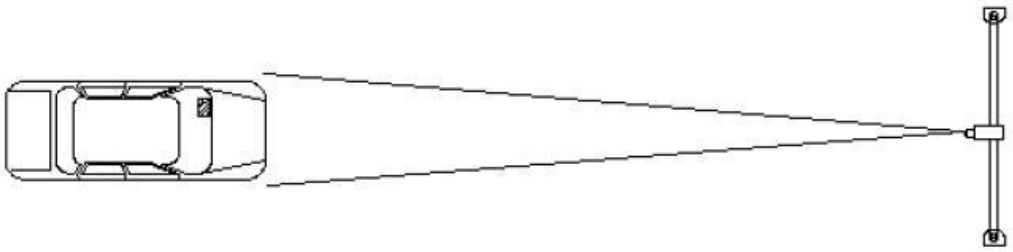
Release Date: 11/07/2012

Camera Installation

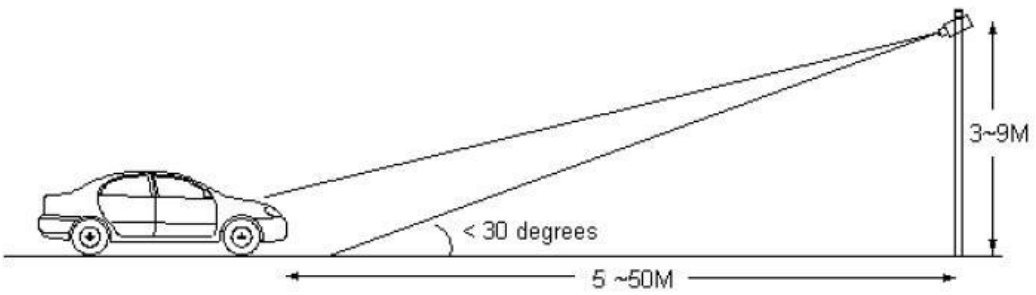
To increase the accuracy of license plate recognition, be sure to install the LPR cameras properly to capture the license plates with the correct image size, lighting conditions and camera angle. This document will first go over the installation guidelines and then show examples of images from cameras that are properly set up, as well as images that are not suitable for license plate recognition.

A. **Installing the camera in front of the vehicle (Recommended):** Install the camera straight in front of and above the vehicle as shown below.

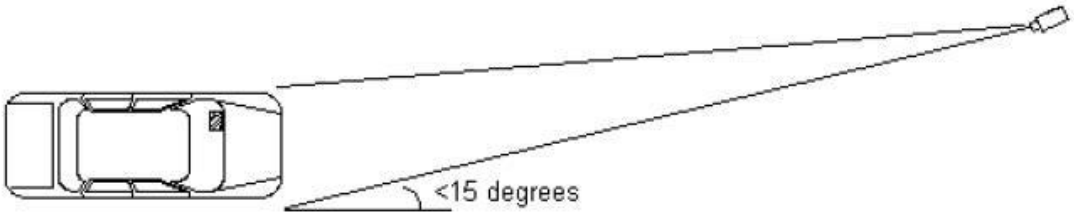
- The captured image should be filled with a full width of the vehicle.



- The distance between the vehicle and the camera should be within 5 to 50 meters; the camera height should be within 3 to 9 meters; the camera setup angle should be within 30 degrees.

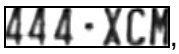


B. Installing the camera slightly to the side: If installing the camera straight in front of the vehicle is not feasible, the camera can be placed within 15 degrees to the left or the right as shown below. To avoid capturing unnecessary contents in the image, the camera should be installed in a higher position to capture the front part of the vehicle only.

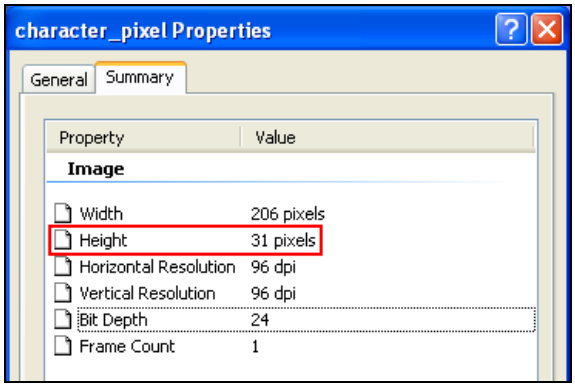


After installing the camera, make sure the height of the captured plate characters is approximately 30 to 35 pixels.

1. Capture a snapshot from the camera view of the installed camera. In the snapshot, the width of the vehicle should fill up the entire image.

2. To check the height of the characters, open the snapshot in Paint, cut out the captured characters, e.g 

, paste it in another Paint file, and save it in BMP format.
3. Right-click the BMP file, select **Properties** and click the **Summary** tab to see the Height.



Tip: Besides camera installation, setting the camera to start image capturing upon motion detection or I/O trigger may also affect LPR results.

- **Motion Detection Mode:** Recommended where false motions, such as from animals or people, are infrequent, or when false image capture is not an issue for you. The benefit of this mode is that the license plate image will always be captured.
- **I/O Detection Mode:** False motion detection can be avoided and the CPU loading is lower.

For GV-DVR LPR System, refer to Chapter 12 in *GV-ASManager User's Manual* to see how to set up the detection mode. For GV-DSP LPR, refer to Chapter 4 in *GV-DSP LPR User's Manual* to see how to set up the detection mode.

Examples of Images Suitable for Plate Recognition

Day Time

Night Time

Examples of Unsuitable Images

The plate characters appear to have a hollow font:

Try to:

Reduce the illumination.

Unclear image:

Try to:

Adjust the focus or the shutter speed of the camera.

Overexposed image:

Try to:

Reduce the illumination, or adjust the angle or the direction of the camera.

The image is interfered by the headlight:

Try to:

Use professional LPR cameras to avoid the headlight interference.

License plate size is too small:

Try to:

Zoom in the camera or reduce the distance between the camera and the vehicle. The width of the vehicle should be about the same as the width of the captured image.

License plate size is too big:

Try to:

Zoom out the camera or increase the distance between the camera and the vehicle. The width of the vehicle should be about the same as the width of the captured image.

Low image contrast:

Try to:
Improve the lighting condition.

Plate is slanted:

Try to:
Adjust the direction of the camera and make sure the license plate's angle of deviation in the captured image is within eight degrees.

Plate is in shadow:

Try to:

Avoid placing the camera where it can be subjected to direct sunlight or reflections.

Visible shadow edges in the camera view may lower the recognition accuracy.