



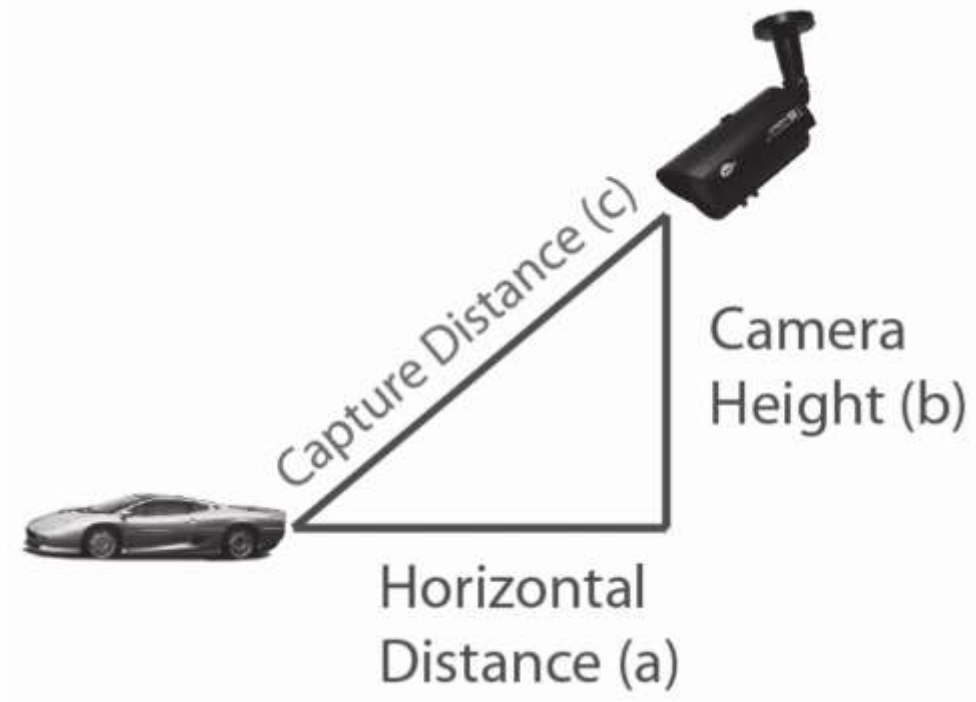
License Plate Camera Setup

Considering the specific requirements to capture the image of a license plate specialty cameras are often necessary. Even with a specialty camera there are still additional requirements.

- The camera must be placed in the right position to have the best view of the plate.
- The plate must be large enough in the frame to be clearly seen.
- The camera must be able to compensate for lightning and movement issues.

POSITION

The camera should be positioned so that the plate on the car does not exceed a 30° angle from a perfect in line direct view. This not only affects the greatest distance to the side that a camera can be positioned but the maximum height as well. The reason is so the camera can clearly see the plate.



$$\text{Capture Distance (c)} = \text{Horizontal Distance (a)} \times 1.1547$$

$$\text{Camera Height (b)} = \text{Horizontal Distance (a)} \times 0.5774$$

For example if a camera will be mounted on a wall 50ft away (a)(Horizontal Distance) from where a car will pass by, it can't be any higher or off to the side more than 28.87ft(b)(Camera Height).



FIELD OF VIEW AND RESOLUTION

The plate must be large enough in the picture and/or the picture resolution high enough to be able to clearly see the characters on the plate. If plate is too small and/or image resolution is too low the plate will not be legible.



The zoom lens has the ability to get the best field of view since it can be adjusted to get a largest view of the plate. It is best to try for a minimum of 80 pixels per foot.

For example with a 2MP camera resolution the widest capture area should not be any larger than 24ft. With a 4MP camera resolution the widest area should not be any larger than 48ft. Keep in mind that if the camera position is not directly in line with the license plate the effective size of the plate is smaller and the field of view should be reduced.

OBJECT MOVEMENT

The faster an object moves the higher the frame rate and faster the shutter speed needs to be.



With the image shown above, the one on the left has a higher shutter speed than the one on the right. With a slower shutter objects passing by are just a blur. Also keep in mind that with higher shutter speed, although the object can be seen more clearly, less light is able to enter the camera so the image is darker. As a result when higher shutter speed is used sometimes additional lighting compensation is needed. Shutter speeds are normally 1/500 or faster.

Additionally a higher frame rate is needed so the object can be captured while still in the best field of view of the camera. For example a car traveling at only 15MPH will travel 22 feet in one second. If the frames per second is too low the plate could be missed. Typically 60 frames per second is needed.



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LIGHTING

The camera image sensor must be able to accommodate for lighting issues. Lighting from headlights, tail lights or where there is a high contrast between light and dark areas, are all issues that must be overcome by the camera's image sensor. Normally very bright IR lights, either built into the camera or externally, are used. Additionally to improve image contrast a black and white image is recommended.

Please consult our field sales staff when selecting a camera for any specialty application
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