

Solution Guide to 2MP License Plate Recognition Bullet Camera (Outside China) V1.0.0



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Revision Record

Date	Revision Version	Description	Author
2020-06-04	1.0.0	Released the first version	H03922

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1 Purpose of this Document

This document describes the engineering design and installation of 2MP License Plate Recognition Bullet IP Camera. It is intended for Uniview personnel responsible for installing and testing this device as well as implementation and maintenance personnel of integrators and contractors. The personnel above are strongly recommended to read through this document before commencing the engineering design, device wiring, and installation.

2 Product Introduction

Chart 2-1 Product introduction chart

Model Number	BOM	Features and Specification	Remarks
HC121@TC-08S-Z	0235C4HN	UNV, HC121@TC-08S-Z-2MP Recognition of Vehicle License Plate Bullet IP Camera Overseas(4.7-47mm, WDR, Starlight, POE, H.265, White Light), Overseas Version	Telephoto version. Applicable scenarios: road sections, exit and entrance
HC121@TCR-08S-Z	0235C4HR	UNV, HC121@TCR-08S-Z-2MP Recognition of Vehicle License Plate Bullet IP Camera Overseas(4.7-47mm, WDR, Starlight, POE, H.265, Infrared), Overseas Version	
HC121@TC-08S-Z28	0235C4HQ	UNV, HC121@TC-08S-Z28-2MP Recognition of Vehicle License Plate Bullet IP Camera Overseas(2.8-12mm, WDR, Starlight, POE, H.265, White Light), Overseas Version	Short-focus version. Applicable scenarios: exit and entrance
HC121@TCR-08S-Z28	0235C4HP	UNV, HC121@TCR-08S-Z28-2MP Recognition of Vehicle License Plate Bullet IP Camera Overseas(2.8-12mm, WDR, Starlight, POE, H.265, Infrared), Overseas Version	

3 Site Survey

Before site survey, the general situation of the project should be studied, including: project background, scale, quality objectives, project starting and completion time. The engineering personnel should carefully study the bidding documents, project contracts, design schemes, drawings and other materials. After arriving at the site, a survey can be conducted according to the above project construction information to learn the actual situation of the site. And then determine the number and specific installation location of the device based on the customer's actual requirements.

3.1 Site Survey Concerns

- (1) Telephoto camera is applied to road sections and exit and entrance scenarios. Short-focus camera is only applied to entrance scenarios.
- (2) For road section scenarios, it is recommended to front mount the camera at a straight road section. In the case of bend roads and steep slopes, please contact the product department to confirm the installation scheme.
- (3) For entrance scenarios, it is recommended to side mount the camera at a place where the width of the lane is between 3-4.5m and the distance from the camera to the capture point is more than 3 meters so that the vehicle can be straightened while going through the capture point. If the on-site environment is quite different from the ideal environment, please contact the product department to confirm the engineering scheme.
- (4) When applying the camera to a road section, the capable pole-mounting range at the road section must be confirmed, otherwise the capture rate would be affected. The distance from the pole to the capture point should be no less than 12m.
- (5) Avoid supplementary light and screen images being blocked by road signs, guide signs, trees and sentry boxes.

4 Engineering Scheme

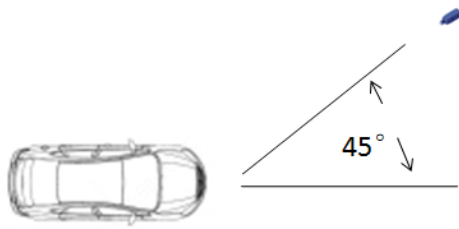
4.1 Sketch of Installation Angle Requirements

Algorithm requirements:

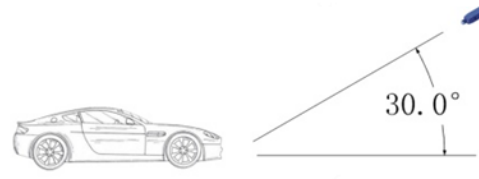
- (1) The horizontal angle between the camera installation position and the center of the license plate should be no more than 45°
- (2) The vertical angle between the camera and the license plate should be no more than 30°
- (3) The horizontal tilt angle of the license plate should be no more than $\pm 15^{\circ}$
- (4) The pixel size of the license plate should be between 90 to 300pix, and the most recommended recognition pixel size is about 130pix

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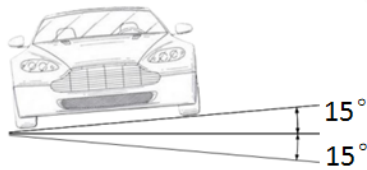
Diagram 4-1 Sketches of Installation Angle Requirements



The horizontal angle α
should be no more than 45°



The vertical angle β
should be no more than 30°



The horizontal tilt angle γ
should be no more than $\pm 15^\circ$



The pixel size of the license plate
should be between 90 to 300pix

4.2 Engineering Scheme and Design for Different Scenarios

Chart 4-1 Recommended Engineering Scheme

Model Number	Road width W(m)	Camera Height H(m)	Distance to the capture point L(m)	Distance from the camera to the road curb S(m)	Recommended Scheme	Recommended scenarios	Camera installation methods
HC121@T C(R)-08 S-Z	$W \leq 4$	1.5-2	4-7	-0.3(30cm from the road curb to the inward side)	H=1.5m L=4m	Exit and entrance	Side mounting
	$4 < W \leq 5$	2-2.5	5-8		H=2m L=5m		
	$5 < W \leq 6$	2.5-3	6-12		H=2.5m L=7m		
	$6 < W \leq 7$	3-6	12-26	0-7	H=6m L=23m	Road Section	Front mounting /Side mounting
HC121@T C(R)-08 S-Z28	$W \leq 4$	1.5-2	4-7	-0.3(30cm from the road curb to the inward side)	H=1.5m L=4m	Exit and entrance	Side mounting
	$4 < W \leq 5$	2-2.5	5-8		H=2m L=5m		
	$5 < W \leq 7$	2.5-3	7-12		H=2.5m L=7m		

Diagram 4-2 Engineering reference for scenario with installation height of 1.5m-3m:

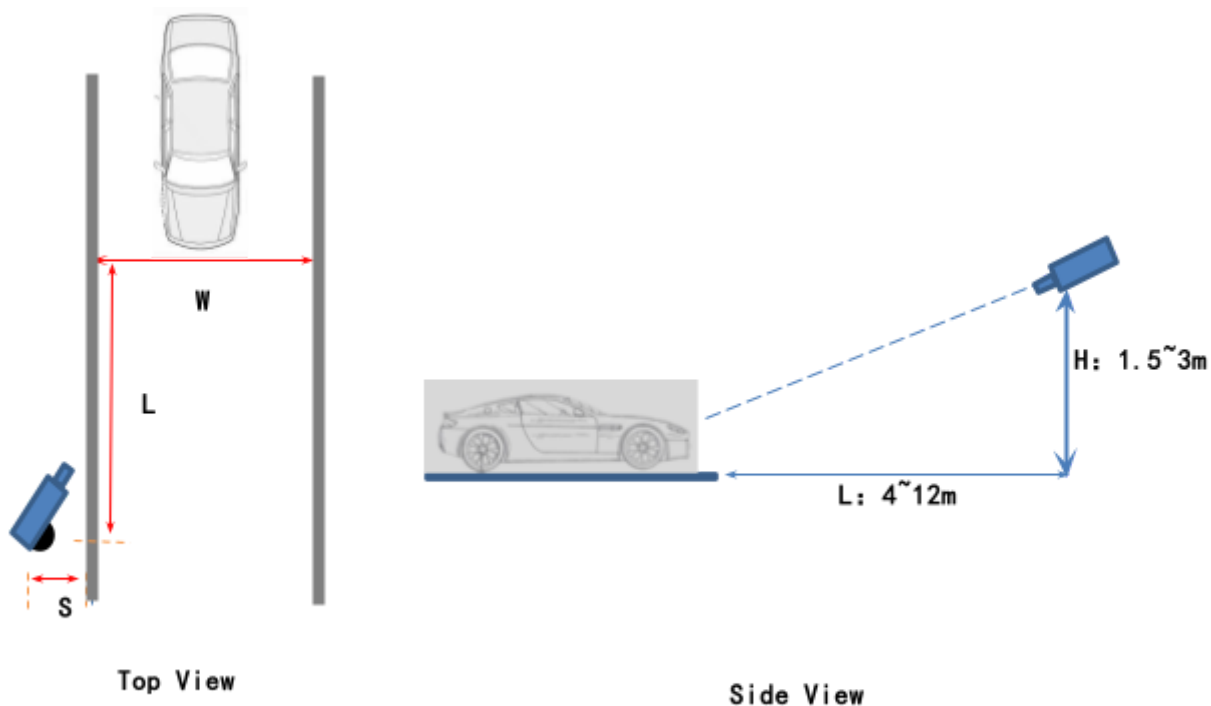


Diagram 4-3 Engineering reference for scenario with installation height of 3m-6m:

