Hardware Installation Guide

Microwave Vehicle Detector

ClairWav-T24-700

Version 1.0

TraffiClair Technology Co., Ltd.

Content

Chapter 1: Microwave Traffic Flow Detector Installation Accessories....3
1.1 Microwave Traffic Flow Detector Dimensions....3
1.2 Installation Instructions....4
1.3 Microwave Traffic Flow Detector Connection Cable Instructions....5
1.4 Microwave Traffic Flow Detector Mounting Angle Instructions....6
1.5 Radar Search Tool User Guide....7
Chapter 2: General Installation Positions for Microwave Traffic Flow Detectors....11
2.1 Confirmation of Installation Points at Urban Intersections....11
2.1.1 Installation on Traffic Light Pole to Observe Oncoming Lanes from Opposite Side....11
2.1.2 Installation on Speed Camera Pole to Observe Oncoming Lanes from Opposite Side....13
2.1.3 Installation on Speed Camera Pole to Observe Own Oncoming Lane....14
2.2 Confirmation of Installation Points on Highways....16
2.2.1 Front-mounted Positions on Highways....16
2.2.2 Side-mounted Positions on Highways....17

Chapter 1: Microwave Traffic Flow Detector Installation Accessories

List of Items for Microwave Traffic Flow Detector:
- Microwave Traffic Flow Detector Main Body: 1 unit
- Microwave Traffic Flow Detector Mounting Bracket: 1 unit
- Mounting Screws: 5 pieces
- Connecting Cable: 1 piece
- Waterproof Cap (Set of Three): 1 unit
- Matching Power Adapter: 1 unit

Additional Fixing Accessories (self-provided):
- Clamps: 2 pieces
- Universal Joint: 1 piece
- Post Bracket: 1 piece
- Bracket Screws (with Flat Spring Washer): 6 sets

Note: The operating voltage of the microwave traffic flow detector is DC24V, with a stable power supply of 18W. Any damage caused by voltage exceeding the specified range will be the responsibility of the user.

1.1 Microwave Traffic Flow Detector Dimensions

The dimensions of the CLAIRWAV-T24 Microwave Traffic Flow Detector are as follows:
- Length: 210mm
- Width: 154mm
- Height: 58mm

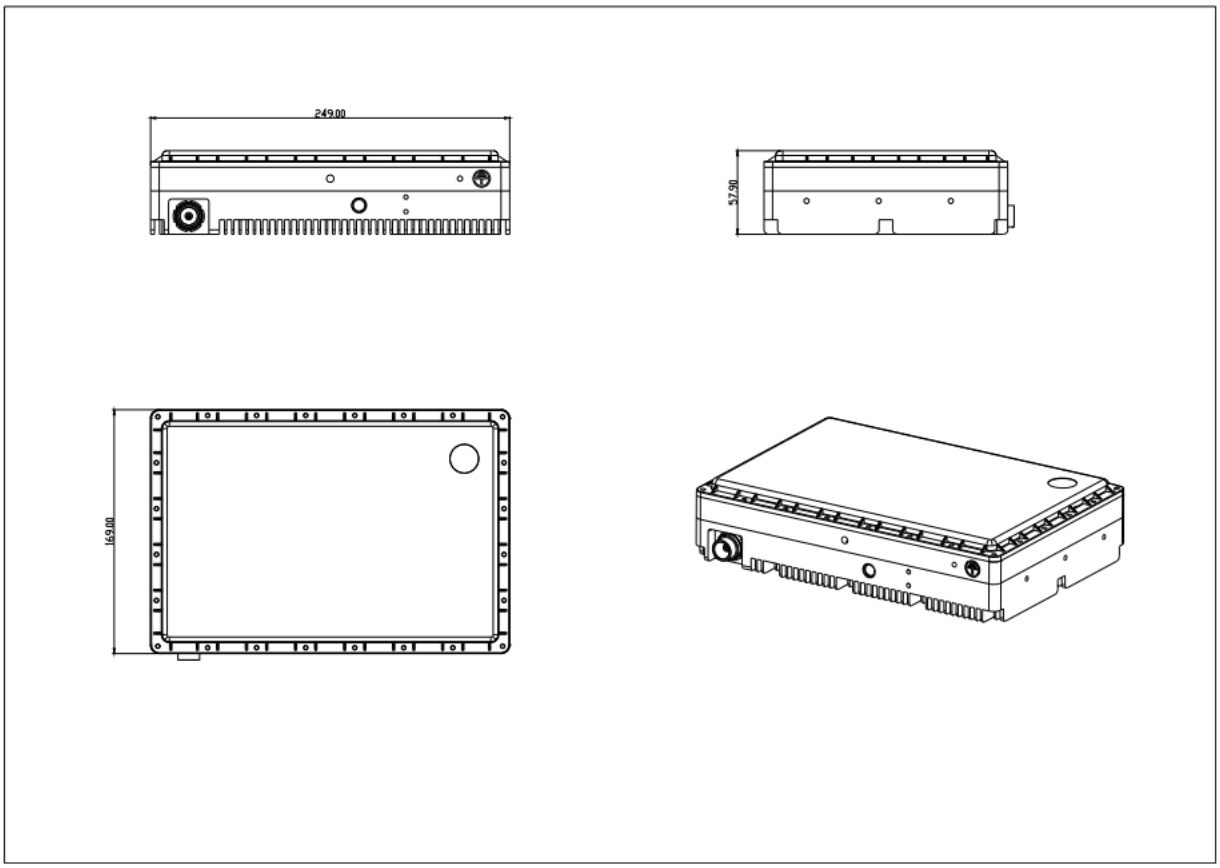


Figure 1.1: Dimensions of Microwave Traffic Flow Detector

1.2 Installation Instructions

Procedure and Explanation for Installing the Microwave Traffic Flow Detector:

1. Connect the Microwave Traffic Flow Detector bracket, universal joint, and post bracket.
2. Secure the post bracket to the pole using clamps.
3. Mount the Microwave Traffic Flow Detector onto the bracket, ensuring it is not installed upside down (the label on the back should be facing upwards for correct installation).
4. Connect the Microwave Traffic Flow Detector's connection cable.
5. Adjust the angle as necessary.

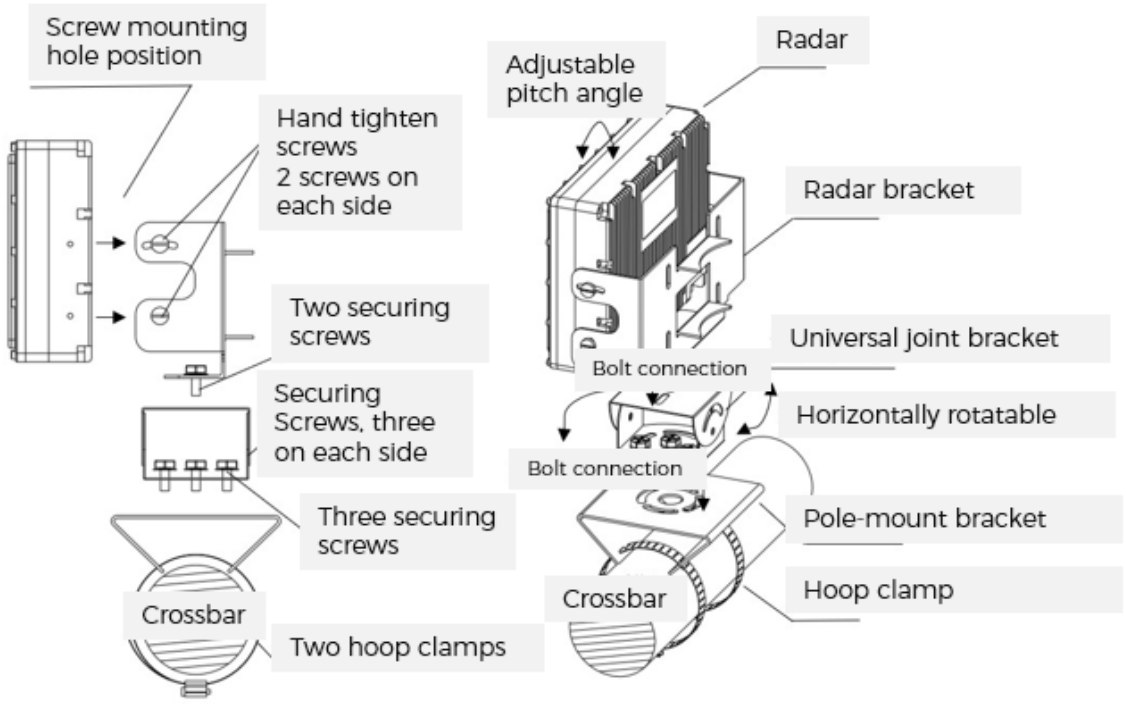


Figure 1.2: Installation Method for Microwave Traffic Flow Detector Crossbar

1.3 Microwave Traffic Flow Detector Connection Cable Instructions

When connecting the cable head to the Microwave Traffic Flow Detector, align the red dot on the aviation plug with the red dot on the connector of the Microwave Traffic Flow Detector. Insert it until you hear a slight click sound, indicating that it is properly installed. To remove, pinch the handle of the plug and pull downwards.

After insertion, tighten the waterproof sleeve around the Ethernet port. Once the power cable connection is complete, ensure waterproofing. Seal any unused connectors with tape for tight sealing.

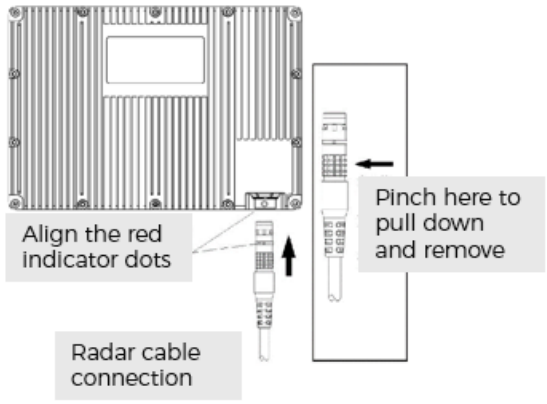


Figure 1.3: Connection of Cable Head

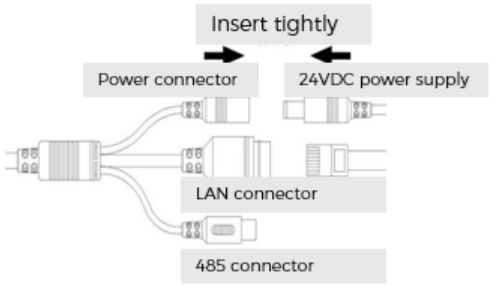


Figure 1.4: Connection of Cable Tail

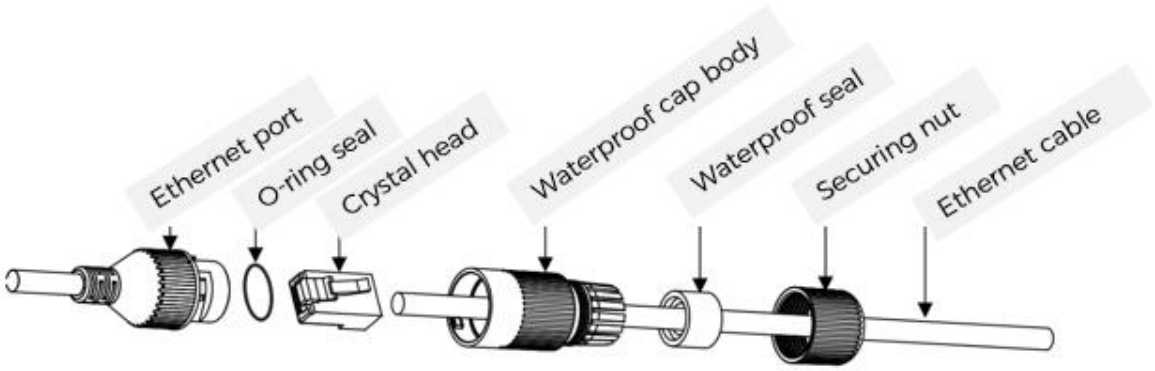


Figure 1.5: Waterproof Sleeve for Ethernet Port

1.4 Microwave Traffic Flow Detector Mounting Angle Instructions

The height of the Microwave Traffic Flow Detector should be consistent with that of the traffic light crossbar. The lateral tilt angle of the Microwave Traffic Flow Detector needs to be adjusted to horizontal, while the pitch angle also needs to be adjusted to horizontal, with the Microwave Traffic Flow Detector facing the target direction.

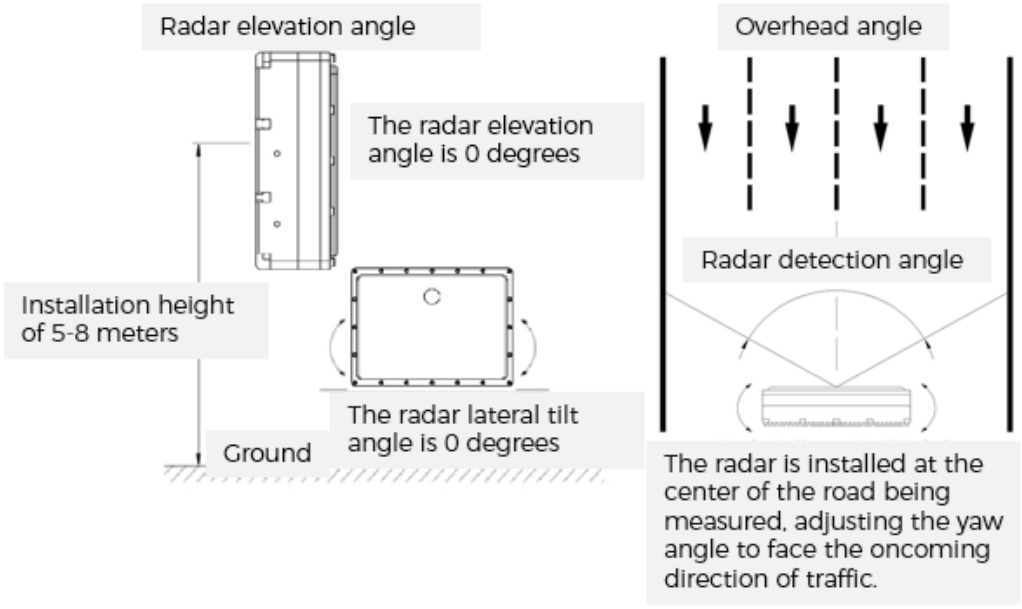


Figure 1.6: Adjustment of Microwave Traffic Flow Detector Mounting Angle

1.5 Radar Search Tool User Guide

After the installation is complete and the network and power are connected, the startup time for the Microwave Traffic Flow Detector is approximately 40 seconds. Once startup is complete, you can open the radar search tool software on the industrial control computer to check if the Microwave Traffic Flow Detector is online.

Setting Upstairs Machine IP Address

To ensure proper communication between the upstairs machine and the Microwave Traffic Flow Detector, it is essential to set the IP address of the upstairs machine to the same subnet as the Microwave Traffic Flow Detector.
*Note: The default IP address for the Microwave Traffic Flow Detector is 192.168.203.11, and the default gateway is 192.168.203.1.
This document assumes the computer is using the Windows 7 operating system; the setup method for other operating systems is similar.

To set the IP address of the computer to the same subnet as the Microwave Traffic Flow Detector, follow these steps:

1. Open Control Panel > Network and Sharing Center.
2. Click on "Change adapter settings."
3. Right-click on your local connection and select "Properties."
4. Double-click on "Internet Protocol Version 4 (TCP/IPv4)."
5. Select "Use the following IP address," then enter the desired IP address.
6. Click "OK" to apply the changes.

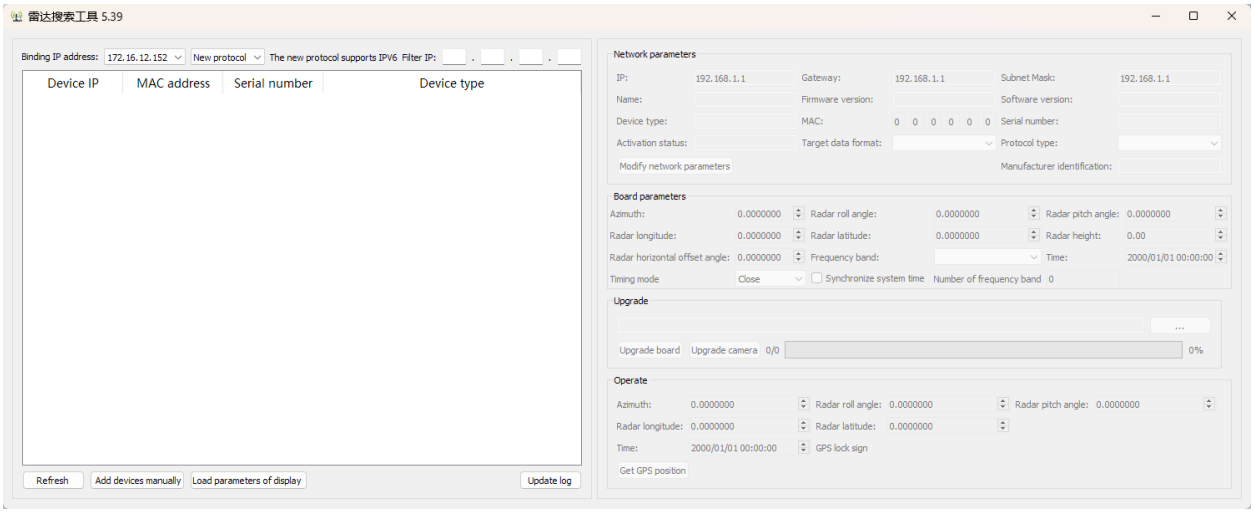


Figure 1.7: Radar Search Tool Interface

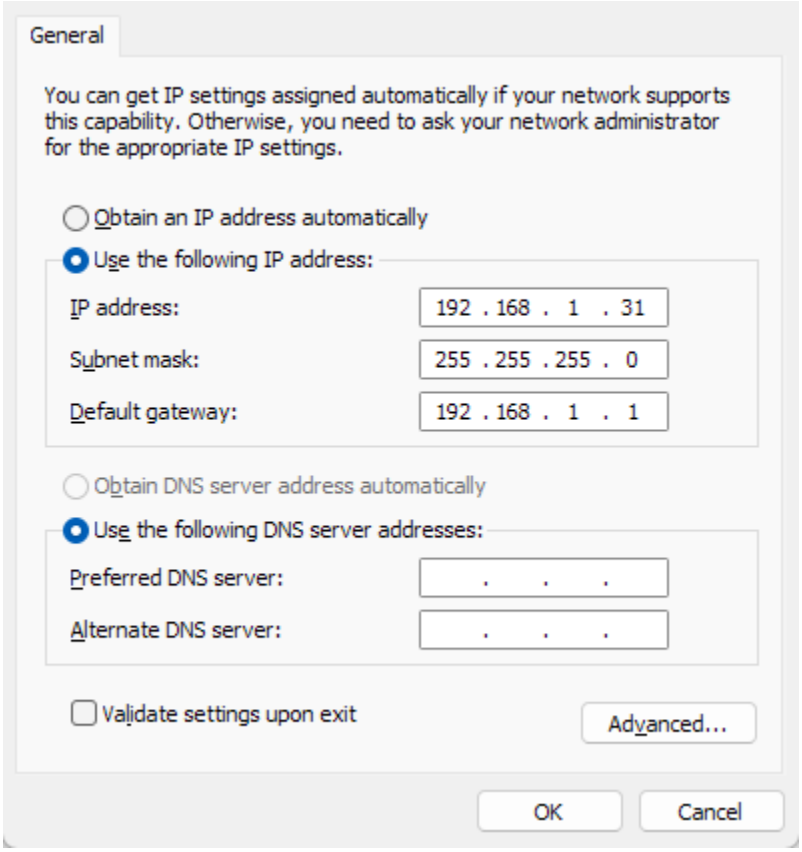


Figure 1.8: Modifying IP Address

The computer-side setup is complete. For detailed software usage instructions, please refer to the software user manual.

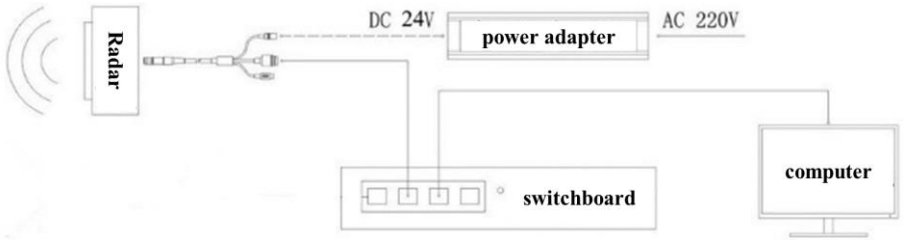


Figure 1.9: Brief Wiring Diagram

Table 1.1: Status Indicator Explanation

Microwave Traffic Flow Detector Bottom Indicator Light Status		
Status	Red Light	Green Light
Power On	Steady On	-
Startup	Steady On	Slow Flashing

Normal Operation	Steady On	Constant Frequency Flashing
Fault	Steady On	Off
Power Off	Off	Off

Chapter 2: General Installation Positions for Microwave Traffic Flow Detectors

2.1 Confirmation of Installation Points at Urban Intersections

Urban intersections can be categorized into types such as crossroads, T-junctions, and multi-way intersections (with more than four roads). The installation of a Microwave Traffic Flow Detector at an intersection can be done in two ways: observing the oncoming lanes from the opposite side of the traffic light pole or observing the oncoming lanes from behind the traffic light pole.

The following conditions at the installation site can significantly affect the overall effectiveness of the Microwave Traffic Flow Detector:
- Check if the area above the observed road is covered by tree leaves, large signage, or large iron frames crossing the road.
- Ensure there are no overpasses or significant obstructions in the middle of the area to be observed by the Microwave Traffic Flow Detector.
- If the distance between the installation position of the Microwave Traffic Flow Detector and the stop line is too close (<35m), it is recommended to lower the Microwave Traffic Flow Detector by 6° to ensure the proper observation of the stop line position.

2.1.1 Installation on Traffic Light Pole to Observe Oncoming Lanes from Opposite Side

At a crossroads, as shown in Figure 2-1, the Microwave Traffic Flow Detector is installed on the traffic light pole, directly facing the oncoming lanes. The geometric relationship between the Microwave Traffic Flow Detector and the oncoming lanes is illustrated in Figure 2-2.

Points to Note for Traffic Light Pole Installation:
- The distance between the Microwave Traffic Flow Detector and the stop line of the oncoming lanes should be greater than 35 meters. If it is less than 35 meters, false parking targets may occur at the stop line position, necessitating a 6° downward tilt of the Microwave Traffic Flow Detector.

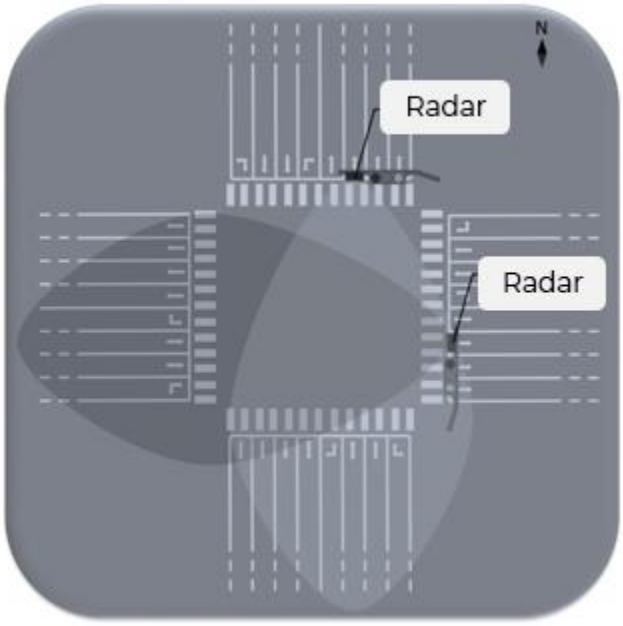


Figure 2.1: Installation Position on Traffic Light Pole at Crossroads

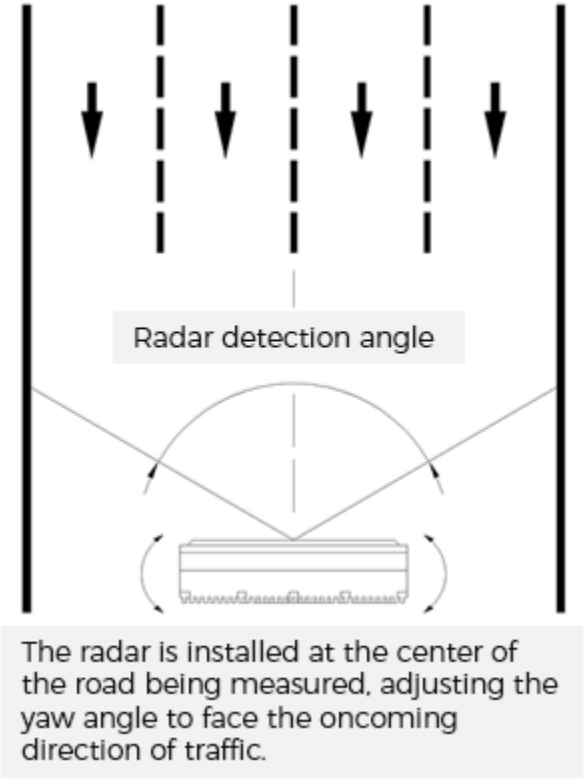


Figure 2.2: Relationship between Installation Position of Microwave Traffic Flow Detector and Oncoming Lanes

2.1.2 Installation on Speed Camera Pole to Observe Oncoming Lanes from Opposite Side

The installation position on the speed camera pole is shown in Figure 2-3. The geometric relationship between the oncoming lanes and the Microwave Traffic Flow Detector is illustrated in Figure 2-4. Under this installation condition, it is essential to check whether there are tall iron fences or green belts in the middle of the oncoming and outgoing lanes. If there are any, the lane closest to the road center will be obstructed, as shown in Figure 2-5, affecting the overall effectiveness of the Microwave Traffic Flow Detector. In such cases, this installation position is not recommended.

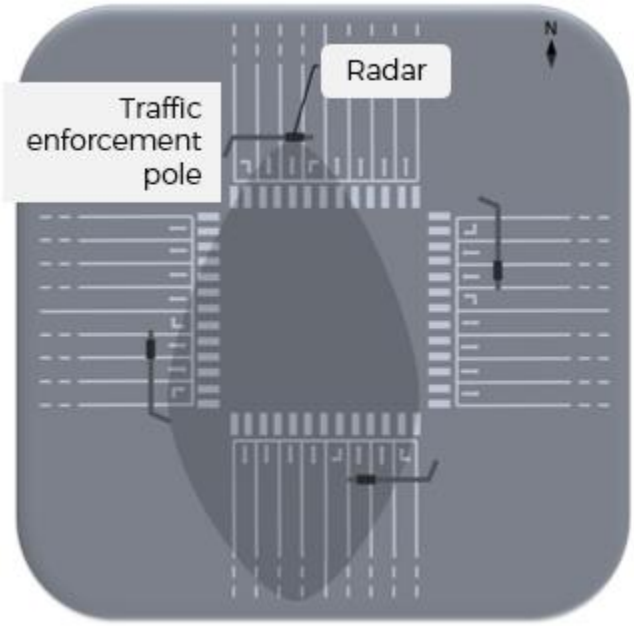


Figure 2.3: Installation Position on Traffic Light Pole at Crossroads

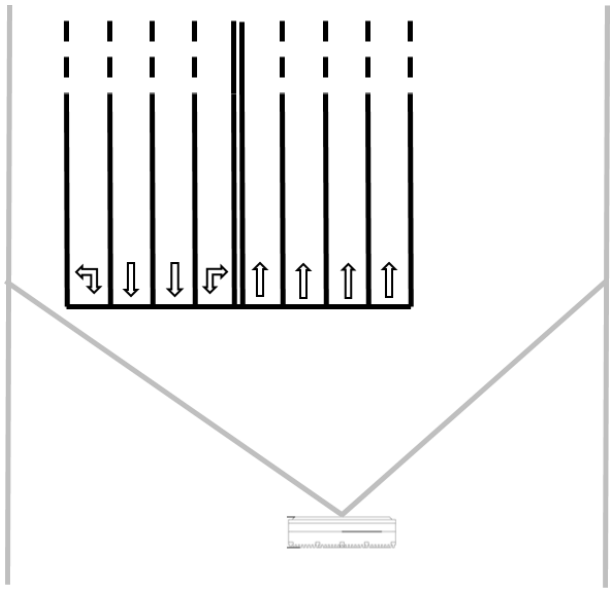


Figure 2.4: Overhead View of Lane and Installation Position on Speed Camera Pole

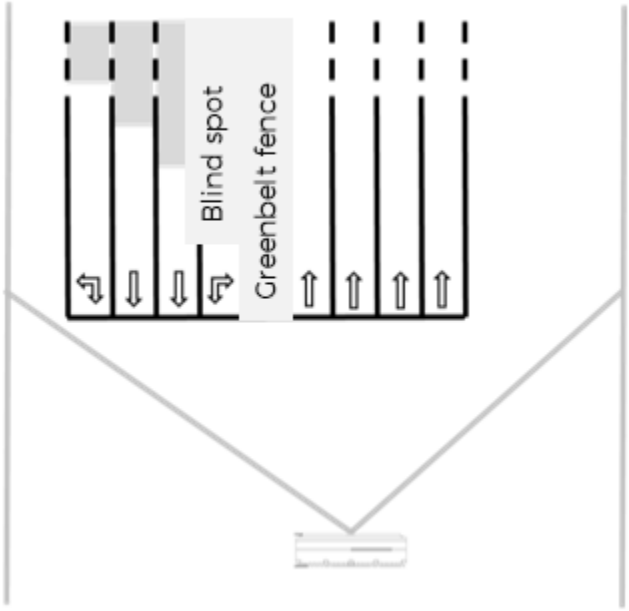


Figure 2.5: Overhead View of Lane with Obstruction in Installation Position on Speed Camera Pole

2.1.3 Installation on Speed Camera Pole to Observe Own Oncoming Lane

Due to environmental constraints, the Microwave Traffic Flow Detector can only observe the oncoming lane from its installation position. This condition typically requires installation on a speed camera pole, as shown in Figure 2-6. The overhead view of the installation position is illustrated in Figure 2-7.

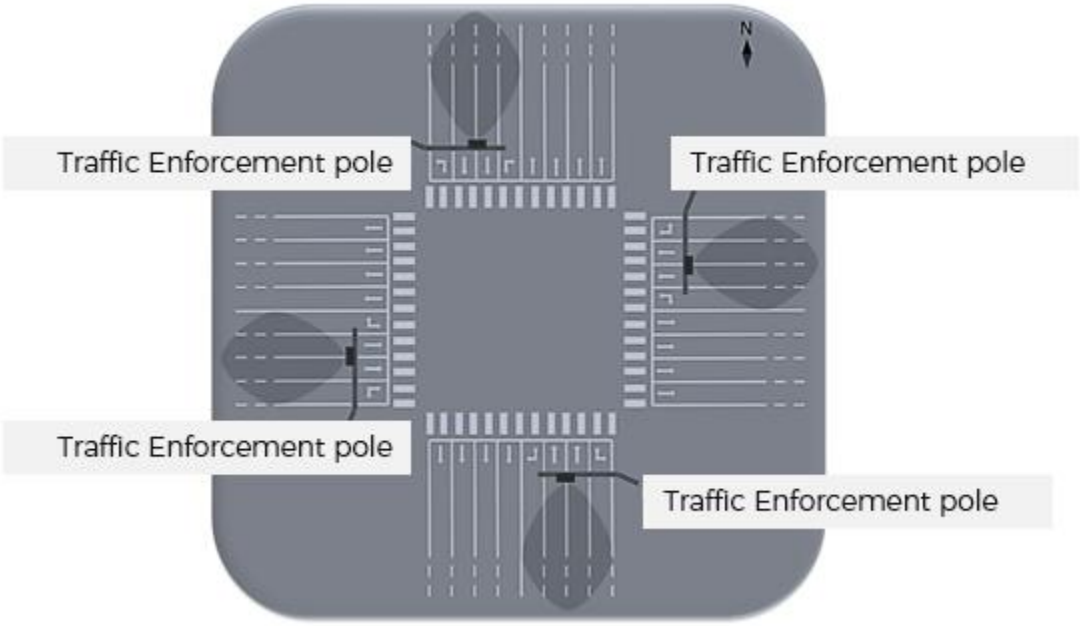


Figure 2.6: Installation Position on Speed Camera Pole

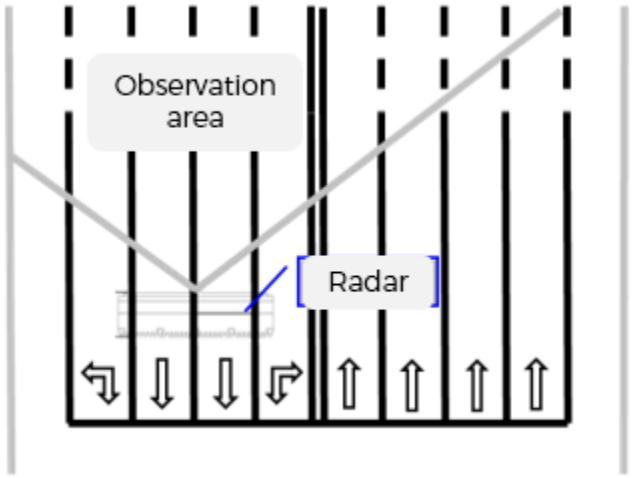


Figure 2.7: Overhead View of Installation Position on Speed Camera Pole

2.2 Confirmation of Installation Points on Highways

On highways, installations typically involve either front-mounted or side-mounted configurations. Front-mounted installations are usually mounted on gantry frames, while side-mounted configurations can be installed on the side arms of gantry frames or on L-shaped poles at the roadside. Front-mounted installations generally provide better performance, while side-mounted configurations may experience some degree of obstruction.

2.2.1 Front-mounted Positions on Highways

Front-mounted positions on highways are typically chosen to be installed on gantry frames. There are three main installation positions for front-mounted configurations:
- Observing both directions of travel lanes, as shown in Figure 2.8.
- Observing oncoming lanes only, as shown in Figure 2.9.
- Observing outgoing lanes, the installation position is as shown in Figure 2.10.

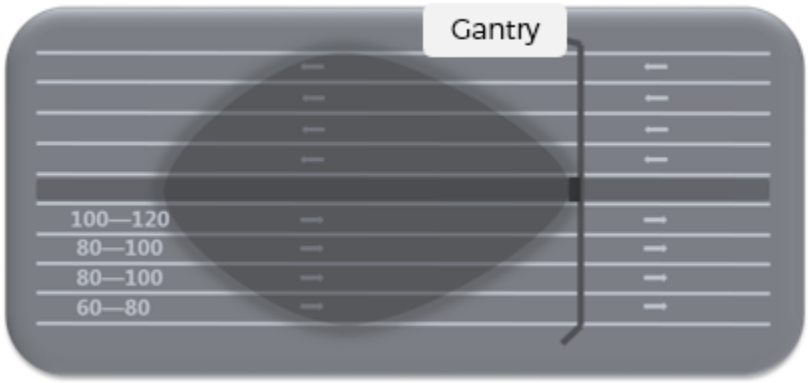


Figure 2.8: Installation Position for Observing Both Directions of Travel Lanes

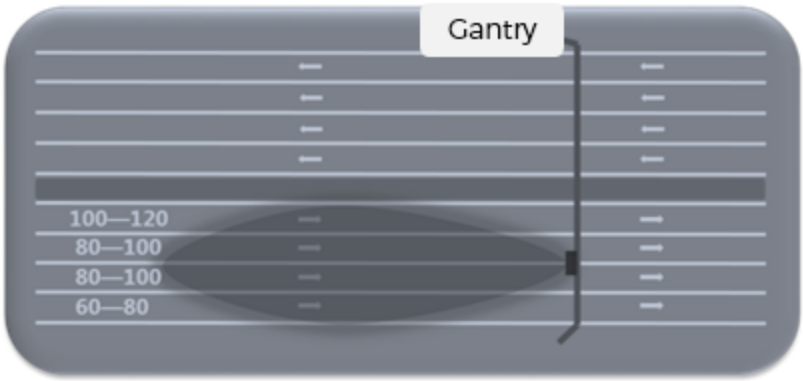


Figure 2.9: Installation Position for Observing Oncoming Lanes

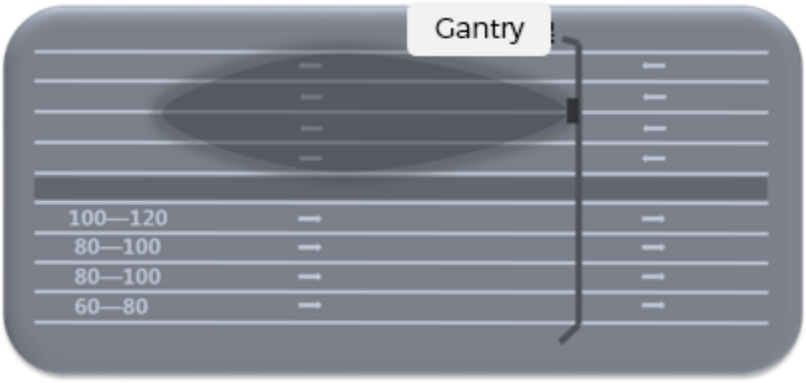


Figure 2.10: Installation Position for Observing Oncoming and Outgoing Lanes

2.2.2 Side-mounted Positions on Highways

When side-mounted on highways, the system can only observe traffic in one direction. Installation positions can be on the side arms of gantry frames or on L-shaped poles at the roadside. Side-mounted positions on gantry frames are shown in Figure 2.11, while side-mounted positions on L-shaped poles are shown in Figure 2.12.

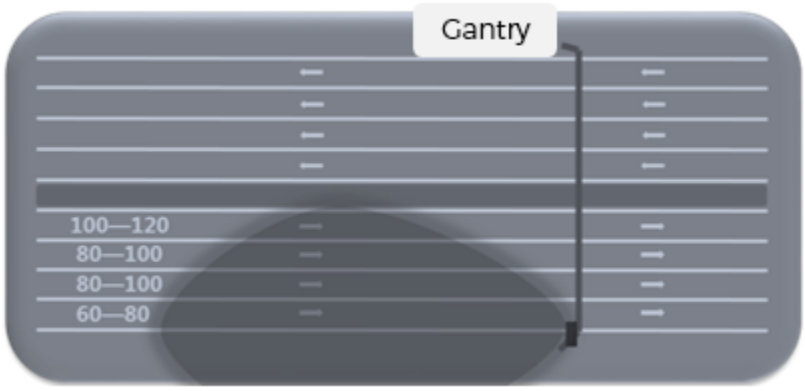


Figure 2.11: Side-mounted Installation Position on Gantry Frame

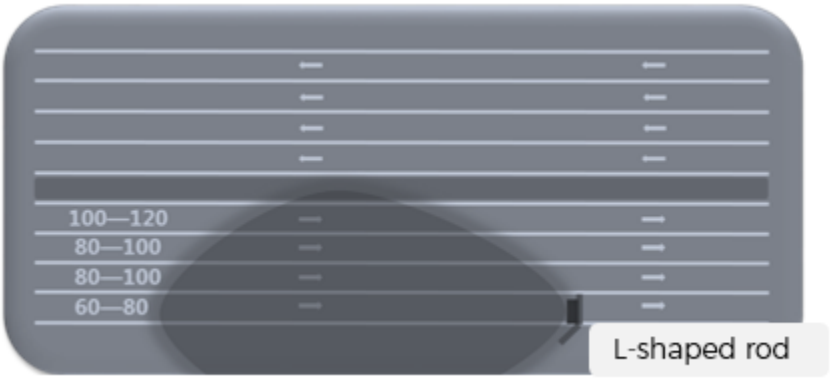


Figure 2.12: Side-mounted Installation Position on L-shaped Pole