77GHz Millimeter Wave Radar

Motorcycle Blind Spot Monitoring System

【User Manual】

INTRODUCTION

1.System Function Overview

This system adopts millimeter-wave radar sensors to real-time monitor the environment on the left, right and rear sides of the vehicle and provide auxiliary early warning functions.

The detection area covers three lanes: 3.6 meters for each of the left and right lanes, and 1.2 meters for the middle lane.

The BSD blind spot monitoring zone spans 8.4 meters to the left and right rear of the vehicle. It triggers an alert for moving objects entering the blind spot, with the LED indicator on the corresponding side flashing simultaneously.

The LCA lane change assist warning zone extends 50 meters to the left and right rear of the vehicle. When an approaching vehicle has a time-to-collision of 5.0 seconds or less relative to the host vehicle, the LED indicator on the corresponding side will stay steadily illuminated.

2.Product Self-Check

Normal Device Status:

(1) The left and right indicator lights each flash twice after the device is powered on.

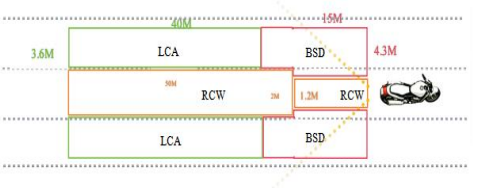
Abnormal Device Conditions: (2) No self-check is triggered after power-on; check that all wiring harness connectors are fully plugged in.

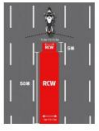
SPECIFICATION

Features	Parameters	Technical Indicators
System Properties	Operating Voltage	9-24v
	Operating Temperature	-40~80℃
	Power Consumption	2W
	IP Rating	IP67
	Frequency Band	77GHz
	Refresh Rate	20Hz
	Housing Dimensions	35*35*20mm
Antenna Performance	Number of Transmit & Receive Channels	4Tx4Rx
	Elevation Beamwidth	±25°
	Azimuth Beamwidth	±75°
Detection Performance	Range Resolution	0.2m
	Velocity Resolution	0.2m/s
	Velocity Measurement Range	±180km/h
	Velocity Measurement Accuracy	Within 0.2m
	Velocity Measurement Accuracy	Within 0.2m/s
	Angle Measurement Accuracy	Within 1°
	Detection Range	70m

3. Warning Logic and Strategy:

- The system calculates the predicted time-to-collision (TTC) between the host vehicle and target vehicles in real time based on the formula: Relative Distance ÷ Relative Speed = Time-to-Collision (TTC), and takes this value as the warning judgment benchmark to intelligently adjust warning strategies.
- When the actual distance ＜ Relative Speed × TTC threshold, the system determines there is a potential collision risk and triggers graded warnings.
- Example of graded warning logic:



Function Area	Warning Level	Trigger Condition	Indicator Light Status
BSD 	Level 1 Warning	① Activation speed ≥ 10 km/h ② Relative speed of target: Approaching ③ TTC > 5 s	LED constant on
	Level 2 Warning	TTC ≤ 5 s	LED flashes
LCA 	Level 2 Warning	TTC ≤ 5 s	LED constant on
RCW 	Level 2 Warning	TTC ≤ 5 s	Dual LEDs flash

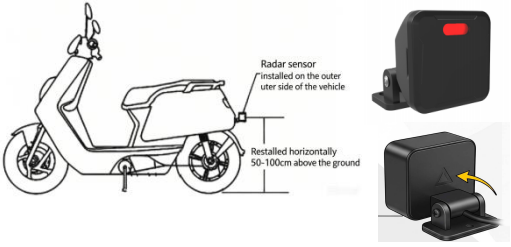
ACCESSORY LIST

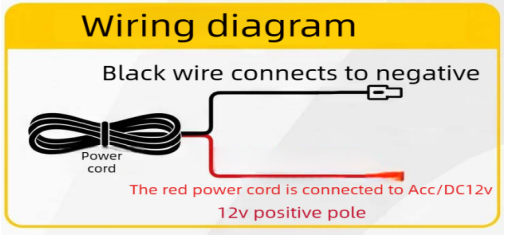
NO.	Name	Quantity
1	Radar Sensor	1 Piece
2	LED Indicator Light	2 Pieces
3	Accessory Kit	1 Pack
4	User Manual	1 Copy
5	Wiring Harness	1 Set

4.Installation

Installation Scheme

Install the unit at the center rear of the two-wheeler via the universal mounting bracket. The mounting height from the ground shall be 400~1000 mm, and the radar shall be installed horizontally.





1.When installing the sensor, ensure the triangular symbol on the back of the sensor is facing upward

2. do not directly connect electric vehicles to the battery, as this will damage the main unit. only 12-24v is supported. we are not responsible for damage caused by incorrect wiring

3. for electric vehicles, power is drawn from the 12v dc port; for motorcycles, connect to the acc terminal in the fuse box

4. After the wiring is correct, when the power switch is turned on, the signal light will perform a self-check and flash twice, indicating that the sensor is operating normally.

Product Precautions

- This system shall be powered by a 12V DC stabilized power supply.
- Keep the radar cover clean during installation. Wipe the cover with a soft damp cloth and let it air-dry naturally.
- Check the radar shape during installation to ensure it is free of deformation. Do not squeeze, knock or drop it.
- Install the radar away from high-power frequently-started electrical devices, motors and other areas with strong magnetic field interference as much as possible ;
- No obstructions shall exist within the radar beam range during testing. Use an open testing environment to avoid inaccurate measurement results.
- Only factory-original radar units can be installed. Do not disassemble or reassemble the unit by yourself.

FAQ

	Possible Causes	Troubleshooting Methods
The left/right LED indicator lights display reversed warning positions of targets.	Left and right lights installed reversely; radar mounted upside down.	1.Check the marks on left and right lamps
		2.Verify whether the radar face is installed correctly
The indicator light stays on or remains off after power-up.	1.Poor contact. 2.Damaged LED light	1.Check the wiring harness connections by plugging and unplugging
		2.Replace the LED light for inspection.