24Ghz Millimeter-wave Radar

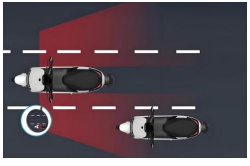
Motorcycle Blind Spot Monitoring System

· MANUAL ·

Introduction

1. System Function Overview

This product is a millimeter-wave sensor integrating a microwave transceiver. It transmits and receives microwave at a frequency of 24.00-24.25 GHZ to detect approaching and departing targets, and alerts the rider via indicator lights whether there is a dangerous target in the blind spot. When the vehicle changes lanes, the product monitors the movement of targets approaching from behind on both sides of the rider.

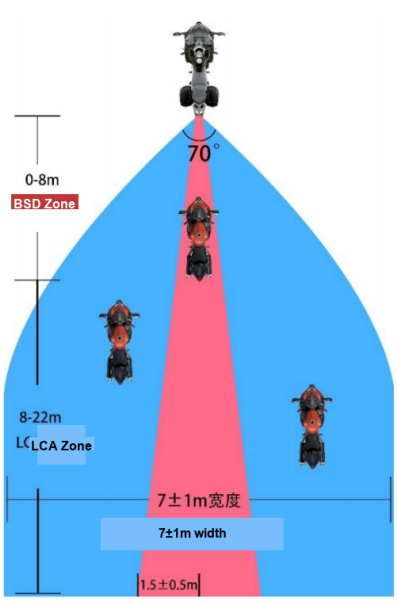


2. Normal Device Status

(1)When a target is detected approaching from the left: the left LED flashes until the target leaves the detection zone or no longer meets the approaching trigger condition within the zone; the left light turns off after a 1 s delay.

(2)When a target is detected approaching from the right: the right LED flashes until the target leaves the detection zone or no longer meets the approaching trigger condition within the zone; the right light turns off after a 1s delay.

(3)When a target is detected approaching from directly behind: both left and right LEDs flash simultaneously until the target leaves the detection zone or no longer meets the approaching trigger condition within the zone; both lights turn off simultaneously after a 1s delay.



Specifications

Feature	Parameter	Technical Index
System	Operating voltage	12V±1V
	Operating temperature	-20~+60°C
	Detection target/type	Vehicle
	Waterproof rating	IP67
	Frequency band	24GHz
	Operating current	20-40mA
	Housing size	
Antenna	TX/RX channels	1 TX / 2 RX
	Elevation beam width	±28°
	Azimuth beam width	±70°
Detection	Distance accuracy	±0.7m
	Speed accuracy	±2.5m/h
	Max detection speed	180km/h
	Left width	1.5±0.5m
	Right width	1.5±0.5m
	Trigger speed	2.5km/h
	Detection distance	22m

3. Early Warning Strategy

Maximum detection distance: 18-22m
BSD detection zone: 0-8m
BSD zone minimum approaching speed to trigger alarm: 2.5km/h
LCA detection zone: 8-22m (speed difference between approaching target a
LCA zone minimum approaching speed to trigger alarm: 10km/h (speed diffe
Maximum detection width: 7±1m (left width + right width)
The middle zone is based on the radar centerline: the widest point is 1.5±0.5
and 1.5±0.5m on the right

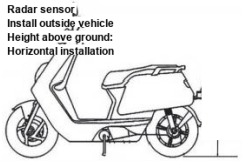
Parts List

NO.	Name	Qty
1	Radar	1 pc
2	LED indicator	2 pcs
3	Accessory kit	1 pack
4	Manual	1 copy
5	Wire harness	1 set

4. Installation

Installation Plan

Install at the center of the rear of the two-wheeled vehicle using a universal mounting bracket, at a height of 400~1000mm above the ground, keeping the radar vertical to the ground and parallel to the tail of the vehicle.



Radar UP, install facing upward, vertical to the ground

5. Wiring Diagram

Precautions

- Please use a 12V DC regulated power supply for this system;
- Keep the radar cover clean during installation. Clean the cover with a soft damp cloth and then air dry;
- Pay attention to the radar shape during installation; ensure the installed radar is not deformed. Do not squeeze, bump, or drop it;
- Keep the radar away from frequently started high-power electrical equipment and motors or other positions with strong magnetic interference;
- During testing, there must be no obstruction within the radar beam range, and the test environment should be as open as possible to avoid affecting measurement results;
- Ensure the radar is the original factory part during installation; do not disassemble it by yourself.

FAQ

	Possible Cause	Troubleshooting
Left/right LED indicator shows target warning position reversed	Left/right lights reversed, radar installed upside down	1. Check left/right light labels 2. Check whether the radar face is correctly installed
Light stays on or off after power on	1. Poor contact 2. LED light damaged	1. Check wire harness plug 2. Replace LED light to check