

**77Ghz Millimeter Wave Radar
Motorcycles Blind Spot Detection System
Instruction manual**

Catalogue

I. Introduction.....	3
1.1 Overview of system functions.....	3
1.2 Product self-inspection.....	4
1.3 Alarm strategy.....	4
II. Specifications.....	6
III. Accessories list.....	6
1.4 Installation.....	7
1.5 Wiring diagram.....	7
IV. Notes on the use of products.....	8
V. FAQ.....	8

I. Introduction

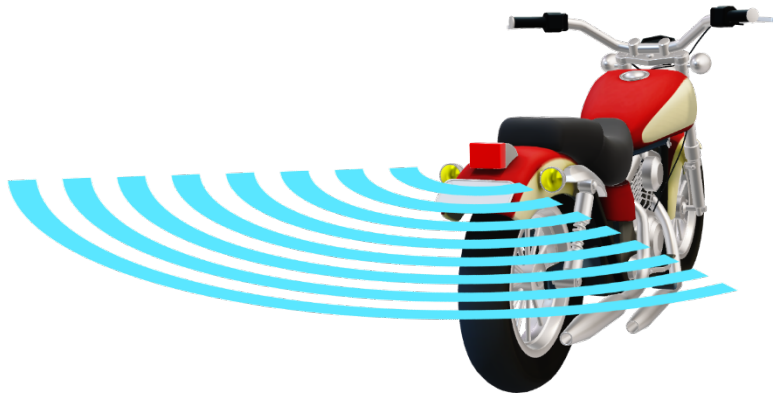
1.1 Overview of system functions

The system uses millimetre wave radar sensors to monitor the environment behind and to the sides of the vehicle, monitoring the driver's "field of view" and providing an assisted warning function when the driver is driving normally or changing lanes.

The measurement area is divided into two sections: 4.4m on the left and right (no alarm in the middle $\pm 0.5\text{m}$):

The blind spot monitoring area is within 10m in the rear direction and provides early warning of objects moving into the blind zone, at which point the LEDs on the same side flash.

In the proximity warning function for vehicle lane change the detection distance reaches 50 m. When there is a target vehicle approaching in the area, the LED on the same side is always on when the approach time between the target vehicle and the vehicle is less than or equal to 5.0s.



1.2 Product self-inspection

Normal state of the equipment:

1) . The left and right lights flash twice each when the unit is powered up;

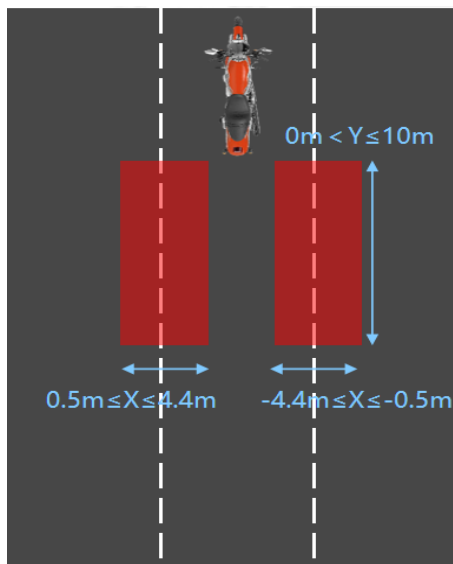
Equipment exceptions:

2) . No self-test after powering up the device, radar is not normal.

1.3 Alarm strategy

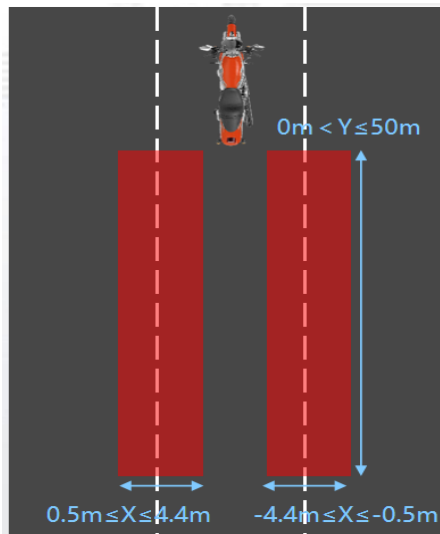
The alarm range is centred directly on the rear of the vehicle. The horizontal distance is X and the vertical distance is Y. The centre is the negative left horizontal distance and the centre is the positive right horizontal distance.

Blind spot detection function -BSD



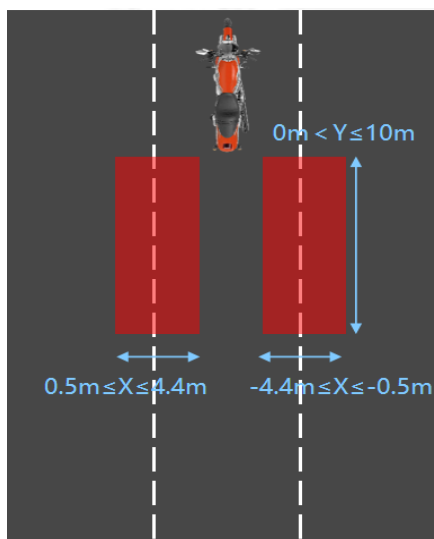
- System start-up speed: $V \geq 10 \text{ Km/h}$
- Early warning horizontal range: $0.5m \leq X \leq 4.4m$, $-4.4m \leq X \leq -0.5m$
- Early warning vertical range: $0m \leq Y \leq 10m$
- Early warning strategy: Moving target alarm in the alarm area
- Includes active and passive overtaking, same speed following.
- Trigger condition: Target objects moving at speed within the warning range, warning lights in the corresponding direction flash to alert the driver.

Lane change assist function -LCA



- Early warning horizontal range: $0.5\text{m} \leq X \leq 4.4\text{m}$, $-4.4\text{m} \leq X \leq -0.5\text{m}$
- Early warning vertical range: $0\text{m} < Y \leq 50\text{m}$
- Early Warning Strategies: $\text{TTC} \leq 5.0\text{s}$
- Alarm trigger condition: When a target is within the warning range and the approach time is less than 5 seconds, the warning light in the corresponding direction will be on to alert the driver.

Active overtaking alert function -AOA



- Function start speed: $V \geq 10\text{km/h}$
- Early warning horizontal range: $0.5\text{m} \leq X \leq 4.4\text{m}$, $-4.4\text{m} \leq X \leq -0.5\text{m}$
- Early warning vertical range: $0\text{m} < Y \leq 10\text{m}$

- Trigger condition: There are moving speed target objects within the warning range and the warning light in the corresponding direction flashes to alert the driver.

II. Specifications

Features	Parameters	Technical specifications
System Properties	Operating voltage	9-16v
	Operating temperature	-40~80°C
	Power consumption	2.5W
	Waterproof rating	IP67
	Frequency band	77GHz
	Refresh rate	20Hz
	Housing size	28*28*22.5mm
Antenna performance	Number of transceiver channels	1Tx4Rx
	Pitch beamwidth	±25°
	Horizontal beamwidth	±55°
Detection performance	Distance discrimination	0.2m
	Speed discrimination	0.2m/s
	Speed measurement range	±200km/h
	Distance measuring accuracy	Better than 0.2m
	Speed measurement accuracy	Better than 0.2m/s
	Goniometric accuracy	Better than 1°
	Detection distance	50m

III. Accessories list

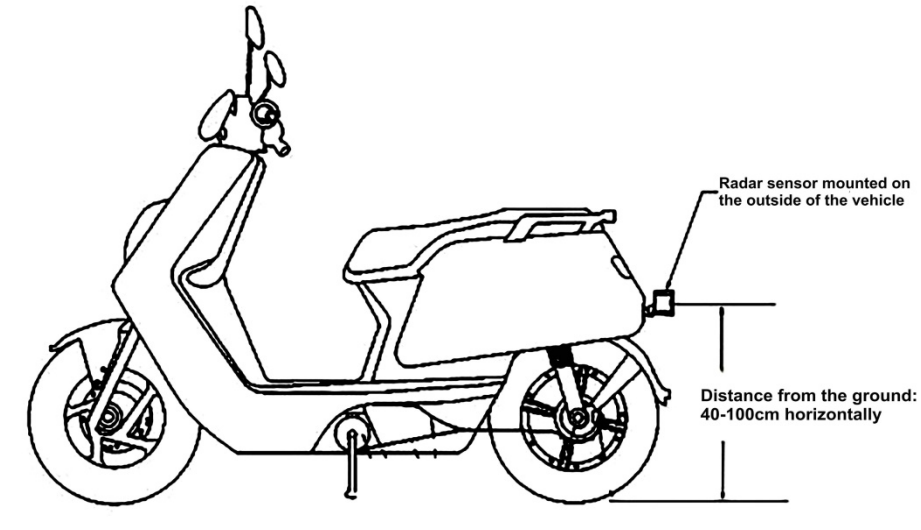
NO.	Name	Quantities
1	Radar	1 pc
2	LED indicator	2 pcs
3	Accessory kit	1 pack
4	Instruction manual	1 book
5	Wire Harness	1 bunch

1.4 Installation

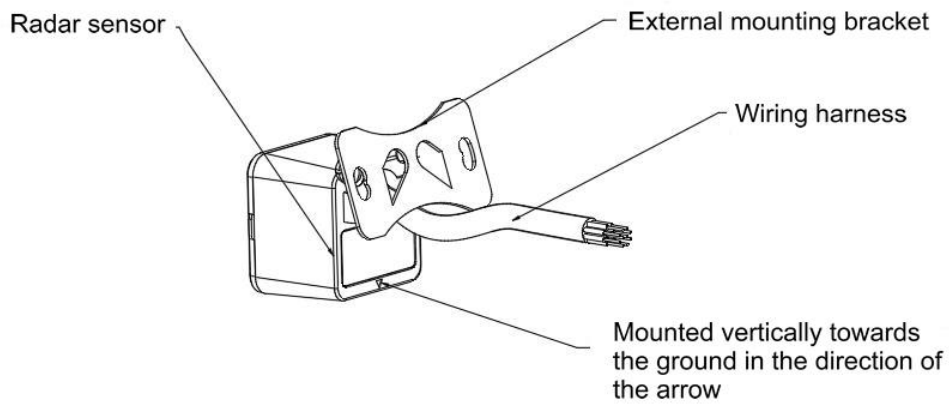
Installation options

Mount the radar in a central position at the rear of the two-wheeled vehicle via the universal mounting bracket at a height of 400-1000mm from the ground.

Keep the radar mounted horizontally.

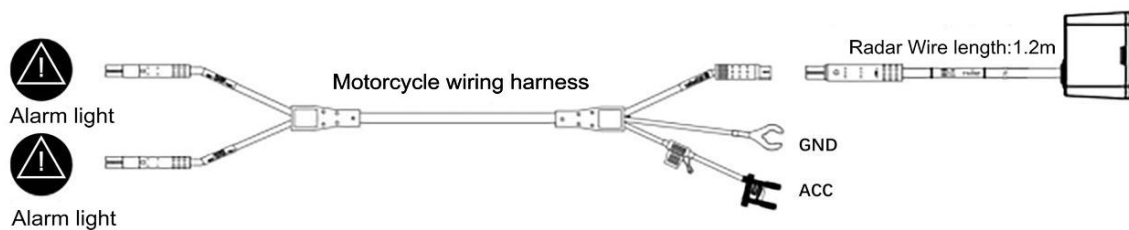


Installation diagram



Radar schematic

1.5 Wiring diagram



IV. Notes on the use of products

- Power supply pins require a separate 12V DC regulated power supply;
- Please keep the radome surface clean when installing, to clean the surface wipe it with a soft damp cloth and let it dry naturally;
- When installing the radar, please pay attention to the shape of the radar, make sure that the radar is not deformed when installed and do not squeeze, bump or drop it;
- Installed as far away as possible from locations with strong magnetic interference, such as high-powered electrical equipment and motors that are frequently started;
- When testing, there should be no obstructions in the radar beam range and the test environment should be as open as possible to avoid affecting the measurement results.
- Ensure that the radar is factory fitted, do not disassemble it yourself.

V. FAQ

	Possible reasons	Exclusion methods
Left/right LED indicators show the opposite position of the target warning	Left and right lights mounted backwards, radar mounted top and bottom backwards	1. Check the left and right light signs
		2. Check that the radar surface is correctly installed
Light always on and always off after power up	1、 Wiring harness problem 2、 Damaged LED light	1、 Wire harness plugging and unplugging check
		2、 Replacement of LED lights to check