BSD

Blind Spot Monitoring
Lane-Merging
Assistant Driving
System

Operation
Instruction
Manuel

2 4 Gmillimeter-wave radar
Single-issue and
double-receipt version

Contents

I.Product introduction

Thank you for choosing the blind area monitoring and parallel driving assistant system produced by our company. The product consists of two 24Ghz millimeter wave radars with single and double antennas, two indicator lights or special car blind area rearview mirrors, a buzzer and connecting wiring harness.

The products of this system give early warning to dangerous targets in left and right adjacent lanes. This system includes four functions: BSD, LCA, RCT and AOA. Its unique ability to penetrate smoke, fog and dust can be applied all day and all day, and the objects in the signal area can be detected in real time to calculate the velocity, angle and relative displacement of 64 objects at the same time. It can detect targets within 30M at the farthest, and finally output alarm signals, including first-class alarm and second-class alarm.

System characteristics

1)The system adopts adaptive signal processing and target recognition methods to effectively filter out false alarms caused by low-speed vehicles, stationary guardrails, trees and other targets in the monitoring area. However, only the moving target with speed greater than 10km/h will be alarmed.
2)The system adopts multi-channel interference technology to accurately measure the distance, speed and angle of the target, and does not alarm the targets outside the alarm area, such as moving vehicles across lanes.
3)It alarms the moving targets in the alarm area, including those approaching, following (at the same speed as the own vehicle) and far away.
4)When there are moving targets meeting the alarm conditions in the alarm area, the alarm indicator lights up. At this time, if the driver forcibly turns the turn signal, the alarm indicator flashes and the alarm horn gives an alarm.
5)Dual radar mutual communication technology enables radar to calculate its own speed more accurately.

Ⅱ.Product List

Name	Quantity
24Ghz millimeter wave radar	2
In-vehicle early warning prompt lamp	2
Power cord with buzzer	1
Power extension line	1(5m)
Prompt lamp extension line	2
Radar line	1(Short line left, long line right)
Mounting bracket	2
Tie	several
Spare double-sided stickers	1
Adhesion promoter	several
Angle ruler	1
Instructions	1

Ⅲ. Technical Parameter

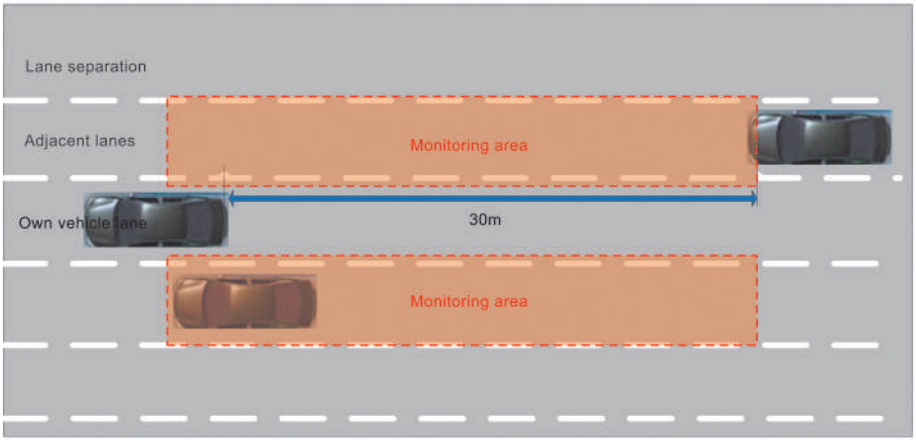
No.	Item	Specification
01	Working voltage	8V-36V
02	Working frequency band	24Ghz
03	Working temperature	-40℃ ～ +85℃
04	Power consumption	< 3W
05	Water-proof level	Ip67
06	Distance resolution	0.5m
07	Range accuracy	Better than 0.18m
08	Detection distance	30m

Ⅳ. Production Function

Explanation

First-class alarm: the prompt light is always on

Secondary alarm: prompt light flashing+buzzer prompt sound



1. BSD blind zone warning
   (detection area:4meters horizontally and 10 meters vertically)
   Working logic:
   Start BSD warning mode when the vehicle speed is > 18 km/h

A. When the target with speed > 10 km/h enters the detection area (the vehicle does not turn on the turn signal), the first-class alarm will be generated until the target leaves the detection area, and the alarm will be cancelled.

B. When the target with speed > 10 km/h enters the detection area (turn on the turn signal), a secondary alarm will be generated until the target leaves the detection area, and the alarm will be cancelled.

2. LCA vehicles approach the early warning detection area:

A. when the vehicle speed is 0: 4m horizontally and 15m longitudinally.

B. When the vehicle speed is 18-60 km/h: 4 meters horizontally and 15-20 meters longitudinally, increasing or decreasing with the speed.

C. when the vehicle speed is more than 60km/h: 4m in the horizontal direction and 20-30m in the vertical direction, increasing or decreasing with the speed.

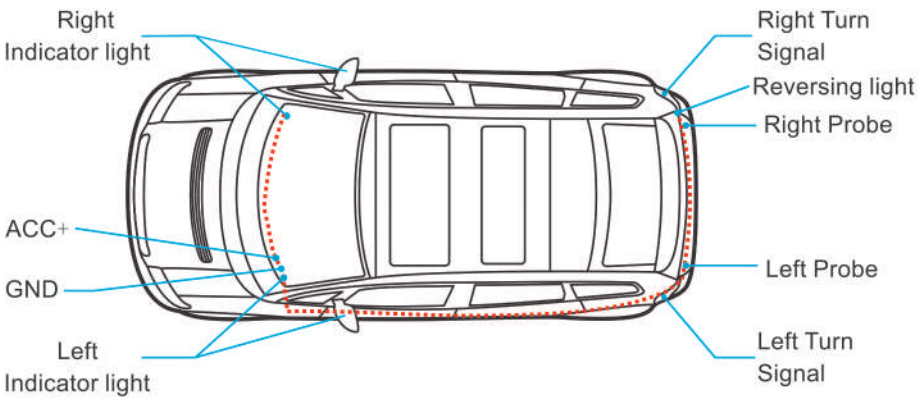
3. AOA overtaking warning (detection area: 4m in horizontal direction and 10m in vertical direction) Working logic: Start AOA overtaking warning mode when the vehicle speed is > 18km/h.

A. when the vehicle actively overtakes other targets with speed > 10km/h and is in the detection area, it will generate a first-class alarm until the target leaves the detection area and cancel the alarm.

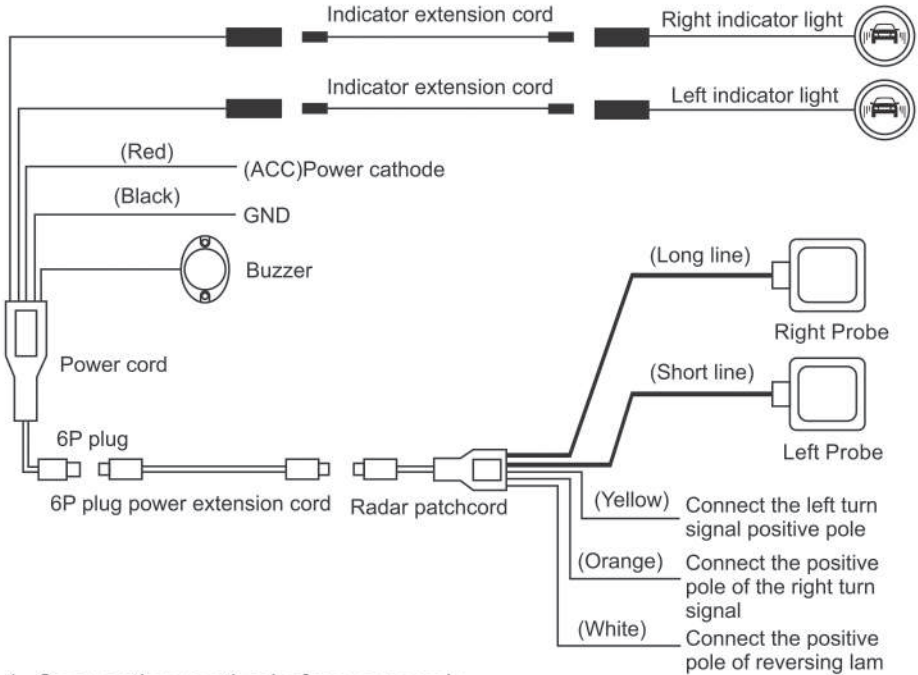
B. When the vehicle actively surpasses other targets with speed > 10 km/h and turns on the turn signal on the corresponding side in the alarm range, a secondary alarm will be generated until the target leaves the detection area, and the alarm will be cancelled.

4. Working logic of RCT reversing warning (detection area: 5-15m sector area):
Start RCT reversing warning mode when R (reverse gear) is engaged: When the target enters the detection area, a secondary alarm is generated until the target leaves the detection area, and the alarm is cancelled.

V. Schematic Diagram of Installation



VI. Line Connection Legend



1. Connection method of power cord:

A. Connect the black line of the power cord with the negative pole of the automobile or ground it.

B Connect the red line of the power cord to the ACC power supply of the car (the car starts normally/shuts down without electricity).

C. The extension line of the prompt lamp and the prompt lamp correspond to each other according to the left and right labels, and the male and female are plugged and connected.

2. Connection method of power extension cable:
Wire the power extension cord from the front to the rear, with the front plugged into the power cord and the rear plugged into the radar patch cord.

3. Radar patch cord connector:

A. Plug it into the power extension cord.

B.One end of the short line is left, and one end of the long line is right.

C. The radar is plugged into the left and right radar plugs respectively.

D.Connect the yellow wire with the positive pole of the left turn signal of the automobile.

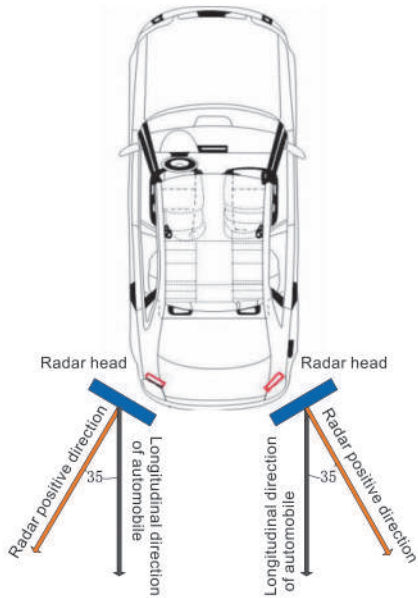
E. Connect the orange line with the positive pole of the right turn signal.

F. Connect the white wire to the positive pole of the reversing lamp.

VII. Installation Method

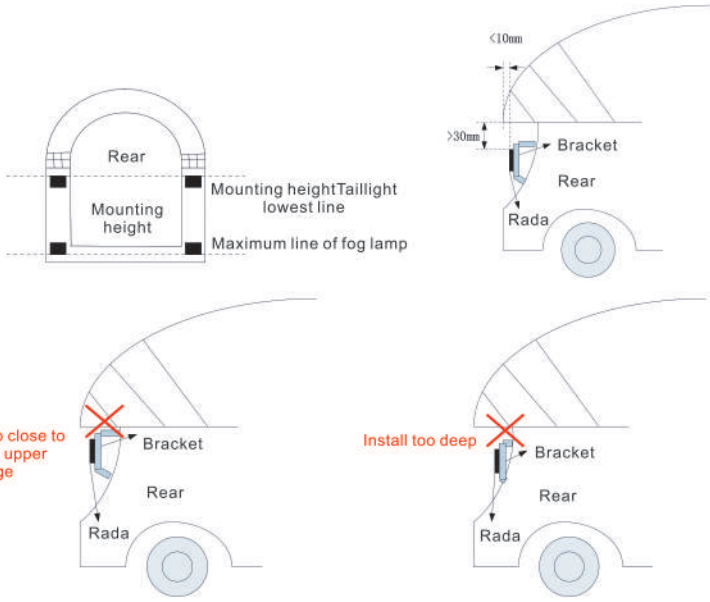
Installation of millimeter wave radar

Two radar heads are installed in the bumper at the left and right corners of the rear end of the car body, as shown in the following figure. Specific installation steps are as follows:

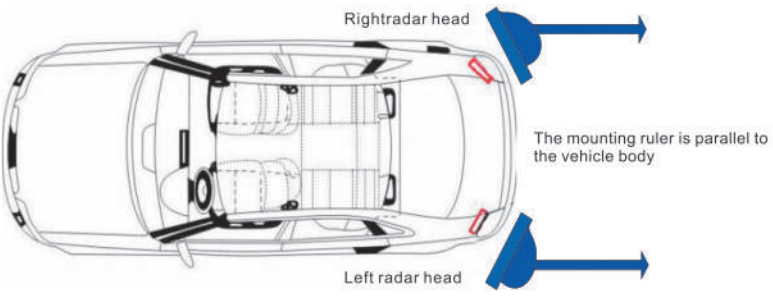


(1) Bracket installation:

The bracket is installed in the bumper, and the appropriate position is selected. The height is best near the middle line of the car height, but it must be ensured that there is enough space for installing the radar, and the radar is not blocked by any metal (such as lampshade, anti-collision beam, etc.) after the bumper is covered; The position of the bracket should not be too close to the upper and lower edges of the space, and the distance from the upper edge should be more than 30 mm; The bracket can't sink too deep into the space cavity either. It's better to make the depth from the radar surface to the cavity opening less than 10mm, as shown in the following figure. Special attention: after the bumper is covered, the radar can not be blocked by the reversing radar on the bumper, and the distance between the two is better than 30 mm.

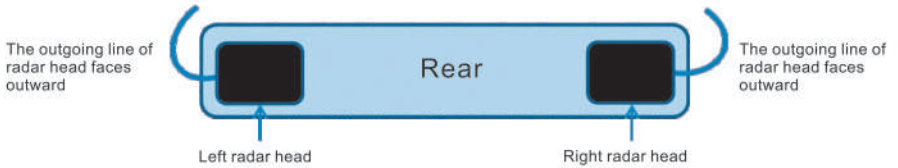


Adjust the angle of the bracket so that the angle between the normal direction of the radar mounting surface on the bracket and the longitudinal direction of the vehicle body is 35 degrees. The installation ruler can be used to ensure the correct installation angle. See the following figure for the use of the installation ruler.



(2) Fixed mode of radar

When fixing the radar head, ensure that the connecting line of the radar head faces the outside of the vehicle, and the back of the radar head clings to the bracket. Fix the radar head on the bracket with screws to keep the radar head vertical, as shown in the following figure:



Note: There must be no metal objects in front of the radar head.

(3) System test

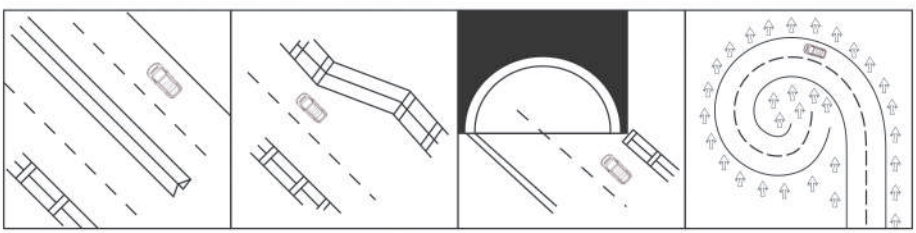
1. When testing, start the car first. At this time, the left and right alarm lights are always on for a few seconds and then go out, indicating the system line
   Road connection is normal; If the left and right warning lights are always on or off, the connection of radar head is abnormal.
2. After the car starts, pull up the handbrake, shift into reverse gear, release the foot brake (such as stepping on the clutch for manual gear), and turn off all lights. When people walk quickly from far to near or shake with metal objects at the side rear of the car, the alarm indicator lights on the corresponding side will flash and the buzzer will sound, indicating that the radar head works normally and the horn is connected normally; otherwise, check whether the connection is correct.

VIII. Notice

⚠ Warninging

Before changing the lanes at the practical lane, please visually check the surrounding areas.
This system is only used to assist you to detect the vehicles behind when changing lanes. Due to some limitations in the actual working environment, sometimes the vehicles have stayed in the adjacent lanes, but the warning signal lamp of system doesn't flash or may delay to flash. Please don't complete rely on this system, and this company shall not take any responsibility for the incident occurred due to this.

1. Under the following circumstances, the radar may not emit the prompt:
   a. The vehicle is located at the rear blink spot of adjacent lanes and keeps the relative same speed for long time.
   b. The adjacent lanes where vehicle is located are extremely wide, which exceeds the computation range of radar signal.
   c. When driving through the hills or top of hill roads.
2. If the roads are narrow, it is possible to detect the vehicles of two lanes.
3. The pre-warning signal lamp of this system may be turned on to the stationary objects on the road or road side.
   (e.g. guardrails/walls/tunnels/green belts etc.)



Guardrail / concrete wall	Barrier / wall narrowing	Tunnel entrance	The turning radius of the green belt is smaller