

# BSD

Blind Spot Monitoring  
Lane-Merging  
Assistant Driving  
System / Operation  
Instruction  
Manuel

24Ghz Millimeter Wave Radar

# Contents

- I . Introduction of Product 1
- II . Product List 1
- III. Technical Parameter 2
- IV. Product Function 2
- V . Schematic Diagram of Installation 3
- VI. Line Connection Legend 3-4
- VII. Installation Method 5
- VIII. Operation Instruction 6
- IX. Notice 6-7

# □ .Introduction of Product

Thanks for choosing the blind spot monitoring lane-merging assistant driving system produced by our company. The product is composed of two 24Ghz millimeter wave radars, two indicators (or special vehicle blind-spot-type rear view mirror), one buzzer and connecting harness.

This system product will produce the pre-warning to the hazardous targets on both left and right adjacent lanes. This system includes the blind spot monitoring, lane-merging assistance, reversing across pre-warning functions. The unique capacities of penetrating the smoke, fog and dust for 24Ghz radar can realize the all-weather and all-time application, as well as detect the objects within the signal area at any time and identify the approaching objects of relative movement. It is able to detect the target as far as 20 meters at maximum, and finally input the pre-warning signals. The pre-warning signals include the Level 1 Warning and Level 2 Warning.

## II .Product List

Name	Quantity
24Ghz millimeter wave radar	2
In-vehicle pre-warning indicator lamp	2
Power line with buzzer	1
Power extension line	1
Extension line of indicator lamp	2
Radar line	1
Bevel protractor	1
Instruction Manuel	1

### III. Technical Parameter

No.	Item	Specification
01	Working voltage	12V
02	Working frequency band	24Ghz
03	Working temperature	-40°C ~ +85°C
04	Power consumption	< 2W
05	Water-proof level	Ip67
06	Distance resolution	0.5m
07	Range accuracy	Superior to 0.18m
08	Detection distance	20m

### IV. Production Function

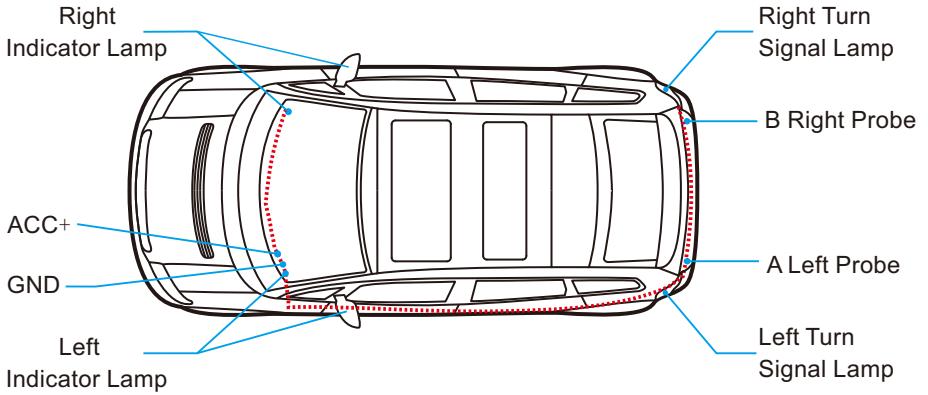
#### Description

**Level 1 Warning:** Indicator lamp is always on

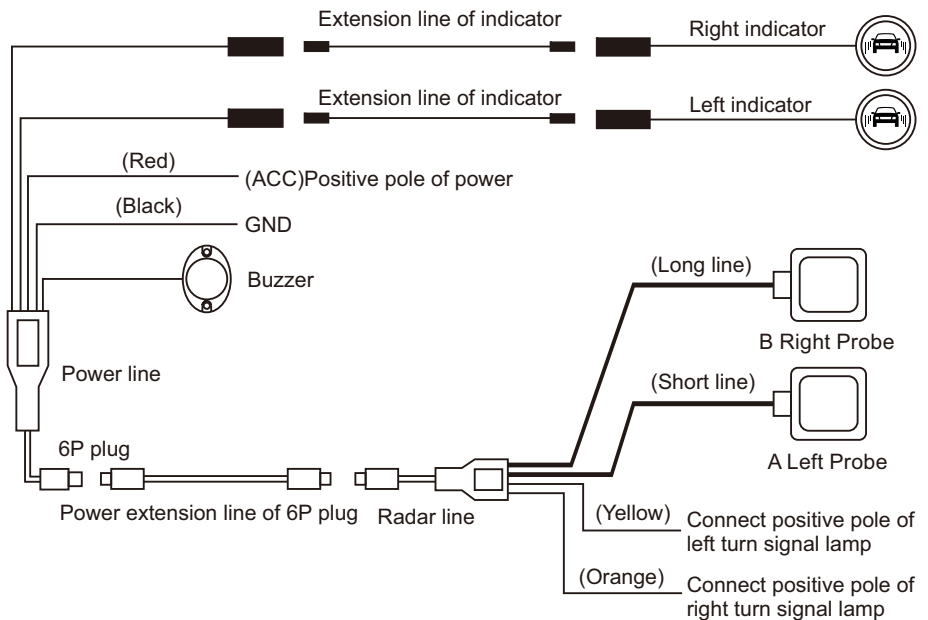
**Level 2 Warning:** Indicator lamp flashes + Buzzer emits prompt tone

1. Signal range: Fan-shaped signal surface with 54° angle horizontally and 10° angle longitudinally.
2. Starting mode: Power-on starting.
3. Pre-warning mode
  - A. If the target object enters the radar signal area with the more rapid speed (this vehicle doesn't turn on the turn signal lamp), it will produce the Level 1 Warning until the target object leaves the monitoring area, and the warning is canceled;
  - B. If the target object enters the radar signal area with the more rapid speed (this vehicle turns on the turn signal lamp), it will produce the Level 2 warning until the target object leaves the monitoring area, and the warning is canceled.

# □ . Schematic Diagram of Installation



## VI. Line Connection Legend



1. Connection method of power line:

- A. Connect the black line of power line with the negative pole of vehicle or bond strap.
- B. Connect the red line of power line with ACC power of vehicle (vehicle starts with normal power/stops with no power).
- C. Correspond the extension line of indicator lamp with the indicator lamp, plug in the male and female for connection.

2. Connection method of power extension line:

Lay out the power extension line from the vehicle head to vehicle tail. Plug in with the power line at the vehicle head, and plug in with the radar line at the vehicle tail.

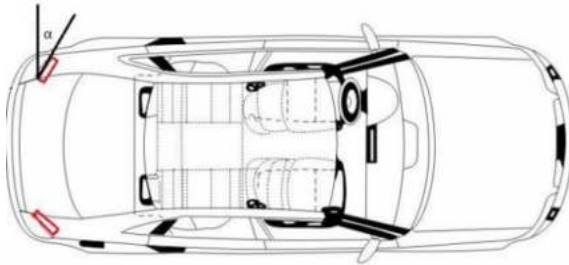
3. Connection method of radar line:

- A. Plug in with the power extension line.
- B. Plug in the radar with the right and left radar plugs respectively.
- C. Connect the yellow line of radar line with the positive pole of vehicle's left turn signal lamp.
- D. Connect the orange line of radar line with the positive pole of vehicle's right turn signal lamp.

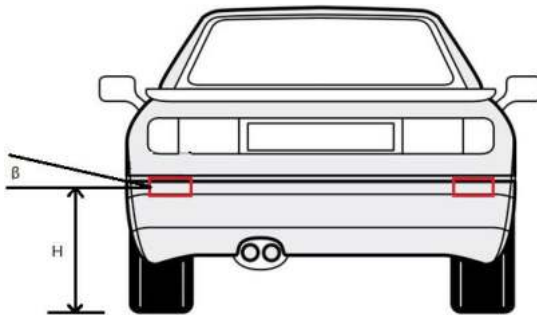
# VII. Installation Method

1. Installation height of radar: 0.4~0.9m from the ground.
2. Installation angle of radar: According to the operation method of scale,  $25^\circ$  arrow inclined surface fits the radar signal surface, the scale is parallel to the vehicle body.
3. Radar's location inside vehicle:
  - A. It can be fixed on the bumper.
  - B. It can be stuck inside the back surrounding.
4. If the radar signal surface towards the vehicle, the front of radar signal surface can't be blocked by the metal substances.
5. The radar outlet is upward or downward.

The schematic diagram of installation is shown as below:



Top View of Radar Installation



Front View of Radar Installation

## VIII. Operation Instruction

1. After vehicle ACC powers on, the system will immediately enter the environmental adaptability detection prior to entering the working stats. After the vehicle stops, the radar will stop working.
2. If not turning on the turn signal lamp and double-flash warning lamp, the system will stay in the Level 1 warning status.
3. If turning on the turn signal lamp and double-flash warning lamp, the system will stay in the Level 2 warning status.

### □ . Notice

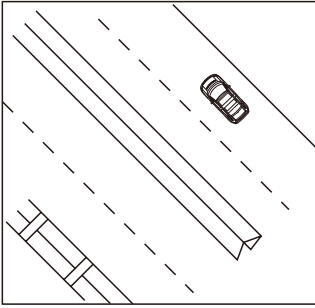
#### Warninging

**Before changing the lanes at the practical lane, please visually check the surrounding areas.**

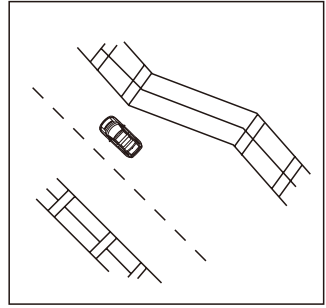
**This system is only used to assist you to detect the vehicles behind when changing lanes. Due to some limitations in the actual working environment, sometimes the vehicles have stayed in the adjacent lanes, but the warning signal lamp of system doesn't flash or may delay to flash. Please don't complete 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.)

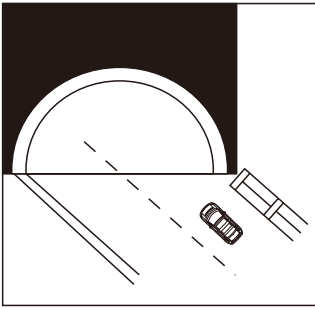




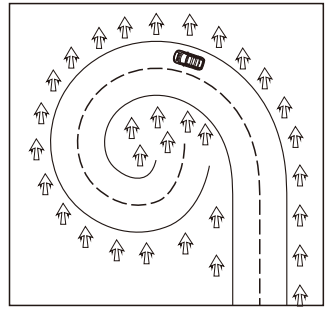
Guardrail / concrete wall



Barrier / wall narrowing



Tunnel entrance



The turning radius of the green belt is smaller