BSD

Blind spot monitoring and parallel assisted driving system

Operation instructions

7 7 G millimeter wave single radar commercial vehicle version

Content

I. Product introduction

Thank you for choosing the blind spot monitoring and parallel driving assistance system produced by our company. The product consists of a 77Ghz millimeter wave radar, two indicator lights (or special blind spot rearview mirrors) and a buzzer connection harness.

This system product can warn the dangerous targets in the adjacent lanes. The unique ability of 77Ghz millimeter wave radar to penetrate smoke, fog and dust can realize all-weather and all-time application, detect the objects in the signal area in real time, and calculate the speed, angle and relative displacement of 64 objects at the same time. It can detect the target within 50M at the farthest, and finally output the alarm signal, which includes the first-level alarm and the second-level alarm.

Ⅱ. Product List

Name	Quantity
77Ghz millimeter wave radar	1
In-vehicle warning light	1
Power cord	1
Buzzer	1
Power supply extension line	2 (5 meters/line)
Indication lamp extension line	2
Installing support	1
Accessories package	1
Instructions	1

III. Technical parameters

No.	Project	Specifications
01	Operating voltage	9 V- 32 V
02	Operating frequency band	77 -79Ghz
03	Working temperature	- 25℃ ～ +75℃
04	Power consumption	< 3 W
05	Waterproof grade	Ip 67
06	Distance resolution	0 . 2 m
07	Ranging accuracy	Better than 0. 1 m.
08	Detection range	0-50 m
09	Horizontal angle range	150°
10	Pitch angle range	±10°
11	Velocity measurement accuracy	0.1m/s

IV. Product functions

Instruction

- After the ACC is powered on, the system can immediately enter the working state after the environmental adaptation test. When the vehicle is turned off, the radar stops working.
- When the turn signal is not turned on and the double flashing warning lamp is in the state, the system is in the level-1 early warning state.
- When the turn signal lamp and double flashing warning lamp are turned on, the system is in the level-2 early warning state.
- Level-1 alarm: the reminder light is always on.
  level-2 alarm: the warning light flashes+the buzzer sounds.

The alarm range is centered on the rear of the vehicle. The lateral distance is X and the longitudinal distance is Y. The left lateral distance of the center is negative, and the right lateral distance of the center is positive.

1. Product self-inspection:

Normal state of equipment:

1) After the equipment is powered on, the left and right indicator lights flash 3 times respectively;

2) When the vehicle speed exceeds 15km/h and there is a target vehicle in the blind area, the indicator light is on, and the buzzer sounds and the indicator light flashes.

2. Blind area monitoring function -BSD

- System starting speed: V≥15Km/h
- Horizontal range of early warning: 1.5m≤X≤4.4m,-4.4m ≤ x ≤-1.6m.
- Longitudinal warning range: 0 m≤Y≤6.5m
- Early warning strategy: alarm for moving targets in the alarm area
- Including active overtaking or passive overtaking, the relative overtaking speed is not more than 20km/h.

BSD early warning mode:

A. When the moving object enters the blind spot monitoring area (the vehicle does not turn on the turn signal), it will give a level-1 warning until the target object leaves the monitoring area and cancel the warning;

B. When the moving object enters the blind spot monitoring area (the vehicle turns on the turn signal), a level-2 warning will be generated until the target object leaves the monitoring area, and the warning will be cancelled.

3. Parallel auxiliary approach early warning function -LCA

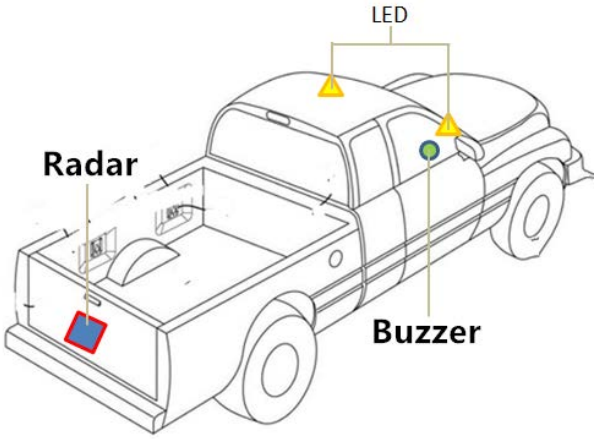
- System starting speed: V≥15Km/h
- Horizontal range of early warning: 1.5m≤X≤4.4m,-4.4m ≤ x ≤-1.6m.
- Longitudinal warning range: 0m < y ≤ 50m
- Early warning strategy: approach time ≤ 4.0s.

LCA vehicle approaches the early warning mode:

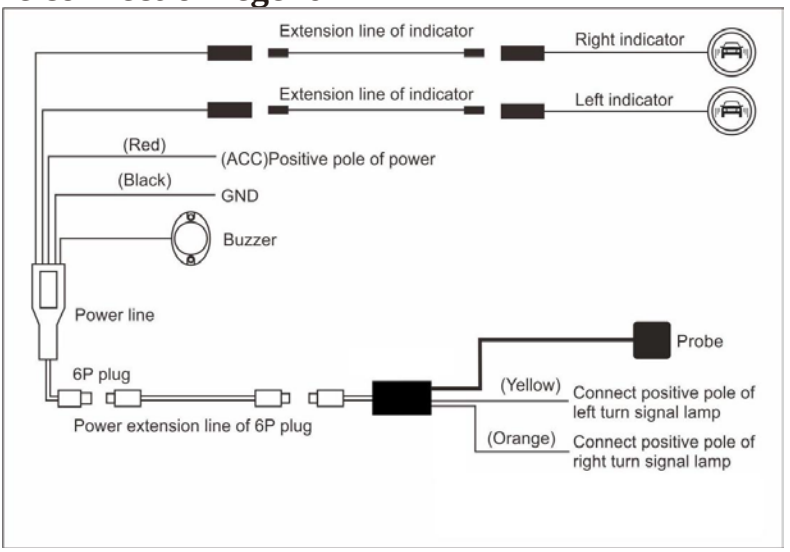
A. When the target object enters the alarm range (the vehicle does not turn on the turn signal), generate a level-1 warning until the target object leaves the alarm area, and cancel the warning;

C. When the target enters the alarm range (the vehicle turns on the turn signal), a level-2 warning will be generated until the target leaves the alarm area, and the warning will be cancelled;

V. Installation diagram



VI .Line connection legend



1. Connection method of power cord:
   A. Connect the black line of the power cord to the negative pole of the vehicle or ground it.
   B. Connect the red line of the power cord to the ACC power supply of the vehicle (the vehicle starts normally/turns off without electricity).
   C. Correspond the extension line of the indicator lamp and the reminder lamp according to the left and right labels, and connect the male and female connectors.
2. Connection method of power extension cord:
   Route the power extension cord from the front of the vehicle to the rear of the vehicle. Plug the front of the vehicle into the power cord and the rear of the vehicle into the radar cable.
3. Radar line connection method:
   A. 6Pin hole end plug and power extension cord are plugged oppositely.
   B. The yellow line is connected to the positive pole of the left turn signal lamp
   C. Orange line is connected to the positive pole of right turn signal lamp.

VII. Radar installation method

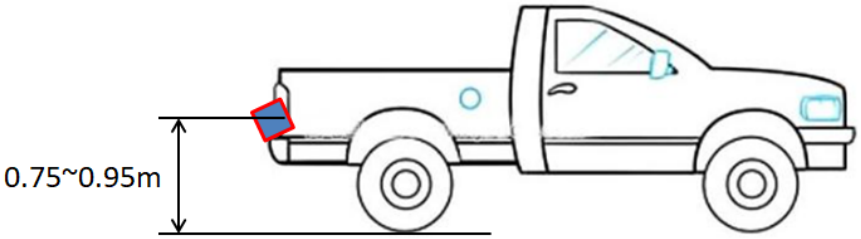
1. Schematic diagram of installation of radar module and angle adjustable bracket

2. Radar installation location

Note: the outlet is at the top.

3. Schematic diagram of radar installation

The specific installation requirements are as follows:



Note:

A. The radar is installed at the proper position at the tail with the outlet on the top;

B. The installation height range of radar from the ground is 0.75 ~ 0.95 m;

C. Installation pitch angle: the radar surface dips 10±2°;

D. The included angle between the radar axis plane and the vehicle body axis plane is 0±1.5°.

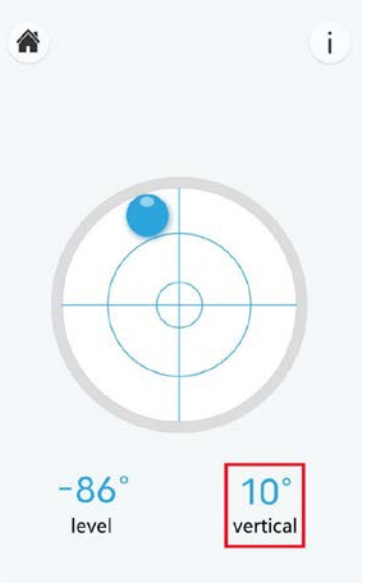
(Important note: Please operate the radar strictly according to the height & angle specified in the steps! ! !)

4、Radar inclination adjustment method:

A. Horizontal adjustment: the radar should be parallel to the cross section of the vehicle body, and the bracket can be parallel to the cross surface of the rear license plate.

B. Pitch angle adjustment: the mobile phone downloads the "level-meter" APP. When in use,

the mobile phone is attached to the radar head and the radar head tilts downward. When the vertical angle on the APP is 10° , tighten the fixing screw to keep the radar tilted downward by 10° !



VIII. Simple troubleshooting and maintenance

Fault phenomenon	Possible reasons	Exclusion method
The left/right LED indicators show that the target warning position is opposite.	The left and right lights are installed upside down and the radar is installed upside down.	1. Check the left and right light signs.
		2. Check whether the radar surface is installed correctly.
When the system detects the early warning target, turn on the turn signal, and the buzzer has no alarm sound.	1. Buzzer is on 2. Turn signal input problem	1. Check whether the buzzer is normal.
		2. Is the signal wiring of the turn signal on?
The lights are always on and off after power-on.	1. Wiring harness problem 2.LED lamp damage	1. Wiring harness plugging inspection
		2. Replace the LED lamp for inspection.

⚠ Warning

Before the actual lane change, be sure to visually inspect the surrounding area. The system is only used to assist you in detecting the vehicles behind you when changing lanes. Due to some limitations of the actual working environment, sometimes the vehicles are already in the adjacent lanes, but the system alarm signal lights do not flash or may delay flashing. You can't rely on this system completely, and our company won't be responsible for any accidents.

IX. Matters needing attention

1. Under the following circumstances, the radar may not give a warning:
   A. The vehicle is located in the blind area behind the adjacent lane, and keeps the relative same speed for a long time.
   B. The adjacent lane where the vehicle is located is extremely wide, when it exceeds the radar signal calculation range
   C When crossing the top of a hill or path.
2. If the road width is narrow, two-lane vehicles may be detected.
3. The warning signal lamp of this system may be harmful to stationary objects (such as guardrails/walls/tunnel/green belt, etc.).