

Blind Spot Detection System (BSD)



77Ghz Millimeter wave technology based

Automotive driving safety Profession

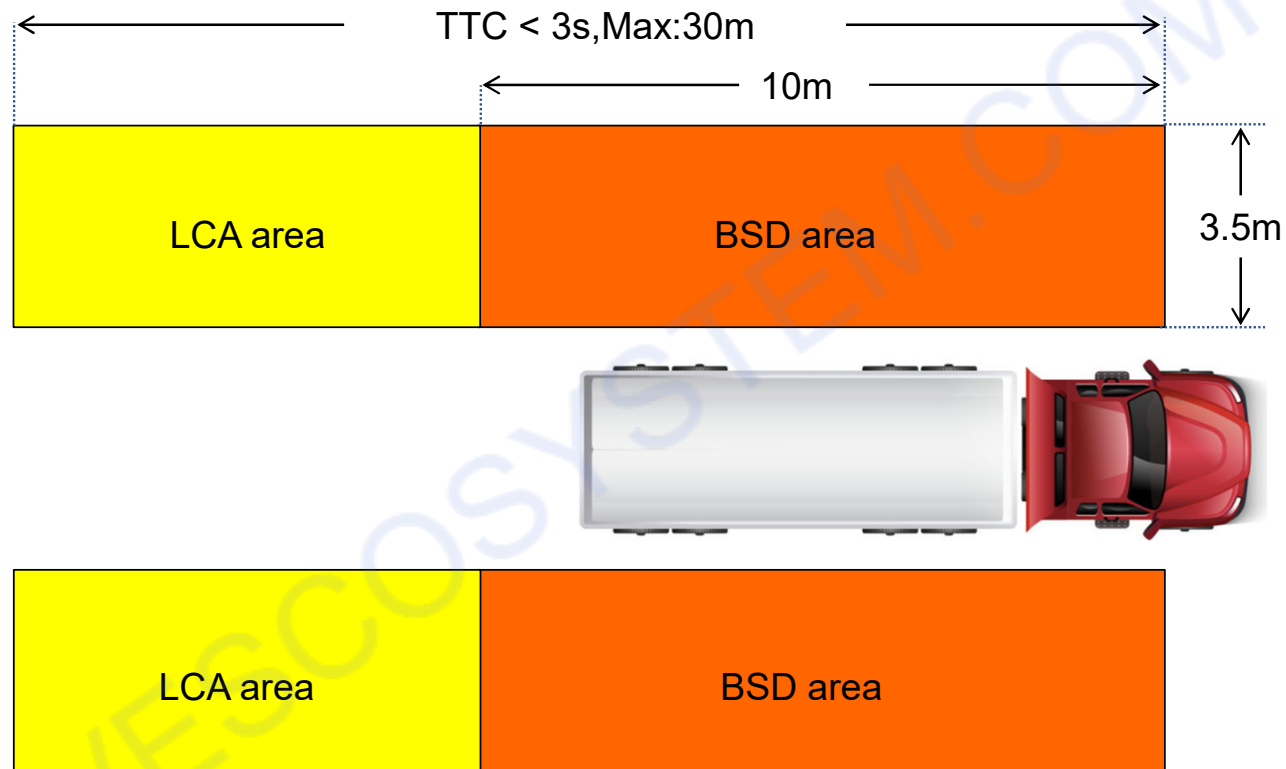
INTRODUCTION

A vehicle “blind spot” is a zone hidden from the driver, this occurs mainly with big Trucks/Buses and manifests itself when the driver makes a turn to the passenger side.

Unitech is proud to introduce a new safety system based on 77Ghz sensor technology that helps the driver detect pedestrian, bicycle and motorcycle in blind spots zone, especially on the passenger side of big Trucks/Buses, and draws the driver’s attention to their presence.



Warning Area

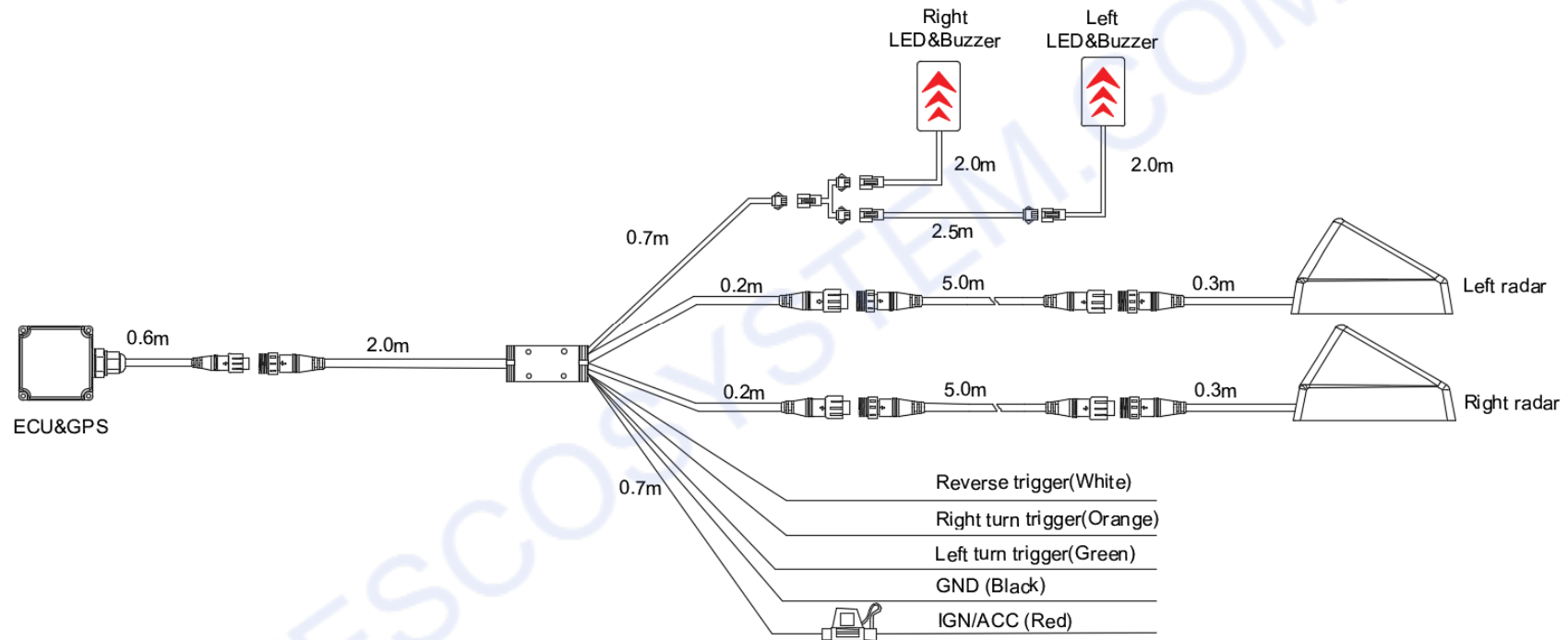


TTC (Time to Collision) = Distance between two vehicles / ($V_{\text{subject vehicle}} - V_{\text{target vehicle}}$)

MAIN PARTS

Part Name	Qty
Radar sensor	2 pcs
Warning indicator	1 pair
ECU	1 pc
Harness	1 set
Installation kits	1 set

WIRING DIAGRAM

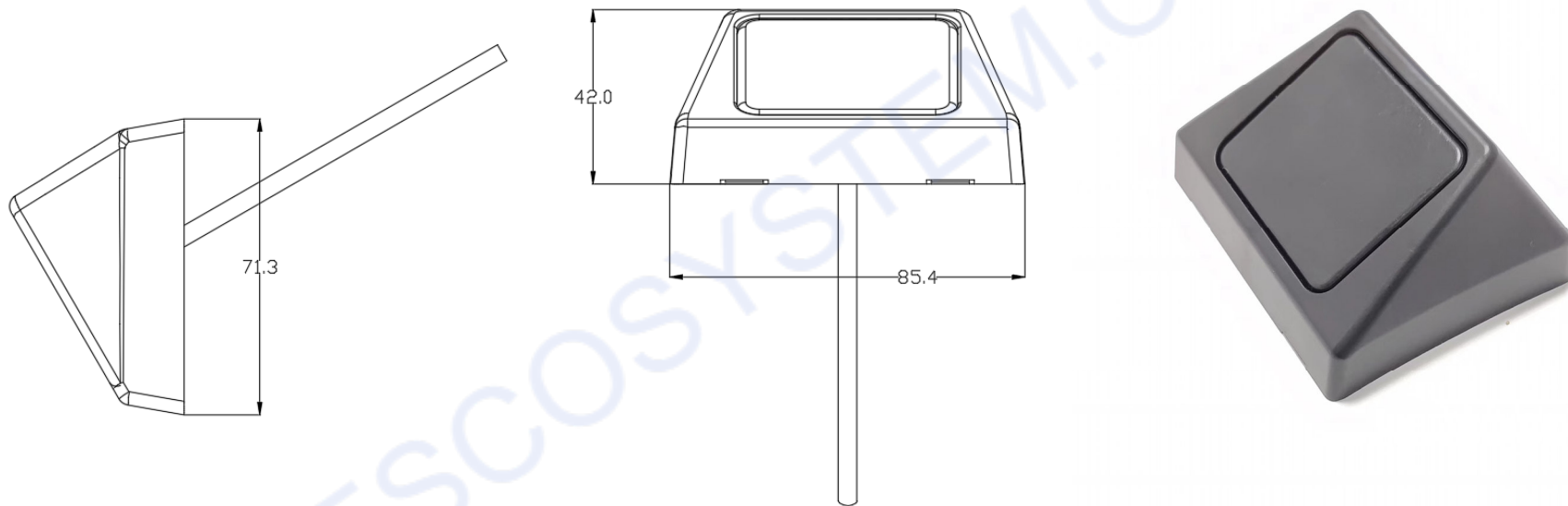


INSTALLATION



APPEARANCE&SIZE-SENSOR

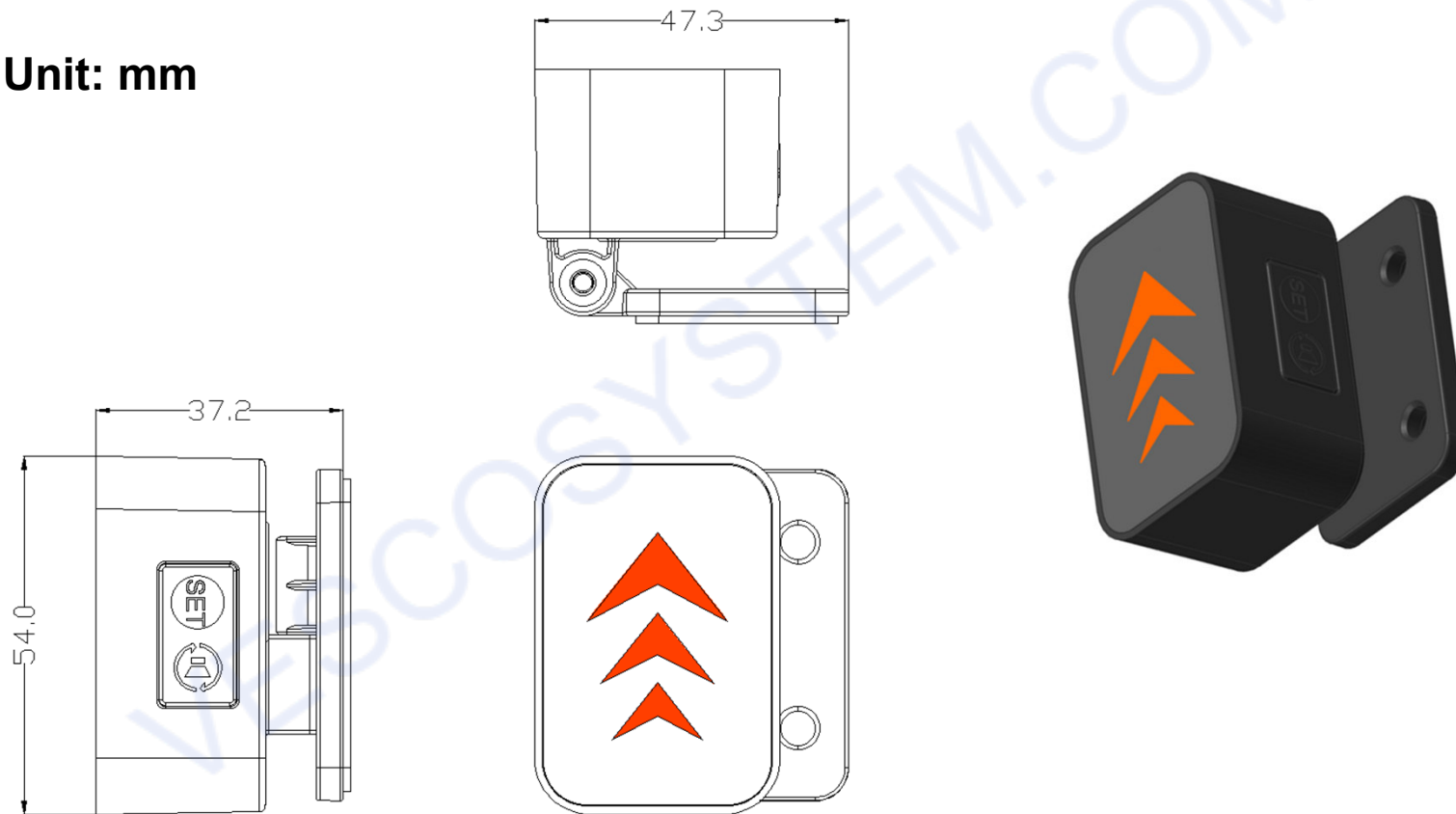
Unit: mm



APPEARANCE&SIZE-INDICATOR

Option 2

Unit: mm



Radar Specifications

ITEM	Parameter	ITEM	Parameter
Rated working voltage (V)	12V/24V	Horizontal angle (°)	140°
Operating voltage range (V)	9-32V	Vertical angle (°)	10°
Power consumption	< 6W	Angle accuracy (°)	±1 @ 40°
Operating temperature range (°C)	-40 ~ +85°C	Angular resolution (°)	30
Storage temperature range (°C)	-40 ~ +85°C	Speed Range (km/h)	-180 ~ +180
Working frequency (GHz)	76-77	Speed Accuracy (m/s)	0.2
Transmit power (dBm)	<55dbm.peak EIRP	Detectability (m)	70m
Modulation mode	FMCW	Distance Accuracy (m)	0.15
Antenna form	2TX, 4RX	Distance Resolution (m)	0.3
Traceable target number _{MAX}	31	Waterproof grade	IP6K7

Function

Self-diagnosis

When the system IGN is on , the system startsself-diagnosis, the result showed as below:

No.	Self-diagnosis result	Warning Indicator	Buzzer
1	Pass	Lit for 1s	Beep once
2	Fail	Blink 3 times in 1s	Beep twice

Function

Low speed detection function (Vehicle speed $\leq 20\text{km/h}$)

- a. When there's pedestrian or cyclist come into the red area from rear , the warning indicator will be lit . If the driver turn on the corresponding turning signal, the system will provide collision warning (warning indicator blink and buzzer beeps twice).



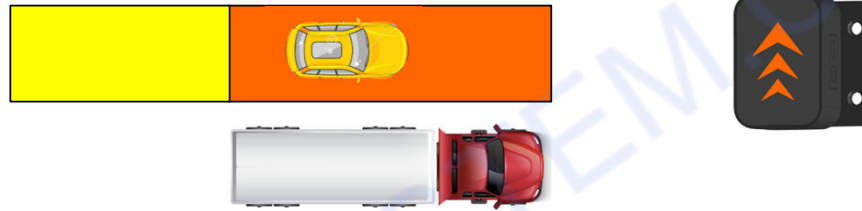
- b. When there's pedestrian or cyclist come into the yellow area from rear and will overtake the subject vehicle in 3s, the warning indicator will be lit. If the driver turn on the corresponding turning signal, the system will provide collision warning (warning indicator blink and buzzer beeps twice).



Function

High speed detection function (Vehicle speed > 20km/h)

- a. When there's vehicle come into the red area from rear or stay in the red area, the warning indicator will be lit . If the driver turn on the corresponding turning signal, the system will provide collision warning (waning indicator blink and buzzer beeps twice).



- b. When there's vehicle come into the yellow area from rear and will overtake the subject vehicle in 3s, the warning indicator will be lit. If the driver turn on the corresponding turning signal, the system will provide collision warning (warning indicator blink and buzzer beeps twice).

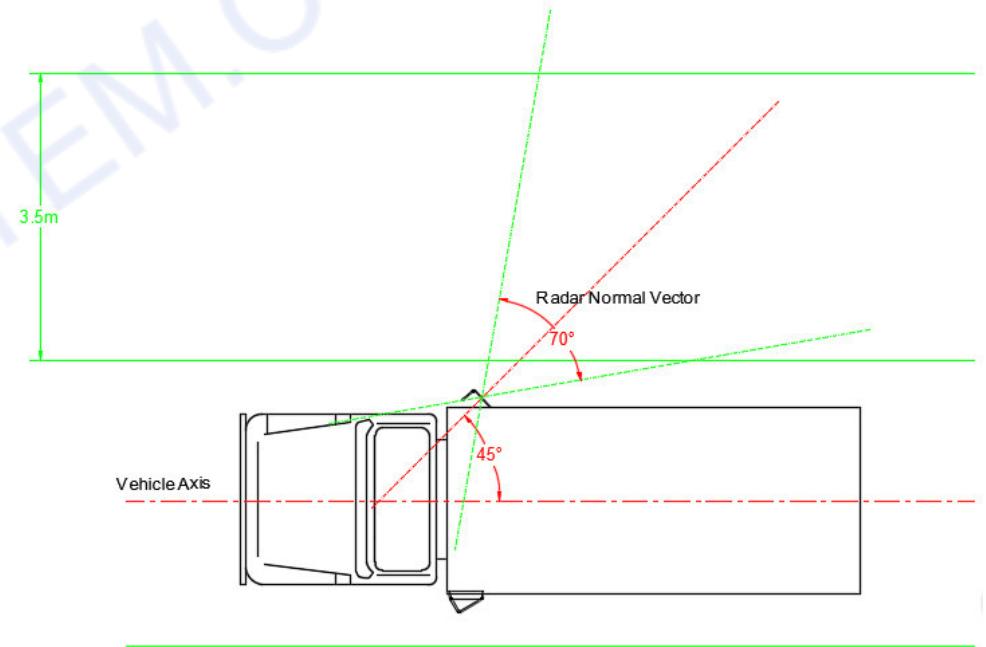
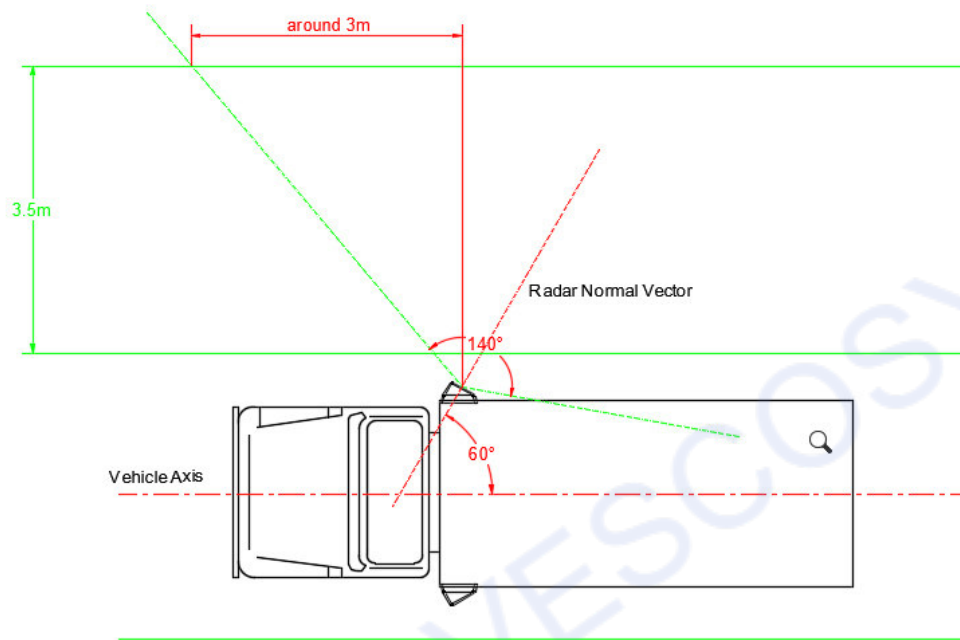


Comparison

Item	24Ghz BSD	Unitech 77Ghz BSD	Other 77Ghz BSD
Horizontal angle	70°	140°	120°
Detection range ability	15m	70m	70m
Radar installation angle (between vehicle body axis line and radar normal vector)	45°	60°	45°

Comparison

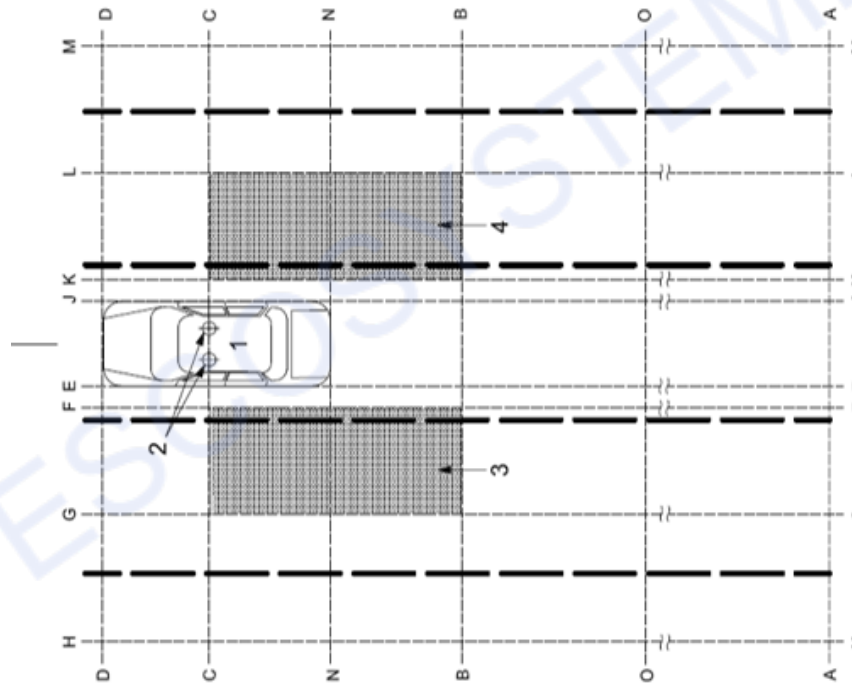
Installation angle and detection range



Comparison

Standard reference: Meet ISO 17387-2008(4.2.1)

ISO 17387:2008 Intelligent transport systems — Lane change decision aid systems (LCDAS) — Performance requirements and test procedures



Customer Case



~~The End~~
Thank you!