

# RODS-L / RODS-L-F

## Operating Manual

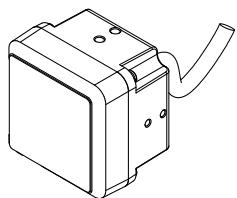


# Table of Contents

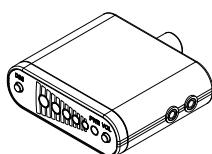
I	Table of Contents .....	1
II	Contents .....	1
III	System Description .....	2
IV	Object Detection Capability .....	2
V	Installation .....	3
VI	Radar Sensor .....	4~5
VII	Display units .....	6~7
VIII	Radar Detection Zone .....	8
IX	Dimension .....	9~10

## Contents

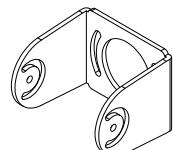
- RADAR Sensor



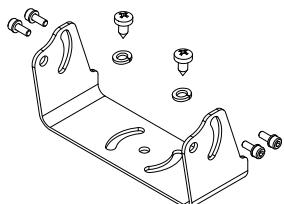
- Display unit



- Wall Mount  
Included screw pack



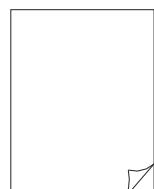
- Bracket for Display unit  
Included screw pack



- Extension Cable (Option)



- User's Guide





## System Description

- The Smallest Radar Sensor Active Blind Spot Detection System for Light-Duty Vehicle.
- The Radar Object Detection System uses FMCW (frequency modulated continuous wave) radar technology to detect stationary objects and people in blind spots.
- This advanced system alerts the operator with both visual and audible warnings.
- The system's capability of being able to determine whether an object is approaching or moving away from the sensor, helps to limit the number of false detections caused by objects of no concern encroaching on the detection area.
- The commercial grade heavy-duty system has an IP69K waterproof rating and works perfectly in all weather conditions.



## Object Detection Capability

The radar sensor transmits and receive 24 GHz radar signal.

It then process the returned signals to determine if an object has reflected any energy back to the sensor .

Our test condition is Radar sensor (height 1 meter location) with adult person at open side.

1dBsm (dB square meter), "Person reflection" approx.at 1dBsm, "Car reflection" at 10dBsm.

The detection range test should be proceeded at outdoor. The detection zone has been cleared of all obstacles.

Any obstacles in the detection zone will interfere with the test.

All dimensions for detection of objects are nominal and very significantly depending on many parameters.

In the case where there are multiple objects in the detection area at various distance and/or angles, the sensor detects the closest object, which is the most important one for collision avoidance.

### Factors Influencing the Detection of Objects

The object properties, location and direction are vey key influences in deterring if an object is detected or not.

**Size:** A large object usually reflects more energy than a smaller object.

**Composition:** Metal is detected better than non-metal materials

**Shape:** A flat object is better detected than a complex shape. Variation in relative location and direction can influence detection.

**Angle:** An object facing directly towards the sensor is detected better than an object that is located towards the edges of the detection area or at an angle.

**Ground condition:** Objects on flat, mineral material ground are better detected than on rough or metal surfaces.

## ◆ Sensor Mounting

The installation site should be flat. Ideally the radar sensor should be mounted on the rear of the vehicles as close to the center as possible at roughly 1 meter above the ground.

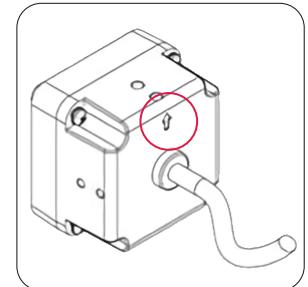
The sensor should be mounted in the upright position.

The "↑" on the back of sensor should be facing pointing top (Refer to the image)

## ◆ Mounting angle

Select the appropriate location to mount the sensor.

- Height tolerance (from ground); 1m +/- 0.3 m)
- Vertical angle tolerance +5 (up), -2° (down)
- Horizontal angle tolerance +/- 5

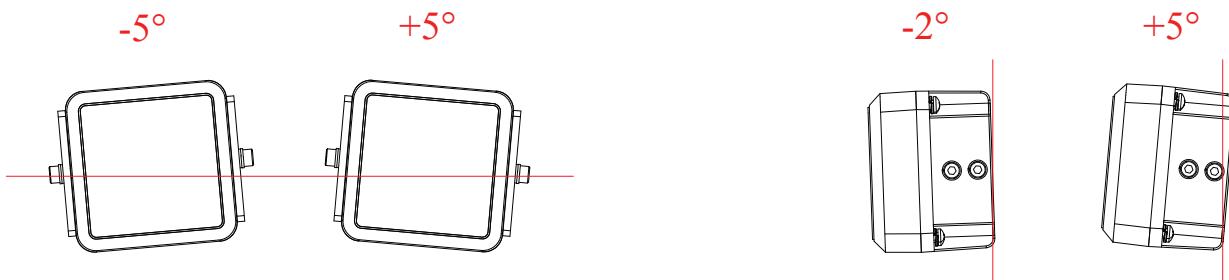


Note:

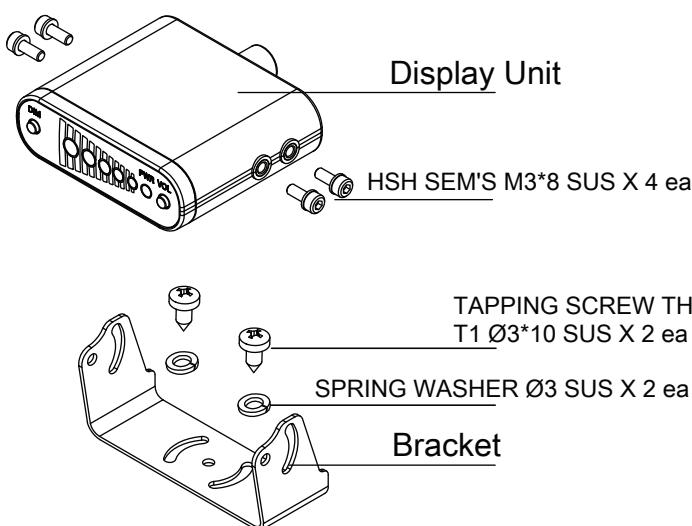
Before permanently installing the RODS(Radar object detection sensor) on the vehicle, verify that the selected sensor mounting location provides a clear detection zone.

Take the machine to a clear area, temporarily attach the sensor in the proposed mounting location, apply power to the system, and verify that nothing is being detected.

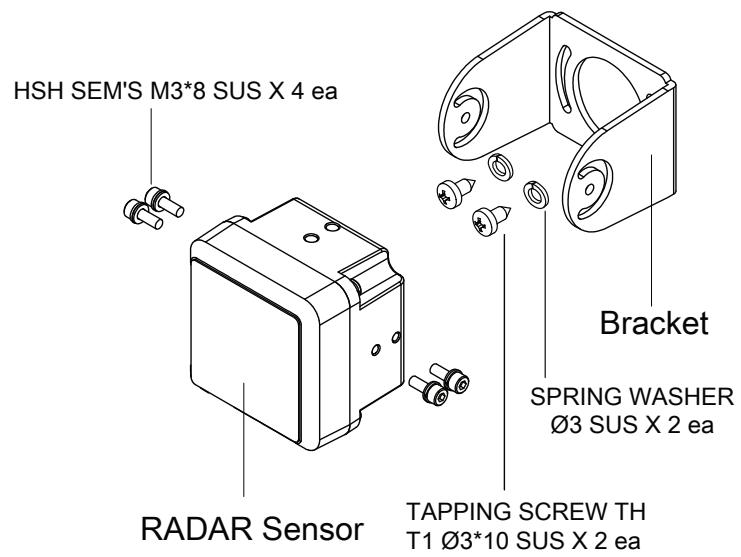
Our system is not affected if multiple systems are operating in the same area or on the same vehicle, even if they are installed in close proximity with overlapping detection ranges.



### Display Unit install

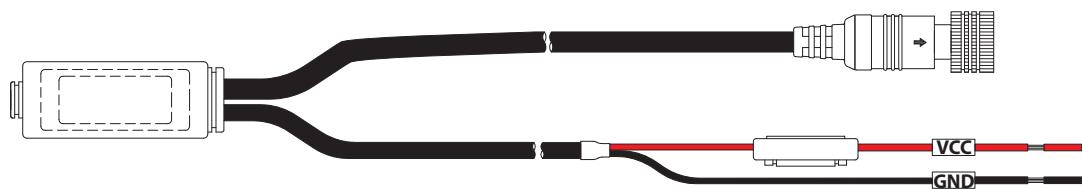


### RADAR Sensor install

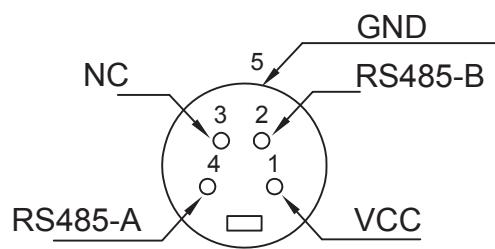




- Rear Cable



- Connector Pin out



- Cable connection

Red : + Vehicle power supply or Reverse Power (3A fuse: Range +9~24V)

Black : Ground (Supply negative)

- Radar Sensor Technical Specification

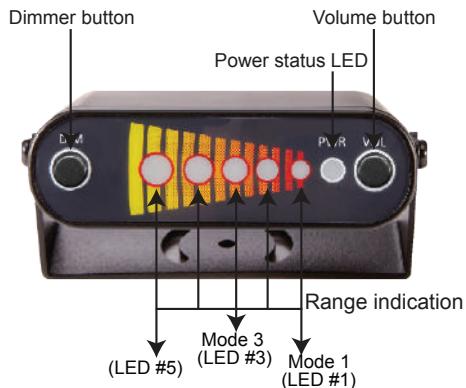
PARAMETER	Value	Units	Condition
<b>Transmit frequency</b>	24.05 ~ 24.20	GHz	EU, FCC, KC
<b>Modulation</b>	FMCW(Frequency Modulated Continuous Wave )		
<b>Supply voltage</b>	12 ~ 24	V dc	
<b>Current</b>	300	mA@12V	
<b>Power on time</b>	300	ms	
<b>Detection time</b>	200	ms	
<b>Communication</b>	RS-485		
<b>Operating temperature</b>	-40 ~ 85	°C	
<b>IP protection rate</b>	69K		
<b>Vibration</b>	TBD	G	
<b>Housing material</b>	Polycarbonate		
<b>Dimension</b>	43.6(H) x 43.6(L) x 33.1(D)	mm	
<b>Weight</b>	175	g	W/O Bracket
	240	g	with bracket

## FCC WARNING

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Display units

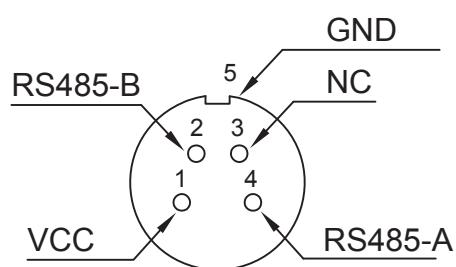


- ◆ LED # 5,4,& 3 are flashing (Furthest Detection zone 3)
- ◆ LED # 5 ~ 2 are flashing (Detection zone 2)
- ◆ All LEDs are flashing (Closest Detection zone 1)

• Rear Cable



• Connector Pin out



**Volume button** : Press volume button for 3 seconds to switch silence (3 steps)

**Power Status LED** : Illuminates green continuously after power is applied to the system

**Range Indications** : Illuminates to give operator a distance zone to the closest detected object. LED's operate from the left to right, with a closer object resulting in more LED's illuminated.

**Dim Button** : Press Dim button to adjust LED (2 steps)

- (1) Press Dim button to verify the current mode for 3 seconds. (LED 1 is less bright and LED 3 is the most bright)



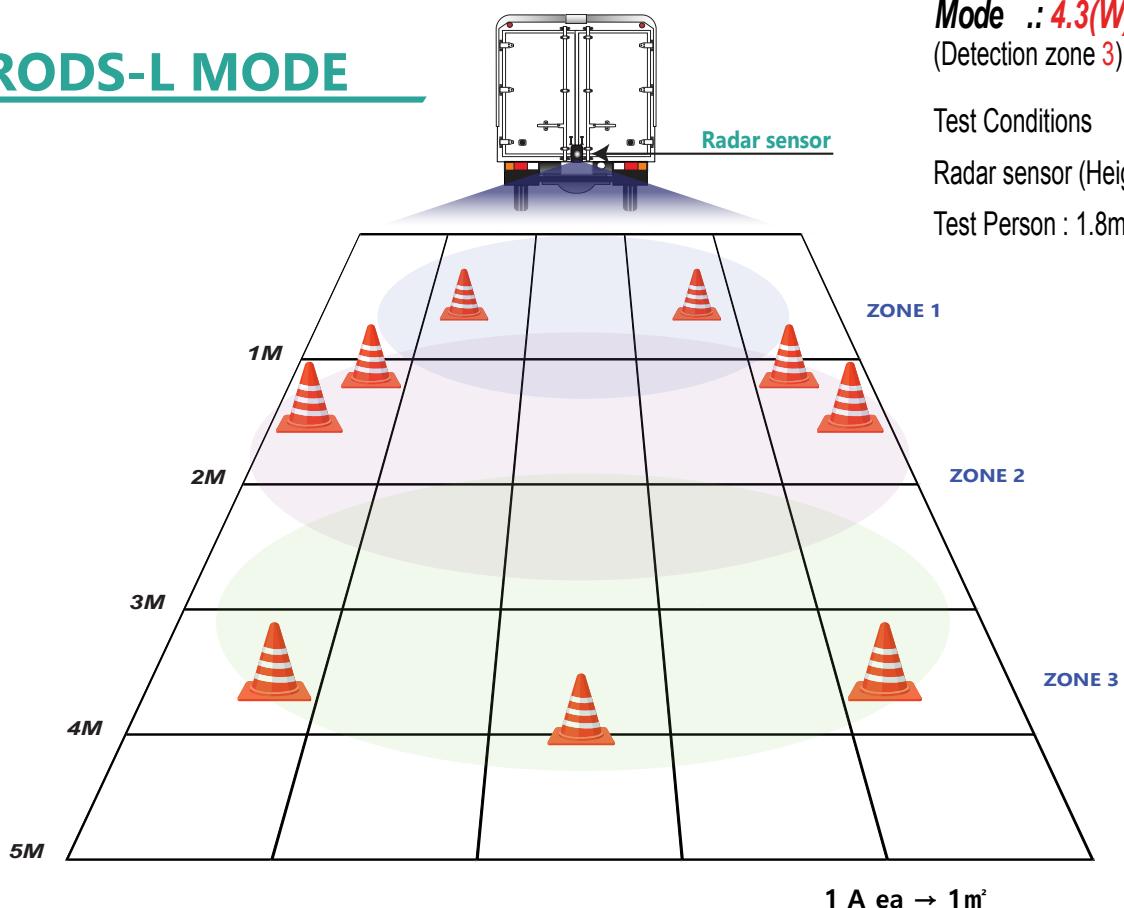
When led #1,#3 and #5 turn on, the system has malfunction. Please contact factory.  
When led #2 and #5 turn on, communication has error.

Before testing the system, make sure the sensors have a clear field of view. This is the most important when testing indoors because the system may detect walls, posts, etc. Verify the green LED on the display is illuminated and the system indicates. No objects are detected. (Indicator LEDs are off).

- Display units Technical Specification

<b>Detection Zone</b>	3 Zones
<b>Speaker</b>	3 x different volume level to be selected
<b>Operating Temp.</b>	-30°C ~ +70°C
<b>Cable Length</b>	0.7 Meter
<b>Connector</b>	4P Screw Lock type
<b>Housing Material</b>	Polycarbonate
<b>Dimension</b>	20(H) x 65(L) x 54(D) mm
<b>Weight</b>	220g with Bracket

## ◆ RODS-L MODE



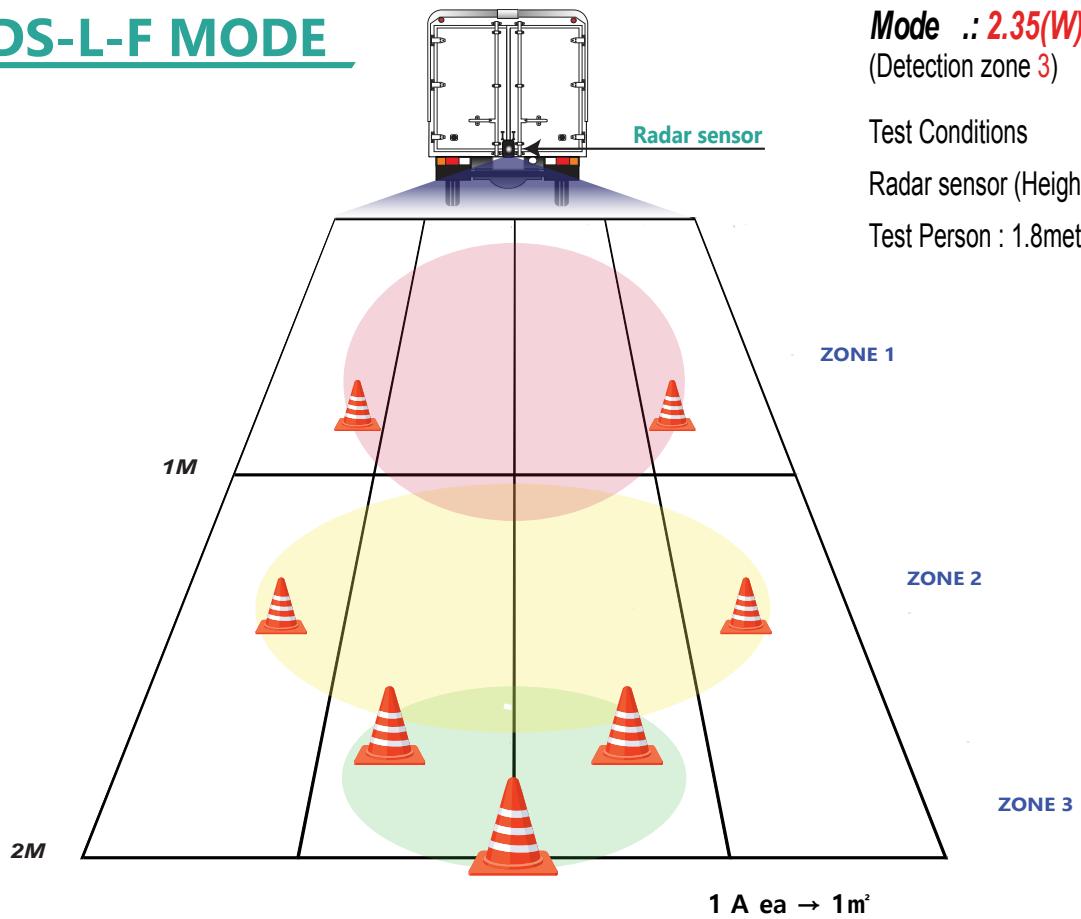
**Mode** .. :  $4.3(W) \times 4.0(L)$  meter  
(Detection zone 3)

Test Conditions

Radar sensor (Height 1.0 meter)

Test Person : 1.8meter tall.

## ◆ RODS-L-F MODE



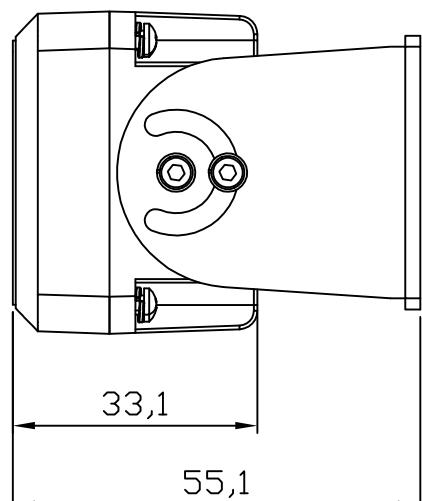
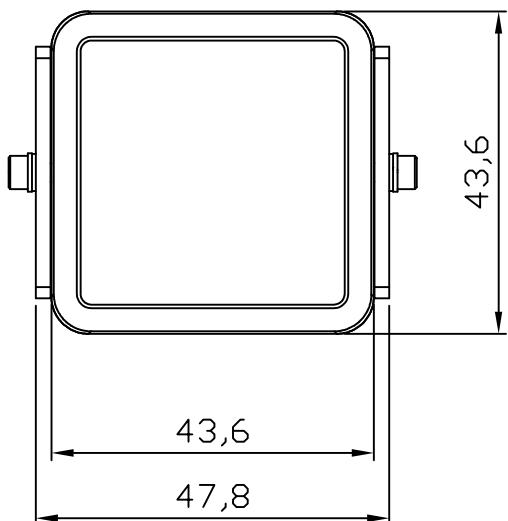
**Mode** .. :  $2.35(W) \times 2(L)$  meter  
(Detection zone 3)

Test Conditions

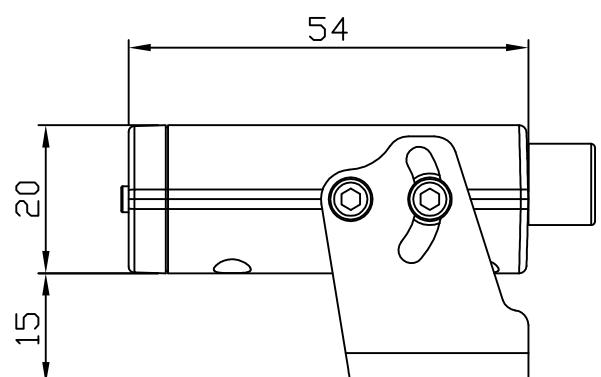
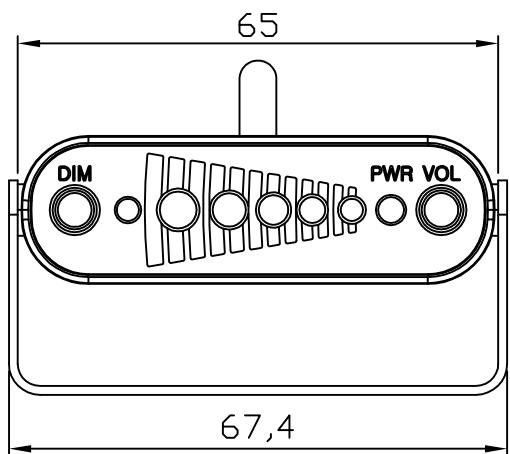
Radar sensor (Height 1.0 meter)

Test Person : 1.8meter tall.

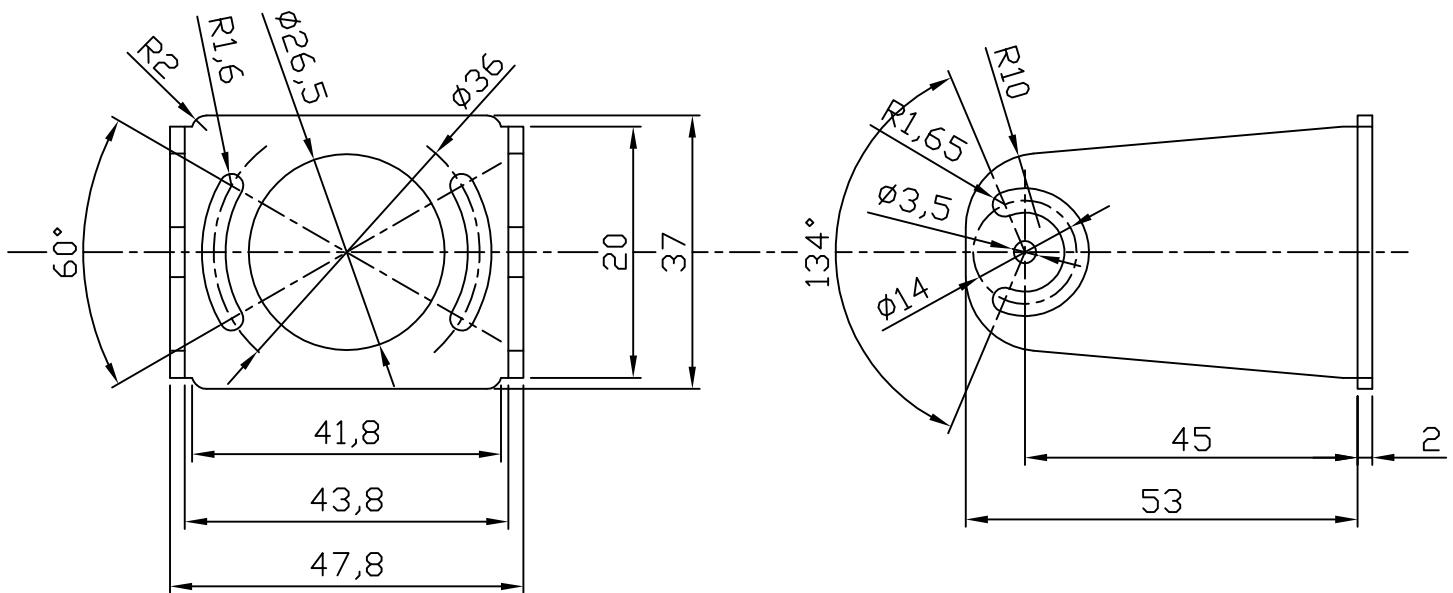
- Radar Sensor (mm)



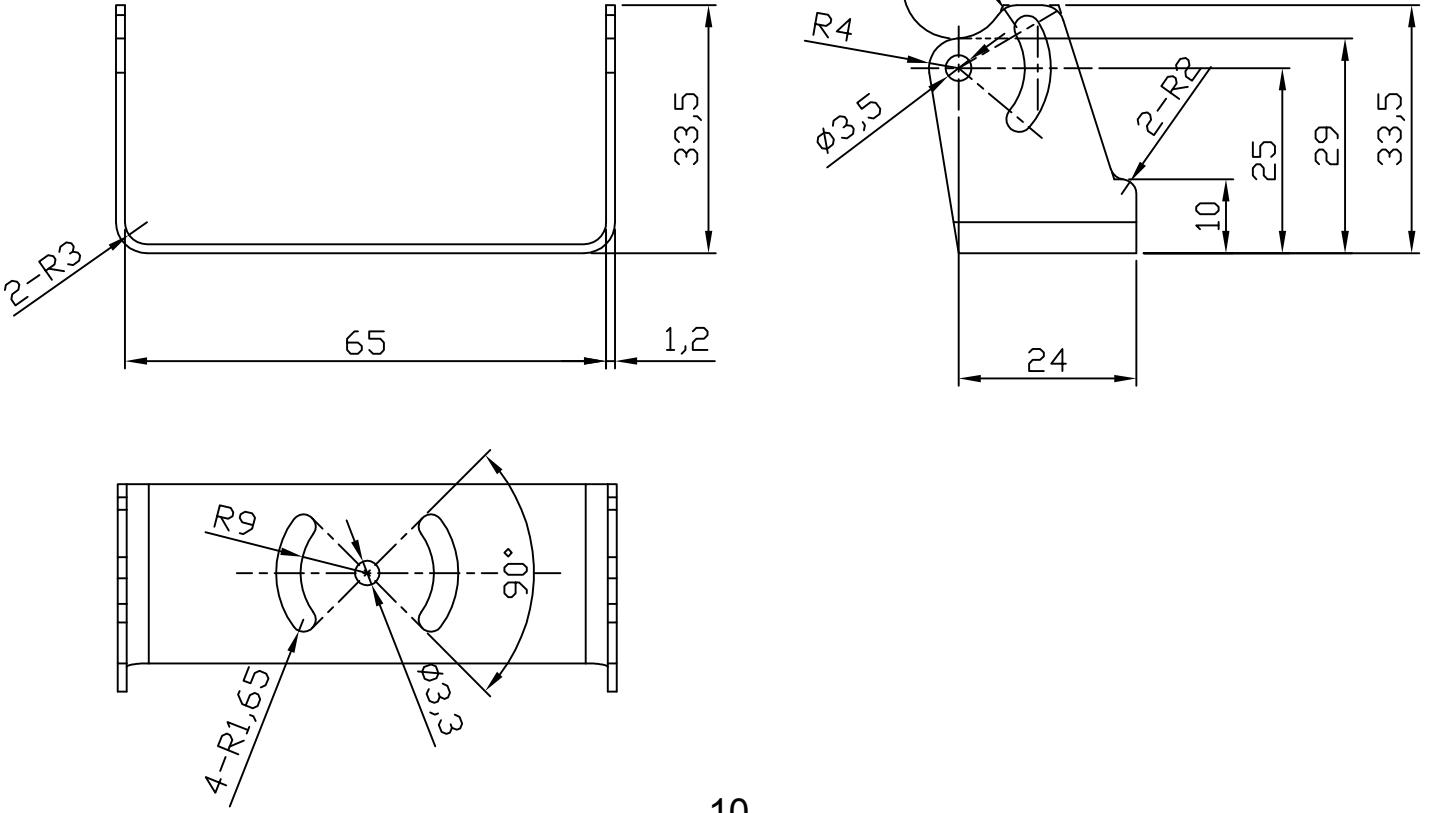
- Display units (mm)



• Radar Bracket (mm)



• Display Bracket (mm)





To reduce the risk of electric shock do not remove cover(or back)  
No user serviceable parts inside. Refer servicing to qualified service personnel.



The lightning flash with arrowhead symbol,within an equilateral triangle,is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Design and specification are subject to change without notice.

Developed and manufactured by Newest One Tech Co., Ltd



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