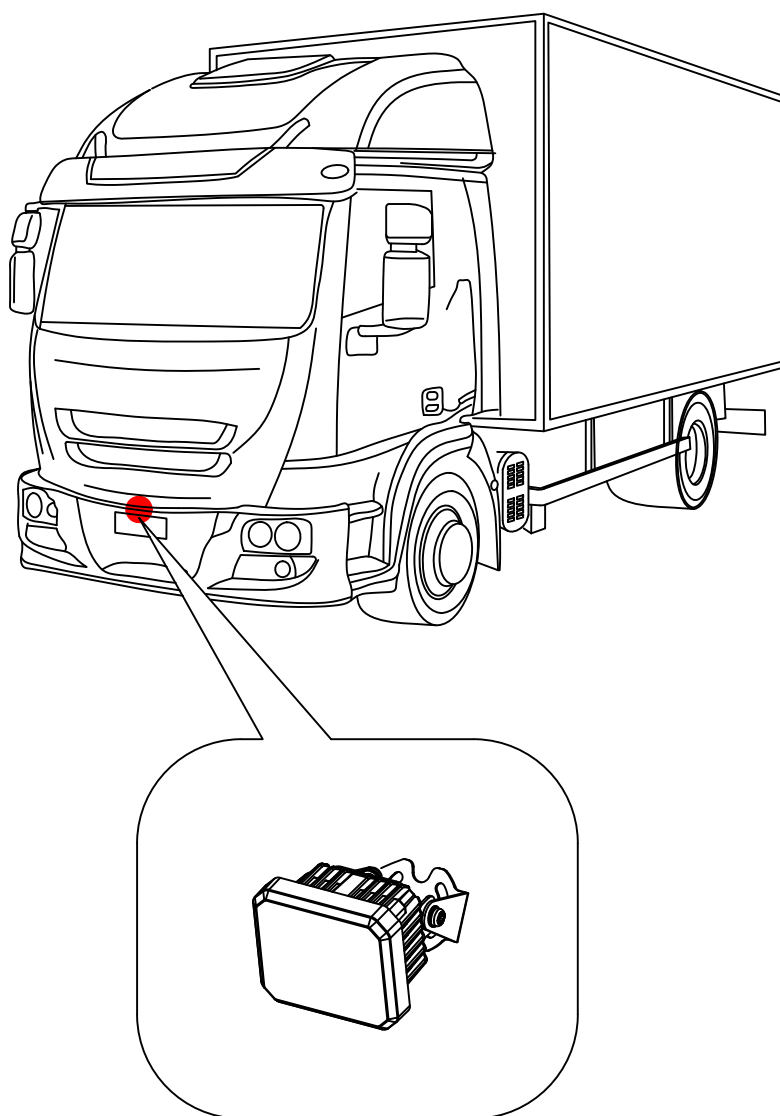


## **Multi-Functional Radar**



**For Bycles / Motor-Bikes (With IMU)**

**For Speed Over Ground Detection (With IMU)**

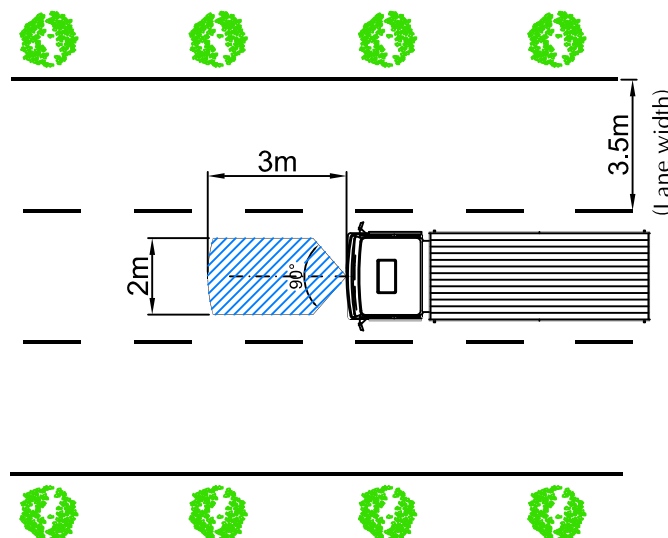
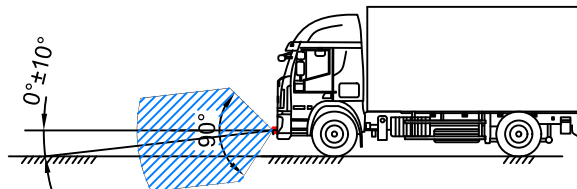
**For Small Trucks Front Detection (With IMU)**

Q Global Solutions (Xiamen) Electronics Corp.  
Floor 3~5th No. 195 Simingyuan, Tong'an Collective Industrial Park, Tong'an  
District, Xiamen, Fujian, China

## System Function

Function introduction:

1. Using RADAR to detect relative ground speed in order to acquire car's actual speed.
2. Speed detection area: 2m in width and 3m in length.
3. Speed detection range: From -100MPH to +100MPH.
4. Accuracy: 0.5mph.
5. Detection result is to be sent out by both CAN and/or UART.
6. **The built-in IMU module of the RADAR speed sensor can output the current movement status of the vehicle.**



## System Parameters

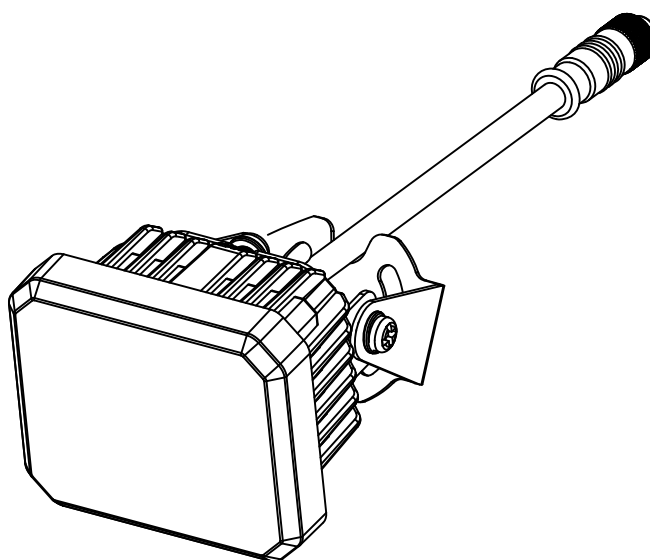
| NO | Characteristics                     |                  |
|----|-------------------------------------|------------------|
| 1  | Modulation mode                     | FMCW             |
| 2  | Frequency band                      | 77-81GHz         |
| 3  | Output power of Eu                  | 29.38 dBm        |
| 4  | Horizontal angle coverage           | 90°              |
| 5  | Pitch angle coverage                | ±45°             |
| 6  | Detect range                        | 35~40m           |
| 7  | Distance resolution                 | 0.250m           |
| 8  | Detect rccuracy                     | 0.301m           |
| 9  | Speed range                         | -100MPH~ +100MPH |
| 10 | Velocity resolution                 | 0.17m/s          |
| 11 | Speed measurement accuracy          | 0.33m/s          |
| 12 | Data update rate                    | 20Hz             |
| 13 | Maximum number of detection objects | 64               |

| NO | Basic parameters      |   |
|----|-----------------------|---|
| 1  | Working voltage       | 12/24V works normally, the light flashes. |
| 2  | Power dissipation     | ≤ 3W                                      |
| 3  | Unit size             | 4.4 x 3.7 x 2.8 cm                        |
| 4  | Weight                | 80g                                       |
| 5  | Storage temperature   | -40°C ~ 85°C                              |
| 6  | Operation temperature | -40°C ~ 85°C                              |
| 7  | Protection grade      | IP67                                      |

# **Multi-Functional Radar**

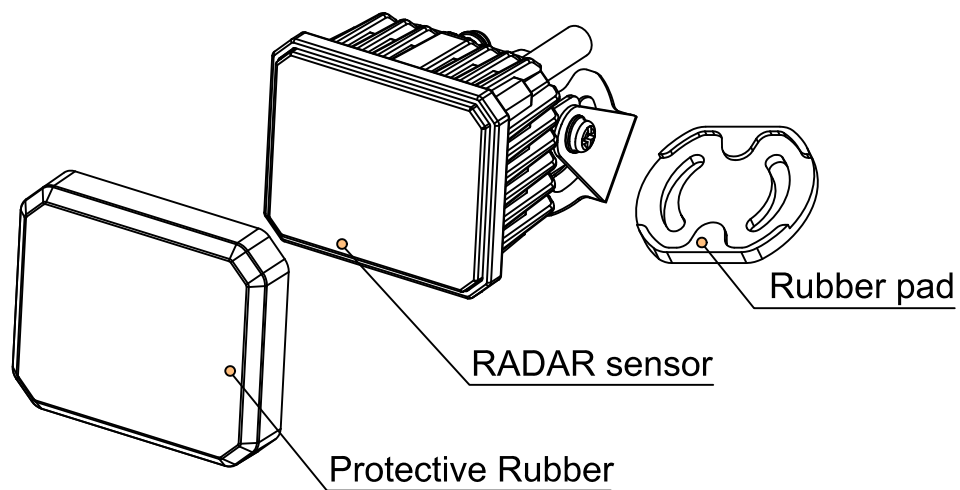
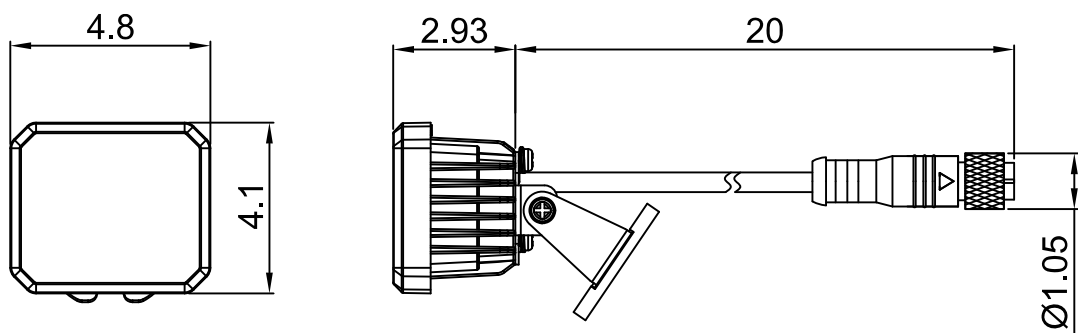
## **(With Built-In IMU)**

### **INSTALLATION**



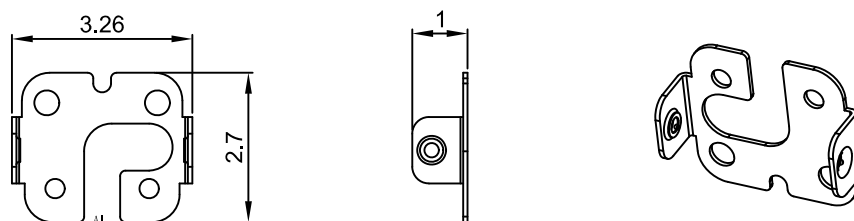
## **RADAR SET**

(Unit: cm)

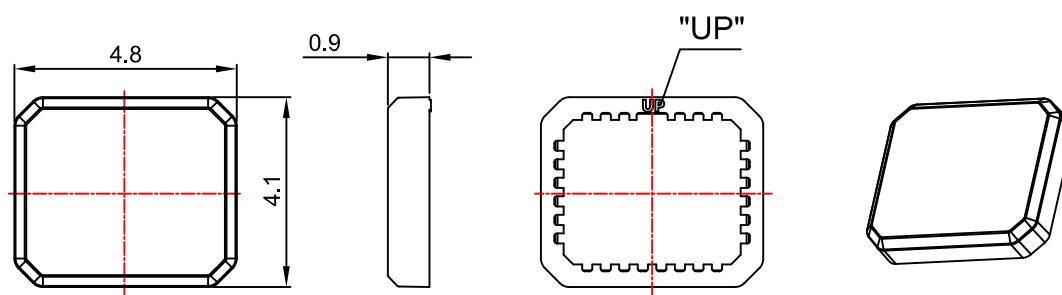


(Unit cm)

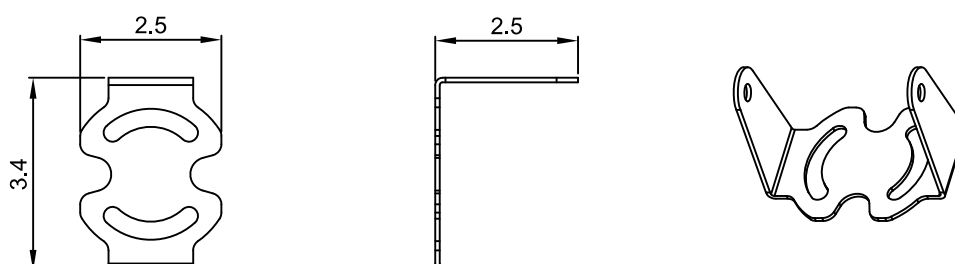
Bracket For Mounting On The RADAR sensor



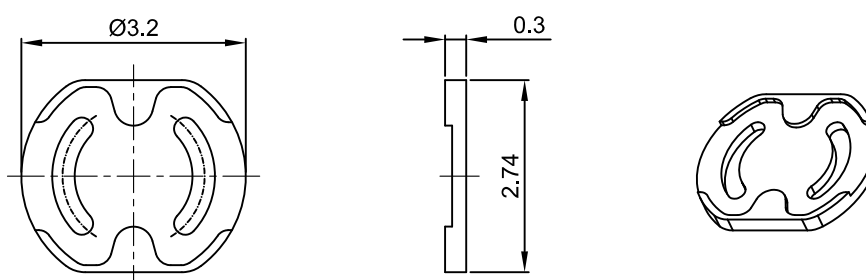
Protective Rubber -In the accessories package



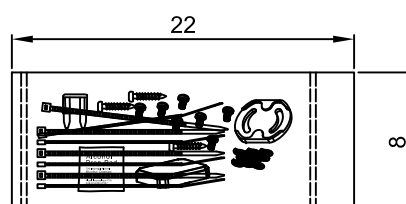
Bracket For Mounting On The Vehicle For Easy Angle Adjustment.



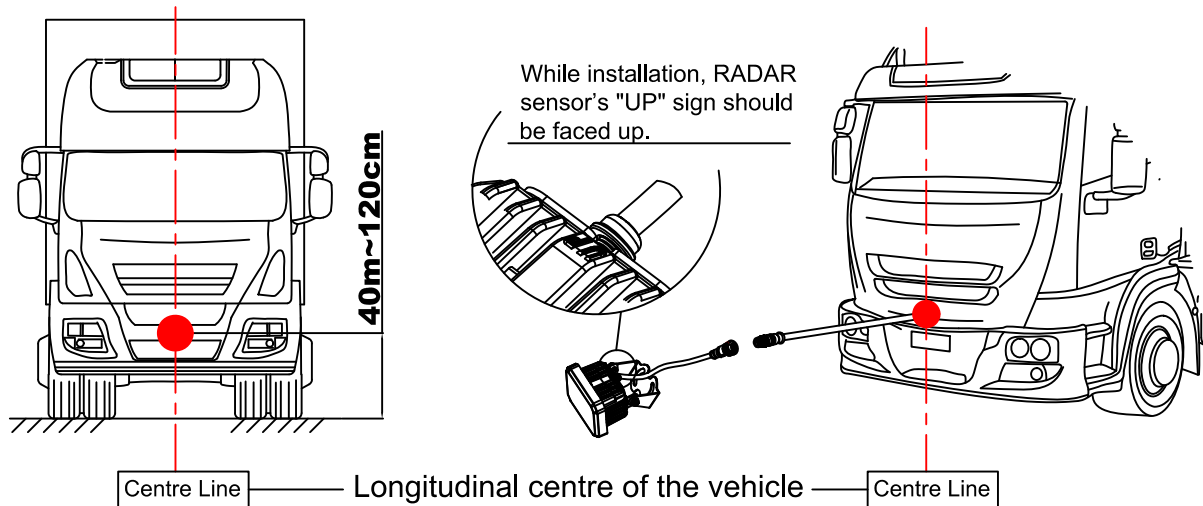
Rubber pad (Under the bracket ) -In the accessories package



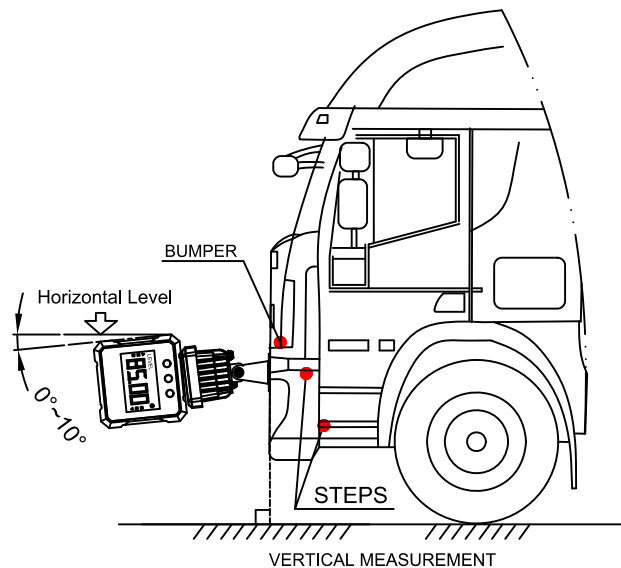
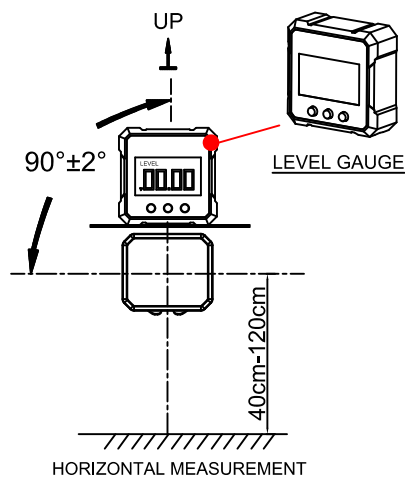
Accessories package



## INSTALLATION INSTRUCTIONS



The height of installation is set at 0.4m-1.2m.

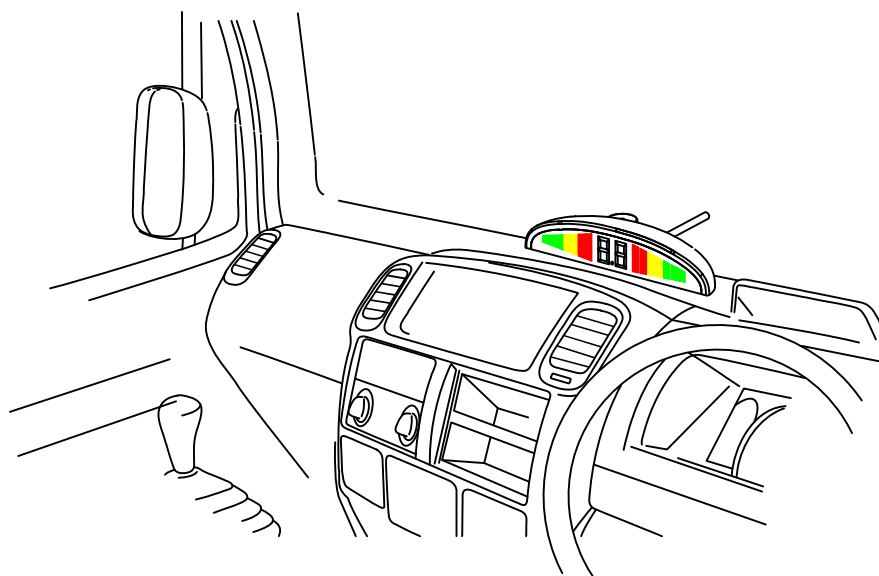


- Horizontal  $\pm 2$  degree tolerance is acceptable.
- It should be a bit downward in order to detect road surface in a proper manner. Downward angle should be within 0-10 degree for speed detection.
- The RADAR sensor's software can automatically calibrate and compensate the tilt angle after installation.

**! While installation, Make sure there's no obstacles around.**

# **INSTALLATION**

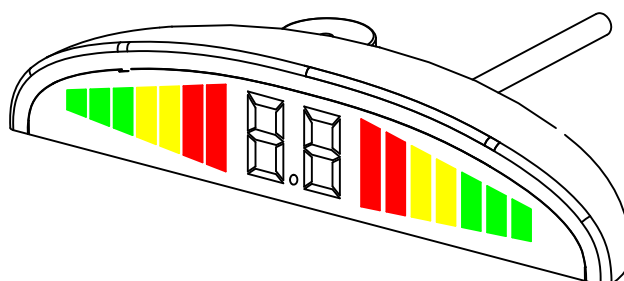
## **LED DISPLAY TO BE MOUNTED ON** **A SUITABLE AREA** **ON THE TOP OF DASHBOARD**



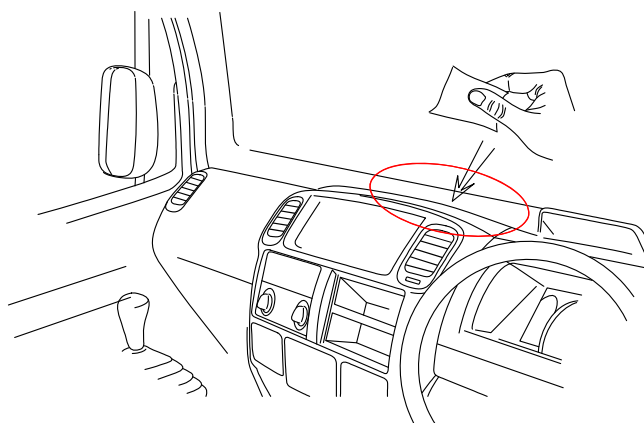


# **DISPLAY**

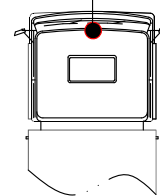
## **INSTALLATION PROCEDURE**



## **Display Installation Procedure**

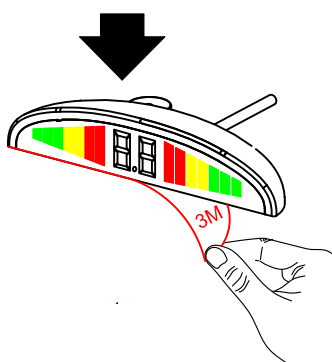


**Display**

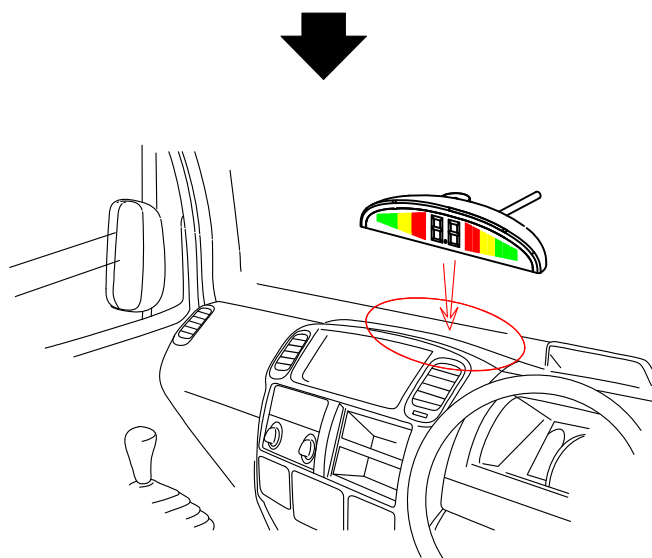


**INSTALLATION AT THE  
AREA OF DASHBOARD**

1. Wipe and clean the area of mounting with alcohol swab.

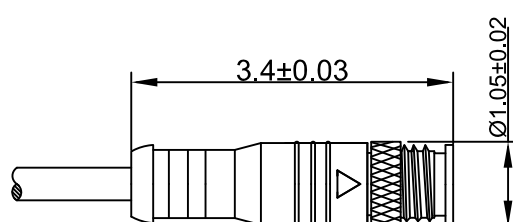
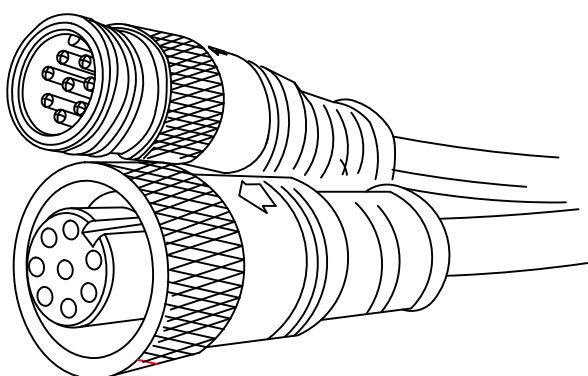


2. Tear off the release film on the bottom of Display.

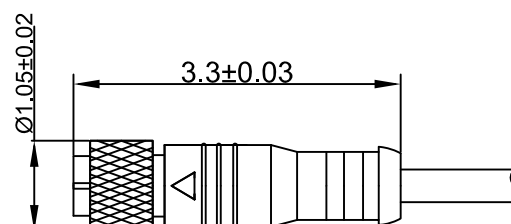


3. Stick the Display onto the recommended area.

## WIRING DIAGRAM



Female Connector







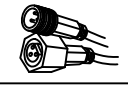

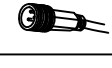



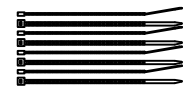

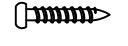




Male Connector

(Unit: cm)

[illegible]

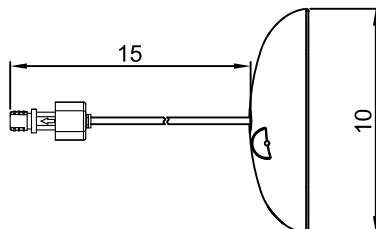
## System wiring diagram

| PARTS LIST          |   |  |       |
|---------------------|---|--|-------|
| NO.                 | DESIGNATION                                       | INSERT MAP   | COUNT |
| ①                   | Protective Rubber<br>(In the accessories package) |    | 1     |
| ②                   | Multi-Functional Radar                            |    | 1     |
| ③                   | Bracket<br>(For mounting on the RADAR sensor)     |    | 1     |
|                     | Bracket<br>(For Mounting On vehicle)              |    | 1     |
|                     | Rubber Pad<br>(In the accessories package)        |    | 1     |
| ④                   | Display   |    | 1     |
| ⑤                   | IMU extension cable (3m)                          |   | 1     |
| ⑥                   | System cable                                      |  | 1     |
| ⑦                   | Test cable  |  | 1     |
| Accessories package |   | (See table 1)  | 1     |

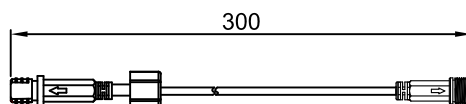
| (Table 1) Accessories package<br>- Parts list |  |    |
|---|--|----|
| Protective jacket (Rubber)                    |  | 1  |
| Cable ties                                    |  | 8  |
| Alcohol prep pad                              |  | 1  |
| Tapping screw (M3.5)                          |  | 3  |
| Fuse (2A 32V)                                 |   | 1  |
| Screw (M3)                                    |   | 7  |
| Spring washer                                 |   | 10 |
| Rubber pad                                    |  | 1  |

## CABLES (Unit: cm)

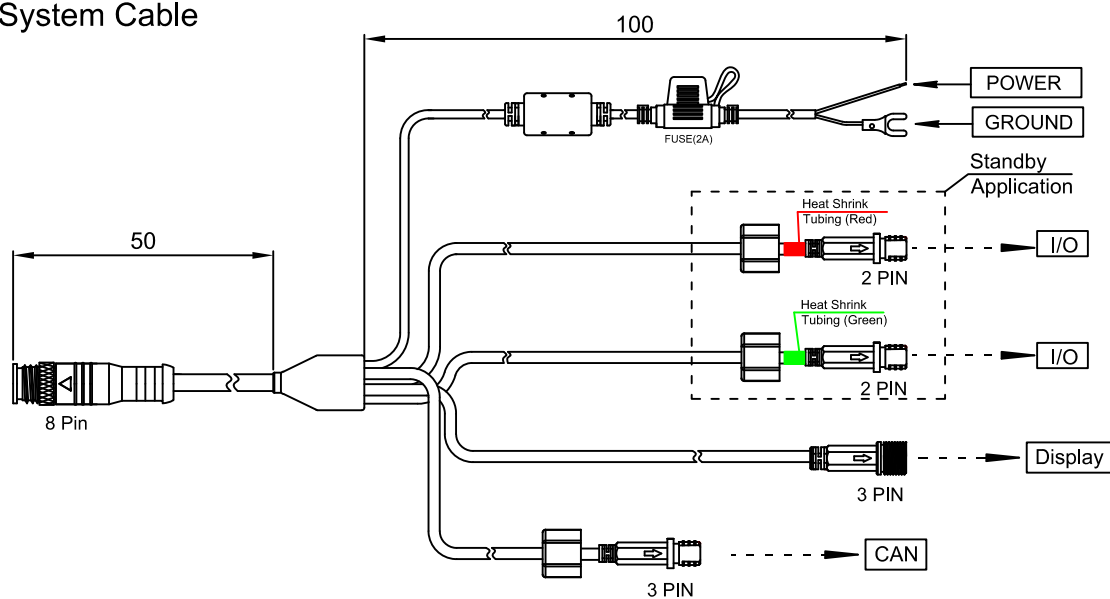
### ④ LED Display set



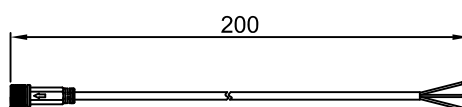
### ⑤ LED Display's extension cable (3m)



### ⑥ System Cable



### ⑦ CAN extended cable (2m)



## **CAN communication protocol**

Baud rate 500k (low in front)

ID 0X610 :

Data 4, Data 5: Speed (m/s)

Hex to Actual Value Formula:

Value= ((Data4+Data 5<<8)-0x4000)/100

Example: Data4: 252 Data5: 64

Value= ((252+64<<8)-0x4000)/100=((252+64\*256)-16384)/100=2.52 m/s

## **UART communication protocol**

Baud rate: 19200

Data 1: bit 4 decimal point display (0: not displayed, 1: display)

Data 2: Minimum distance

xxxx      xxxx

|

|

tens digit   single digit

Example: 0011 1001

|

|

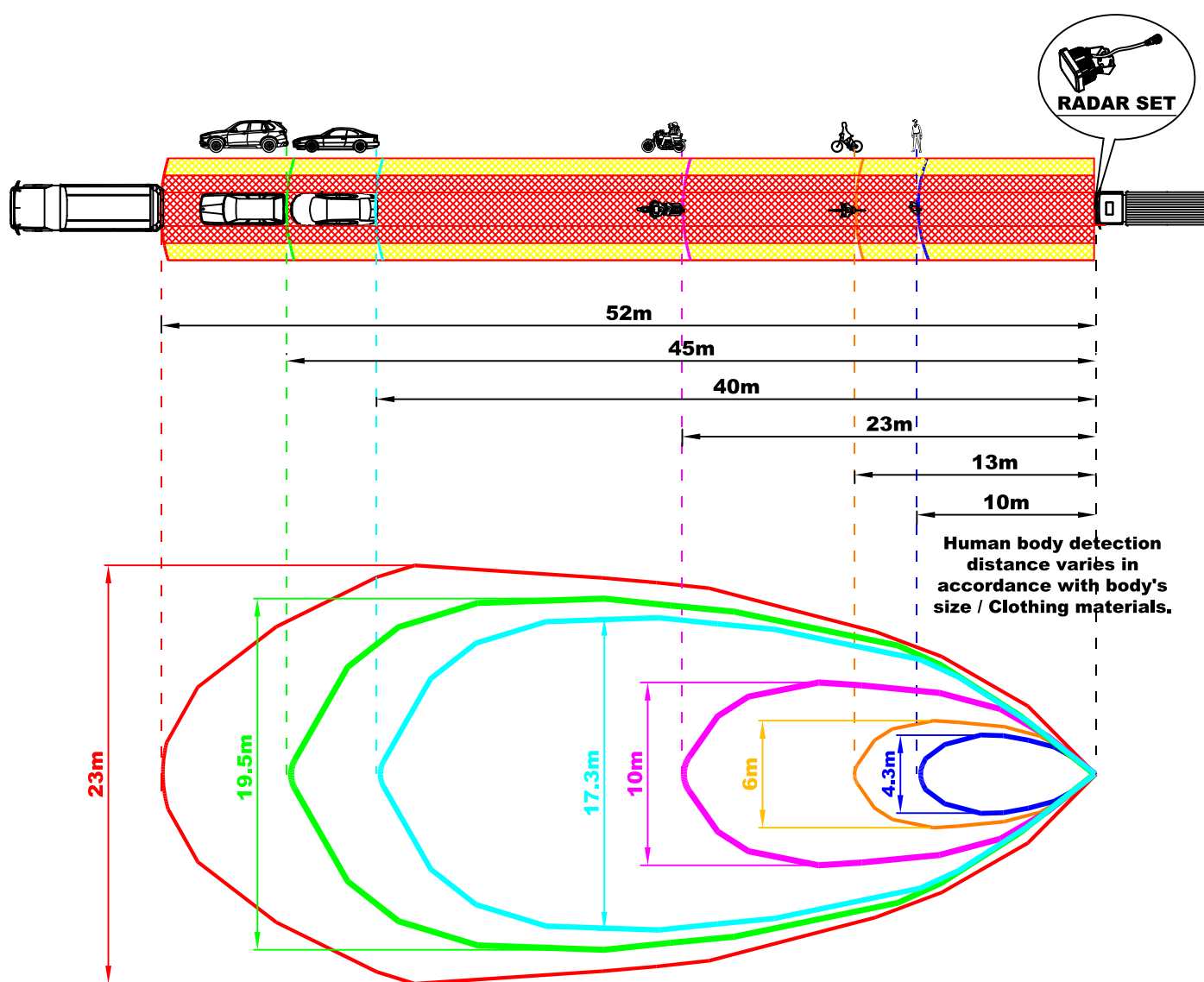
3

9

This is 39 mph

**Note: The unit of UART communication output and the unit of CAN communication output are mph and m/s.**

# Detection Distances of Dump Truck / SUV / Sedan / Motorbike / Cyclist / Human Being





## **FCC Warning**

**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.**

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

**This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.**

**This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.**

**However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:**

- Reorient or relocate the receiving antenna.**
- Increase the separation between the equipment and receiver.**
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.**
- Consult the dealer or an experienced radio/TV technician for help.**

**This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment .**

**This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.**

**This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.**