RADAR LEVEL SENSOR
AIRLS80080G

USER MANUAL

VER. 1.0

ARANKA

Catalogue

1. Warranty and service scope of radar level sensor

The warranty period of the radar level sensor is one year from the date of delivery, and the warranty period of repair and maintenance is half a year. This warranty is only limited to the users of the original buyer or the designated dealer, and does not apply to users who use it wrongly for human reasons, transform, neglect or damage it due to accidents and abnormal use.

For the faulty radar level sensor returned within the scope of warranty, free maintenance is provided. To obtain warranty service, please contact the after -sales service department and attach the fault description. With the permission of our company, send the radar sensor to the after-sales service department.

If the radar level sensor has expired the warranty period or it is confirmed that the failure is caused by misuse, modification, negligence, accident and abnormal conditions, the maintenance cost budget will be provided according to the relevant maintenance charge standard, and the maintenance will be carried out after it is approved. After the radar level sensor is repaired, it is sent back to the customer, and the customer needs to pay the maintenance and transportation costs. (Attachment: warranty)

2. Unpacking inspection and precautions

2.1 Unpacking inspection

Instruction manual

Certificate of conformity

Packing list

Radar Level Sensor

Check the name, model and other contents on the nameplate

Check whether the radar sensor housing is intact and observe

Check the random items against the packing list

Check whether the specifications, models and accessories are correct and complete according to the packing list of the radar level   sensor. If there is any problem, please contact the customer service center in time for replacement.

2.2 Precautions

Please read this manual before installing the radar level sensor. Modifications due to product upgrading are subject to change without notice. Please refer to the real object.

3.   Storage and transportation

3.1 Storage conditions

Temperature : - 40 ~ +60 ℃

Use the original packaging

3.2 Transport the product to the measuring place

Use the original packaging to transport the radar sensor to the measuring place

Collision, dampness and chemical erosion shall be prevented during transportation and storage

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4. Product introduction

4.1 **Product Overview**

76-81ghz frequency modulated continuous wave (FMCW) radar products (also known as millimeter wave radar) adopt the millimeter wave band with higher frequency than Ku band radar. They have important applications img↑range target detection, long-range imaging, multispectral imaging in strong smoke and dust environment, and can detect smaller targets than microwave radar and achieve more accurate positioning, with higher resolution and stronger confidentiality.

As a 78GHz band radar used in the field of industrial measurement, high -precision, non-contact level and liquid level measurement has incomparable advantages over other ordinary microwave pulse radars and guided wave radars. With extremely narrow beam and penetration ability, it can better adapt to ultra complex working conditions without weakening the measurement performance.

4.2 Technical parameters

Radar Level	Two wire system
Max range	8m、15m
Error	±1‰FS、±2‰FS、±5‰FS
Migration	±9.9m
Signal output	4～20mA/Modbus
Power supply	DC 24V（22V~30V）
Ambient temperature	-20℃～+70℃
Ambient humidity	（0%～95%）RH
Protection	IP67
Display	Mobile Phone APP
Weight	0.35kgs
Sizes	■76mm×107mm

4.3 Application

4.3.1 Measured medium

In general, the dielectric constant of the measured medium is required to be greater than 2, so that it can have a good reflection cross section

4.3.2 Ambient temperature of radar level sensor

The ambient temperature range of radar level sensor   is: -20 ℃+70 ℃.I n areas with strong sunlight, it is recommended to install the instrument in a cool place or use a sunshade, which can not only avoid the excessive temperature in the instrument caused by exposure to the sun, but also provide good ventilation and heat dissipation.
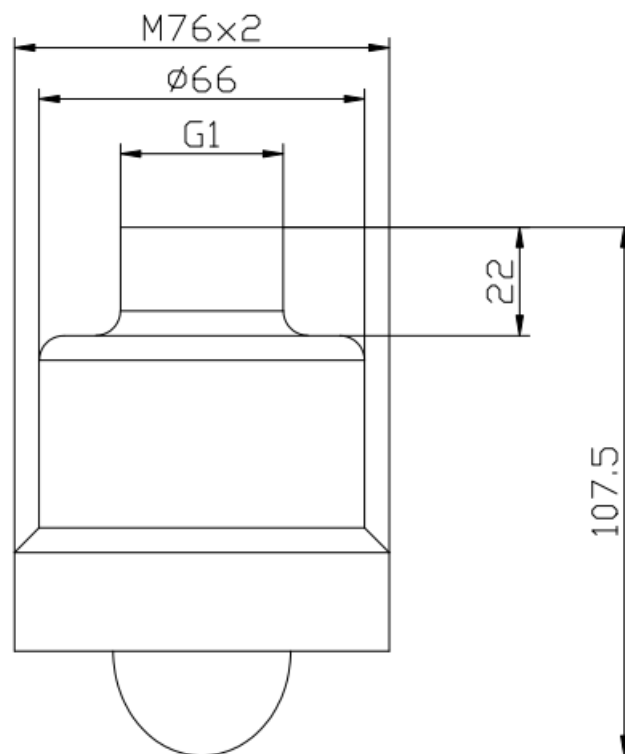
4.3.3 Protection grade

Waterproof and dustproof grade: IP67

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5. Outline structure of radar level sensor

5.1 Outline structure diagram

Diagram1

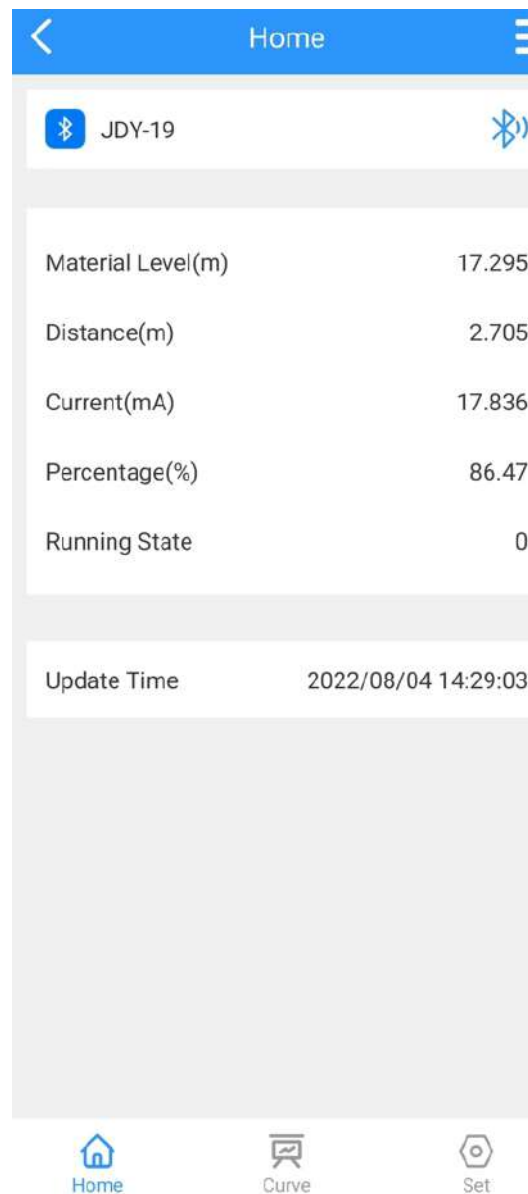P1 diagram for sizes

6. Terminal block of radar level sensor

The radar level ga sensor leads out two power lines, the red one is connected to the positive pole of the power supply, and the blue one is connected to the negative pole of the power supply.

Interface description

Lead wire	Explain
red (+)	DC24V Positive of power supply
blue (-)	DC24V Negative of power supply

7.   Description of radar commissioning parameters

7.1 Radar level sensor mobile app main interface

Home

JDY-19

Material Level(m)	17.295
Distance(m)	2.705
Current(mA)	17.836
Percentage(%)	86.47
Running State	0

Update Time	2022/08/04 14:29:03

Home   Curve   Set

P2 APP main interface

7.2 Waveform interface
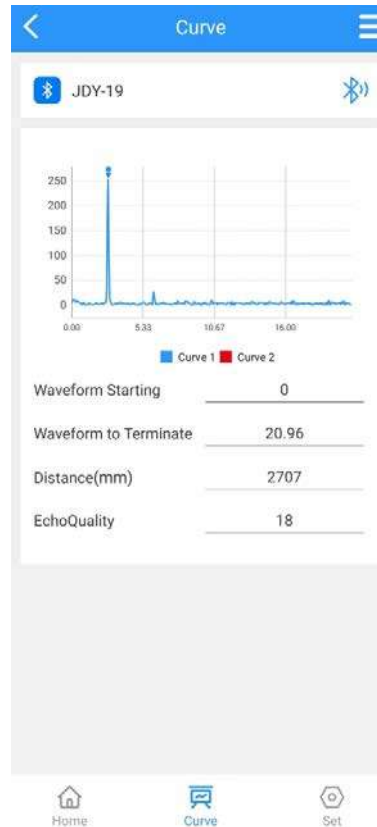
P3 waveform interface

7.3 **Radar menu**

7.3.1User menu

	Measure range
	Migration
	4mA position
	20mA position
Basic parameters	Blind zone
	Damping time
	Device address
	Baud rate
	Backups
	Restore

USER MANUAL   MODEL : AIRLS80080G   ARANKA INSTRUMENTS LLP

7.3.2 Setting range and definition of basic parameters

Basic settings :

Range(500~50000)mm : It depends on the working condition; Indicates the longest distance that the level sensor can measure.

Migration (-9999~9999) mm : It depends on the specific working conditions

4mA Position:4mA Level corresponding to current output , Unit mm

20mA Position : 20mA Level corresponding to current output , Unit mm

Blind zone : The range is 200mm to the measuring range, which is set according to the specific working conditions

Display type : level value / space distance value

Damping time : In order to improve the stability of the measured output value, a larger [damping time] can be set to achieve the stability of the measured value and increase the anti-interference ability. For example, when the damping time is 10, the measured object level changes step at time t, and the measured output value follows the actual position of the measured object after 10 seconds.

Device address : During RS-485 communication, the slave address is the local address (value range: 1-99, default value: 1).

Baud rate : The baud rate of this device during RS-485 communication is 9600 by default.

Backup user parameters:

After the working parameters are backed up, if you forget the original working parameters after manually modifying the parameters, you can "restore" them in the basic settings.

Restore user parameters:

Used to restore the backed up user parameters.

8.　Radar installation and commissioning

## 8.1 **Preparations before installation**

Understand the installation location, structure, measuring range

Required tools: DC 24V power supply, etc

After the tools are ready, unpack the products and check the packing list to determine whether the materials are complete.
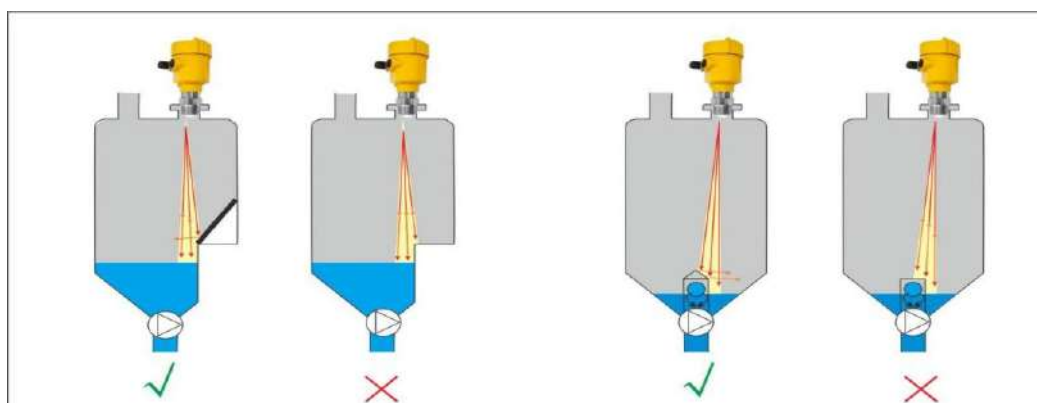
8.2 **Selection of radar installation position**

Avoid installing the instrument in the center or close to the edge of the container, otherwise it is likely to produce wrong readings.
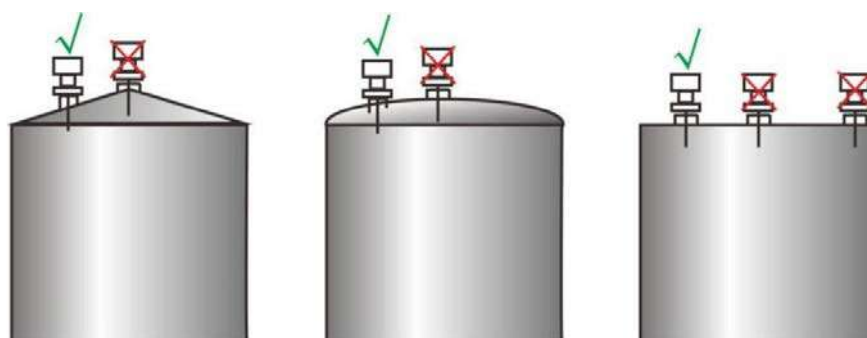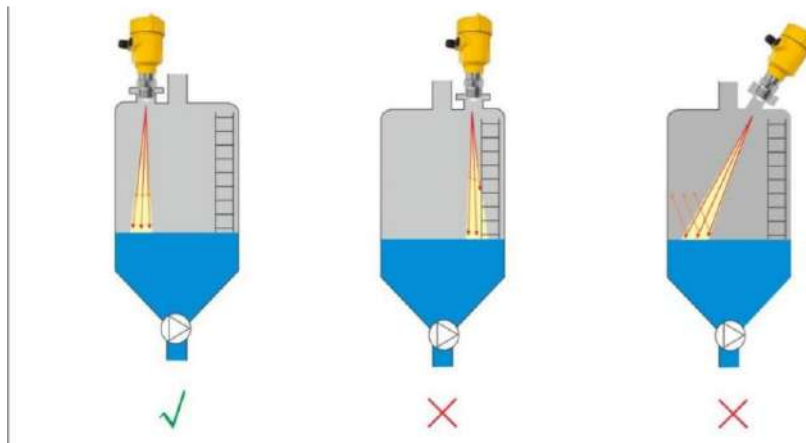

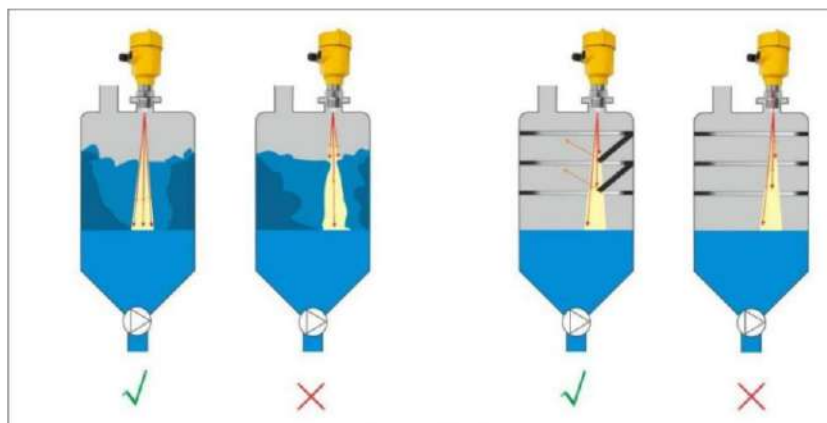P4 installation position

Avoid false echo diagram

P5 False echo

ladder and grid container treatment

P6 Ladder and Grid container

Wall hanging and grid container treatment

P7Wall hanging and Grid container
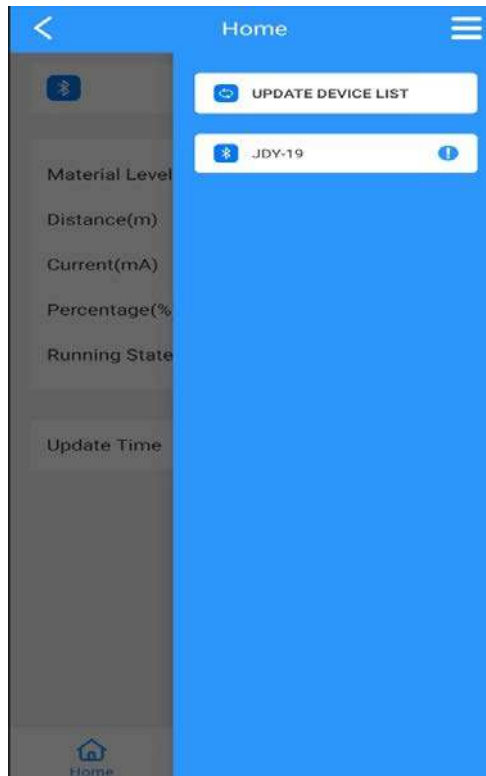
8.3 **Software configuration description**

I nstrument connection

Connect the power line to the DC 24V terminal of the instrument; Pay attention to the positive and negative poles, and do not connect them reversely.
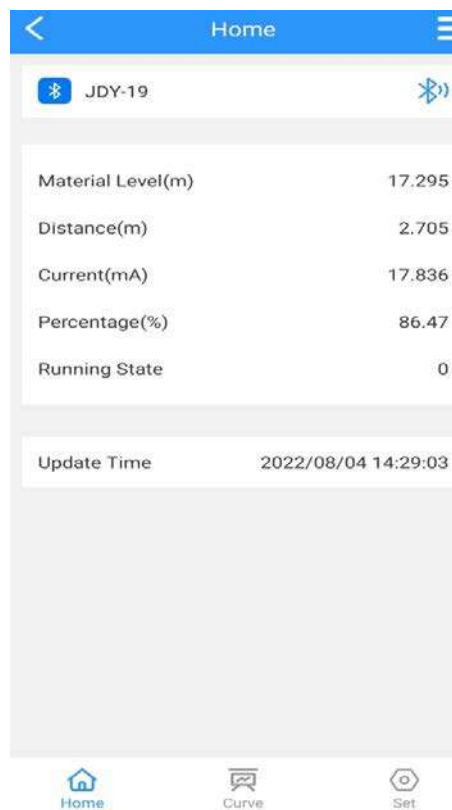
S et instrument parameters

Open the mobile app to display the device connection interface. As shown in the following figure :

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Directly click the device name to be set to enter the main interface, as shown in the following figure.

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USER MANUAL   **MODEL : AIRLS80080G**   **ARANKA INSTRUMENTS LLP**
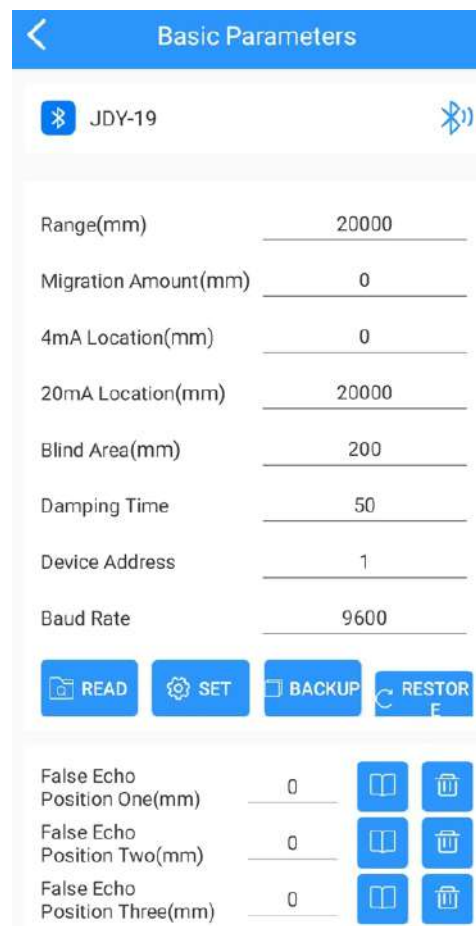
Click the "curve" or "setting" button at the bottom of the screen to enter the echo curve interface and parameter setting interface respectively. Click the "setting" button here to enter the parameter setting interface, as shown in the following figure.
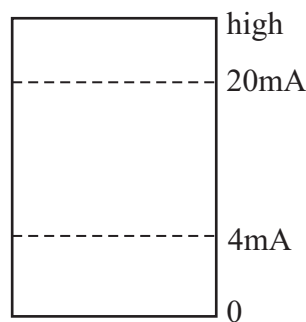

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Click "basic parameters" to enter the basic setting interface. As shown in the following figure.

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Set the "range" according to the working condition, directly click the following digital input box to modify, and the other parameters are modified in the sa   me way. After the parameters are modified, you need to click the "set" button to set it before it takes effect. You can click the "read" button to refresh the parameters.

4mA position and 20mA position must be within the range. The relationship between 4mA position, 20mA position and range is shown in the following figure:

```
┌──────────────────┐ high
│                  │
│- - - - - - - - - │ 20mA
│                  │
│                  │
│                  │
│- - - - - - - - - │ 4mA
│                  │
└──────────────────┘ 0
```

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As shown in the figure, when the level is lower than 4mA, the main interface displays the level of 0, and when the level is higher than 20mA, the main interface displays the level value of 20mA.

9.   Maintenance and repair

Pay attention to keeping the radar sensor clean, and try to be waterproof, moisture-proof, corrosion-proof, and avoid being violently collided and hit by other objects

Avoid direct sunlight on the main body of the radar   sensor, keep away from heat sources and pay attention to ventilation. If the ambient temperature exceeds the rated temperature, corresponding cooling protection measures should be taken.

When the ambient temperature is too low, the instrument protection box or other protective devices can be used for antifreeze protection, and pay attention to keeping the radar dry.

Radar sensor should be detected regularly. (the detection cycle is determined by the user according to the specific situation)

10. Trouble Shooting

Trouble	Cause	Solution
No display	Power supply error	Check whether the DC 24V voltage and current meet the requirements.
	Wiring error	Check whether the wiring is correct.
Unstable indication	Too much fluctuation	Change the installation position of the radar or reduce the fluctuation of the object to be measured.
	Weak echo	Try angle calibration or rotate the radar installation position.
	Strong electromagnetic interference	Ground or shield the radar sensor.