

JJY-YLD128D-W-32

User Manual



Version History		
Date	Change Description	Remarks
2025-08-7	V1.0	

1. Product Introduction

The 80G radar level meter supports RS485/TTL/4-20mA applications. The maximum measuring range reaches 5m, with a minimum blind zone of 2cm. Thanks to its higher operating frequency and shorter wavelength, it is especially suitable for solid applications. Its lens-based electromagnetic wave transmission and reception offers unique advantages in high-dust and harsh temperature environments (up to +75 °C). The meter uses a threaded mounting method, making installation quick and easy.

Main advantages:

- Based on a domestic CMOS millimeter-wave RF chip, delivering a more compact RF architecture, higher signal-to-noise ratio, and a smaller blind zone.
- A 5GHz modulation bandwidth provides higher measurement resolution and accuracy.
- The narrowest $\pm 3^\circ$ antenna beam angle reduces the impact of environmental interference on the meter, making installation more convenient.
- The shorter wavelength offers better emission characteristics on solid surfaces, eliminating the need for a special universal flange for aiming.

2. Technical Specifications

Device Model	128D-W-32-18D	128D-W-32-12D
Communication Type	RS485	4-20mA / 2-wire
Average Current	10mA/12V	3.6mA/20V
Voltage Range	DC 9-26V	20-26V
Sampling Frequency	200ms	
Operating Frequency	80GHz	
Measurement Accuracy	$\pm 3\text{mm}$	
Measurement Resolution	1mm	
Beam Angle	$\pm 3^\circ$	
Measuring Range	0.05~2m Blind zone distance 0.05m	
Protection Rating	IP66	
Product Dimensions	38*86.5mm	
Opening Size	38.5mm to 42mm	
Mounting Method	Thread M38 $\times$ 1.5 (pitch)	
Operating Humidity	0-95%	
Operating Temperature	-40°C - 75°C	
Housing Material	PTFE / 304 Stainless Steel	
Cable Length	485, 4-20mA 2-wire, 0.5m	
Package Dimensions & Weight	80*80*100MM/320 克	

3.Product Dimension Drawing

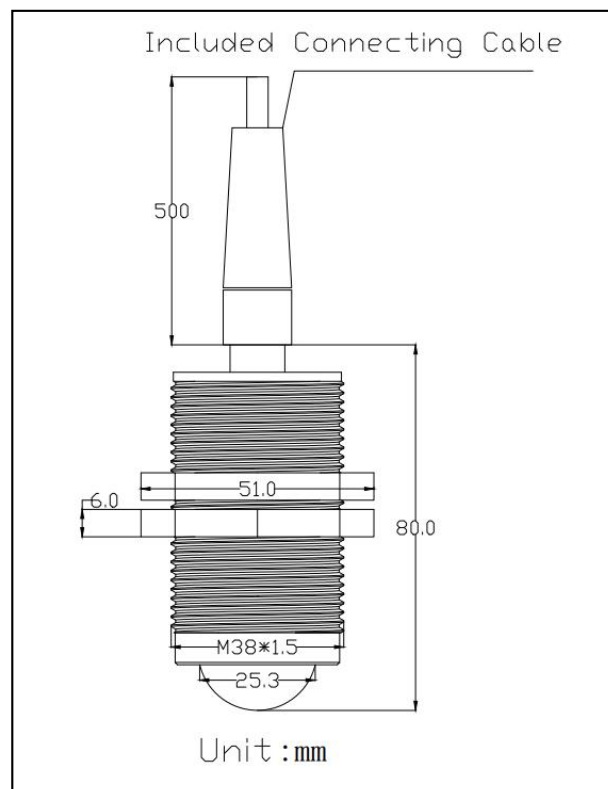


Fig. 3-1 Product Dimension Drawing

4. Wiring Instructions

4.1 Wiring Diagram for RS485 Communication Products



Fig. 4-1 RS485 Wiring Schematic

Red: DC (9-26V power supply) Green: 485-B Yellow: 485-A Black: GND.

4.2 Analog 4-20mA 2-wire Wiring Diagram

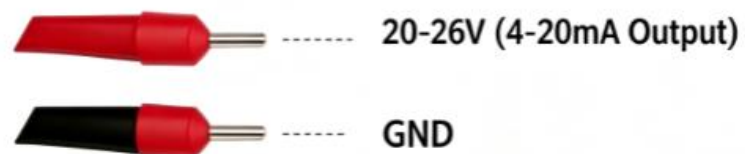


Fig. 4-2 2-wire Wiring Schematic

Red: DC (20-26V power supply) Black: GND.

5. Installation Requirements (Must Be Followed)

Vertical installation: Keep the antenna surface as perpendicular as possible to the measured material or water surface to ensure the strongest echo.

Away from the feed inlet: The device must not be aimed at the feed inlet to avoid interference from falling material.

No obstacles within the beam: Ensure there are no obstacles such as ladders, steps, or beams within the beam angle ($\pm 3^\circ$).

Conical vessels: Try to aim the beam directly at the lowest point of the tank bottom; avoid oblique incidence that causes inaccurate bottom measurement.

5.1 Installation Example — Sealed Tank Scenario

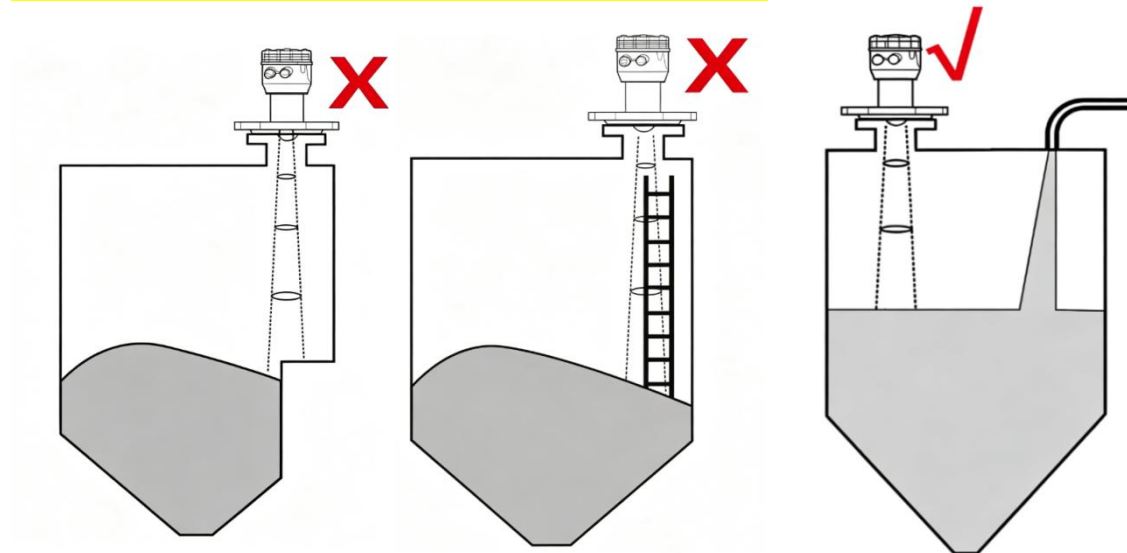


Fig. 5-1 Installation Example for Sealed Scenario

- The radar installation position must keep the beam completely clear of ladders and steps, and away from the feed and material-drop zone, ensuring no interference below.

10cm away from tank wall

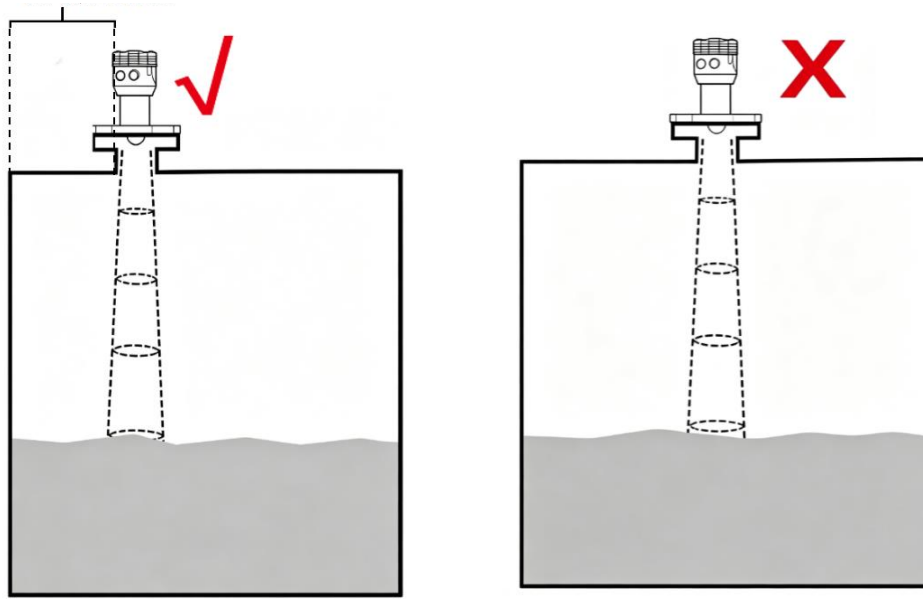


Fig. 5-2 Installation Example for Sealed Scenario

- It is recommended to keep the radar installation position about 10cm from the tank wall (the wall must be smooth). Installing at the center of the tank tends to cause multiple internal reflections, resulting in secondary echo interference.

5.2 Installation Example — Open Scenario

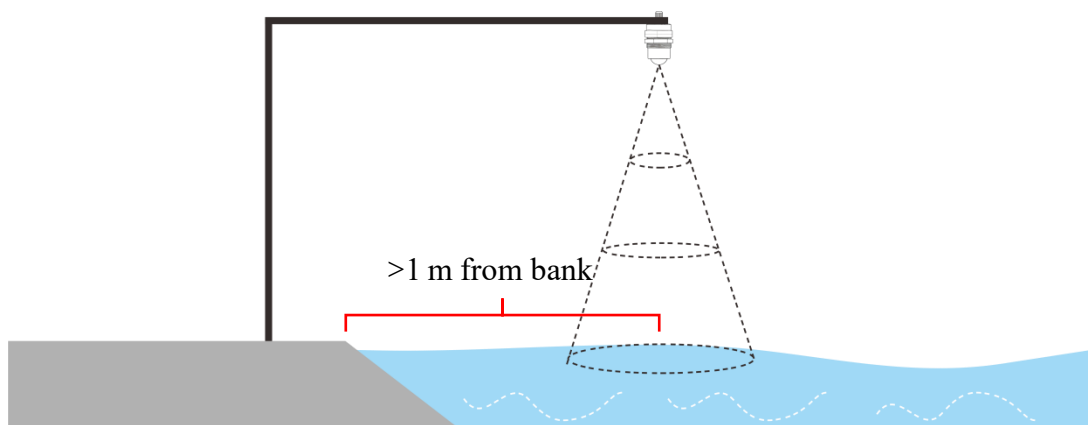


Fig. 5-3 Installation Example for Open Scenario

- The radar installation position should be at least 1m from the bank, and the mounting point should avoid areas with large waves or heavy surging, as large waves cause echo distortion and increased measurement error.

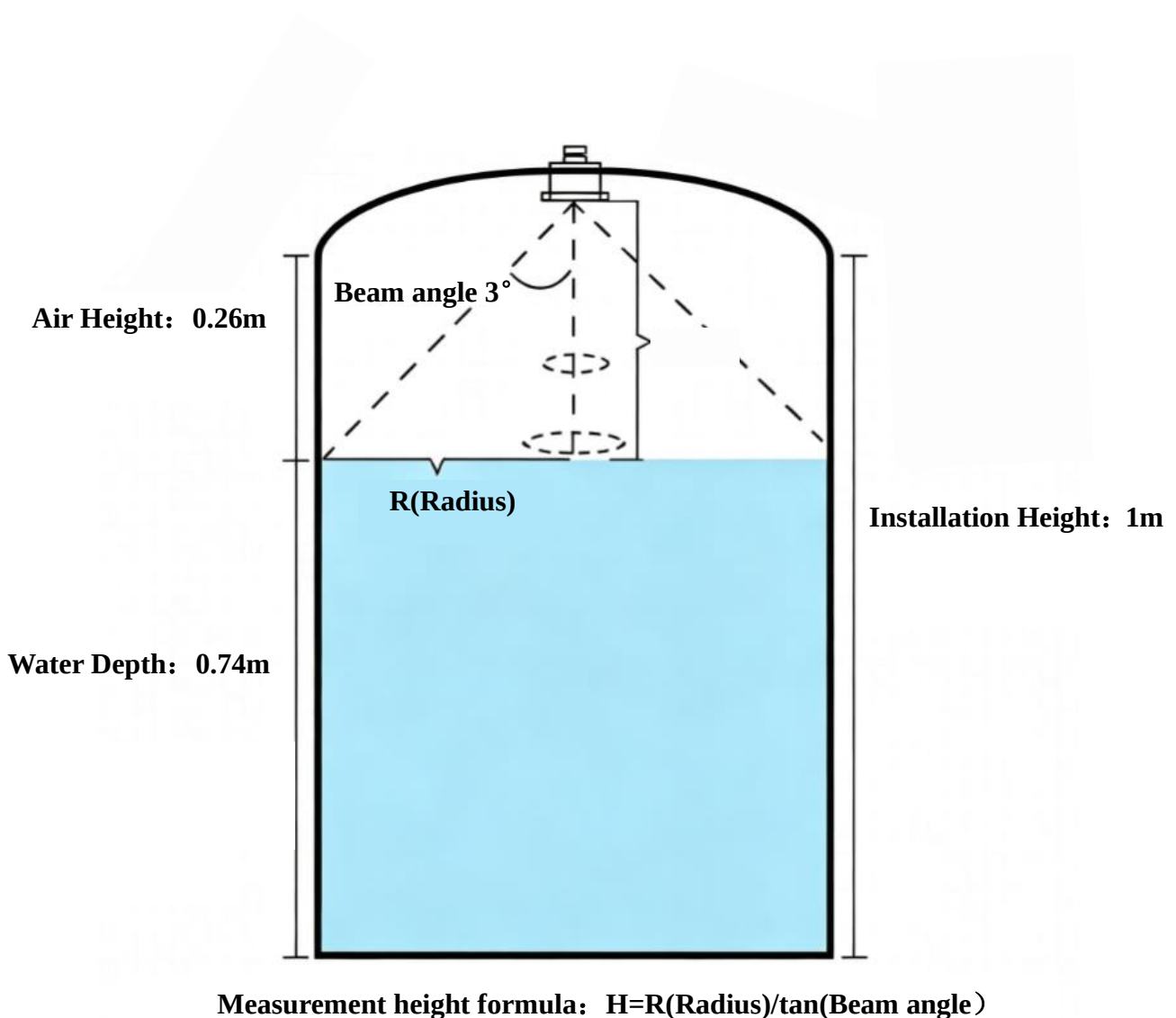
- Keep away from bank obstacles, foam, and floating objects to avoid false echoes.

6. Terminology Diagram

Air Height: distance from the sensor probe to the liquid surface / measured surface

Water Depth: distance from the tank bottom / water bottom to the liquid surface

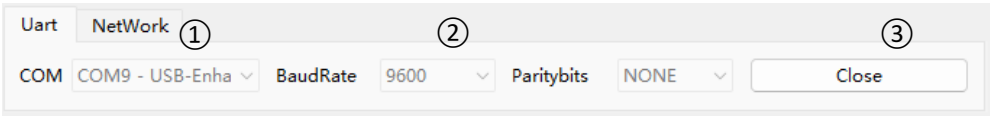
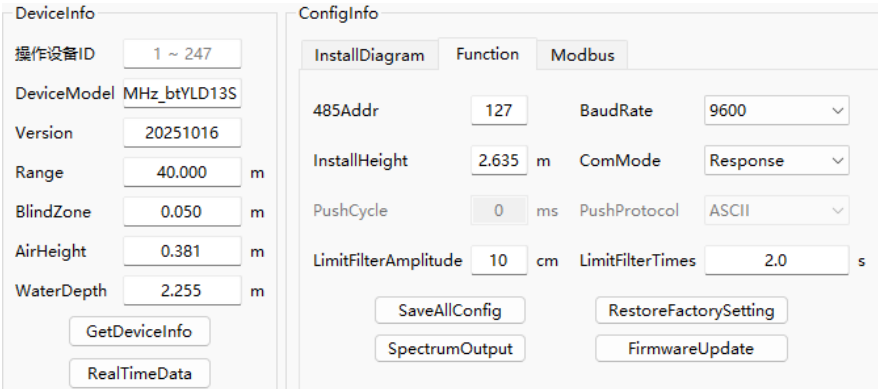
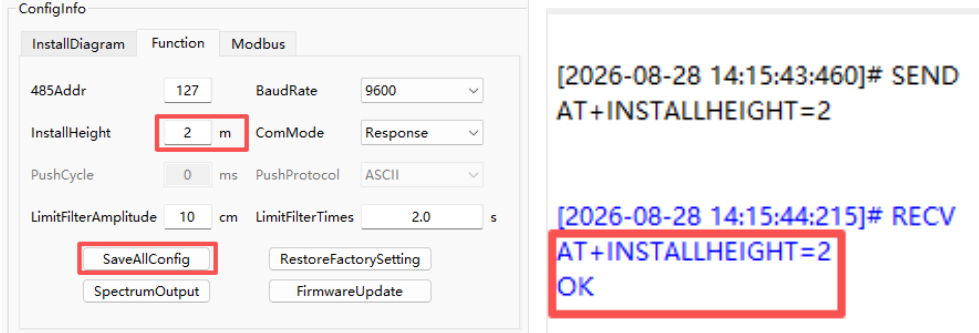
Installation Height: distance from the sensor probe to the tank bottom / water bottom;

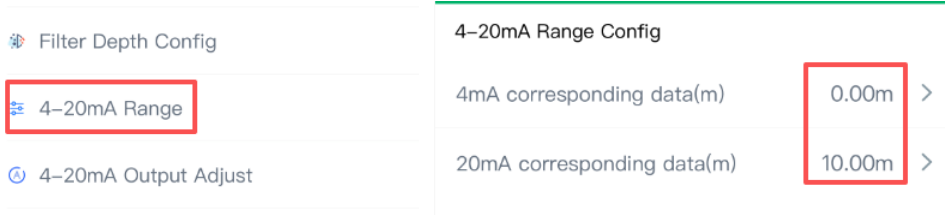


Example: $H = R / \tan 3^\circ$

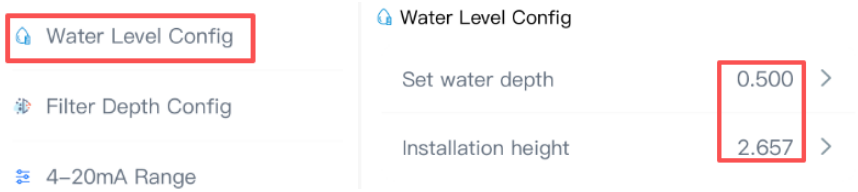
Fig. 6-1 Beam Parameter Principle Schematic

7. PC Software Quick Configuration

Step 1	Power-on confirmation: For radar using 485 communication, connect DC 9-26V; for radar using 2-wire communication, connect DC 20-26V.
Step 2	Set the installation height on the host computer: (1) Open the host computer software and enter the device communication configuration interface. Select the USB serial port currently connected to the radar (if no port appears, check the driver); the default baud rate is 9600, then complete the hardware connection.  (2) Click "Detect Current Device". When the host computer displays the radar information, communication with the radar is successful.  (3) Configure the installation height parameter. As shown, set the installation height to 2m, click "Save All Configurations", and upon the reply "ok" the parameter is set successfully. Installation Height = Water Depth + Air Height. Installation Height: distance from the tank bottom to the sensor probe. Real-time Air Height: distance from the sensor probe to the water surface.  TTL and 485 devices only need the above configuration; 4-20mA devices must complete the following steps:

Step 3	Configure the 4-20mA corresponding range: (1) Search for the "宇宙物联" mini-program in WeChat, enable Bluetooth and location permissions, and tap "Search Bluetooth"; (2) Tap the discovered Bluetooth device and enter the connection password "2016"; (3) Tap "4-20mA Range Configuration" and set the value for 4mA and the value for 20mA. For example, as shown, 4mA corresponds to 0m and 20mA corresponds to 10m. 

8. Bluetooth Mini-Program Quick Commissioning

Step 1	Power-on confirmation: For radar using 485 communication, connect DC 9-26V; for radar using 2-wire communication, connect DC 20-26V.
Step 2	(1)Search for the "宇宙物联" mini-program in WeChat, enable Bluetooth and location permissions, and tap "Search Bluetooth"; (2) Confirm that the "Air Height" distance displayed on the mini-program home page is correct. Air Height: distance from the sensor probe to the water surface. (3) Tap "Water Level Configuration", then tap "Set Water Depth" and set the current water depth value. Water Depth: the distance from the bottom to the water surface; Installation Height: the distance from the sensor probe to the bottom;After setting the water depth, the device automatically calculates the installation height.  For example, as shown above: setting water depth to 0.5m automatically

	calculates the installation height as 4.989m
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9. Common Parameter Settings

Requirement	Setting Command
Set Mounting Type	AT+INSTALLTYPE=1 (Conventional mounting=0 , Suspended mounting=1)
Enable Nearest Peak	AT+NEARESTPEAK=1 (Off=0, On=1)
Set Blind Zone	AT+BLINDZONE=x (x is the value to be set, unit m, minimum blind zone 5cm)
Set Sliding-Window Filter	AT+SLIDWINFILTERNUM=4 (Saves the latest 4 sampled data points, averages them for output, and filters out spikes)
Set Amplitude-Limiting Filter	AT+LIMITFILTEROFXCM=10cm,30\n
Set Radar Transmit Power	AT+RFPOWER=1,5 (1,5 means auto-adjust transmit power; 1,1 means use power level 1)

10. Troubleshooting

Phenomenon	Possible Causes and Remedies
Device cannot communicate	(1) If it is a radar with 485 communication, use a multimeter to check whether the voltage is within 9-26V. (2) If it is a radar with TTL communication, use a multimeter to check whether the voltage is within 2.8-3.0V. Verify the wiring: (3) For TTL devices, connect device TX to serial RX and device RX to serial TX (cross-connection). For 485 devices, connect 485-A to A and 485-B to B. (4) Confirm the baud rate: The device default baud rate is 9600; please ensure the baud rates match. (5) Verify the serial tool: Short the serial tool's TX to RX and A to B

	respectively and perform a loopback test to confirm the tool's send/receive function works properly.
Values occasionally jump erratically	Appropriately increase the duration (e.g.45s) Send command: AT+LIMITFILTEROFXCM=10cm,90\n
Blind zone displayed	(1) Check whether the installation is vertical; ensure the measured surface is outside the blind zone (5cm). (2) Enable suspended mounting and set the blind zone to 0.3m (recommended for open environments).
Prompt: insufficient echo energy	(1) Confirm the installation is vertical; (2) Check whether there are obstacles, floating objects, foam, etc. around the installation position; (3) Ensure the measured surface is flat; severe fluctuation or turbulence causes echo energy attenuation.
Fixed interference object present	Eliminate the fixed interference by learning the false echo.
Air height value often too large	(1) There may be false echoes (tank wall, obstacles); (2) adjust the installation position; Enable the nearest peak function.
Air height value often too small	(1) There may be false echoes (tank wall, obstacles); adjust the installation position; (2) Eliminate the fixed interference by learning the false echo.

Precautions

- The supply voltage must not exceed the range shown in the wiring diagram. AC power is strictly prohibited.

- Always disconnect power before wiring and installation; do not plug or unplug while powered.
- The radar can penetrate clothing, plastic, acrylic sheets, wood, glass, etc. Pay attention to the measured substance.
- When measuring liquids, the medium's dielectric constant is generally greater than 2.5. Too low a dielectric constant tends to cause weak echoes, abnormal measurement, or direct penetration of the liquid.
- During installation, keep the probe perpendicular to the medium surface and avoid the tank wall, nozzles, and internal obstacles.
- Do not disassemble the device yourself; if a fault occurs, contact the manufacturer's technical support.