



Radar level transmitter

Datasheet

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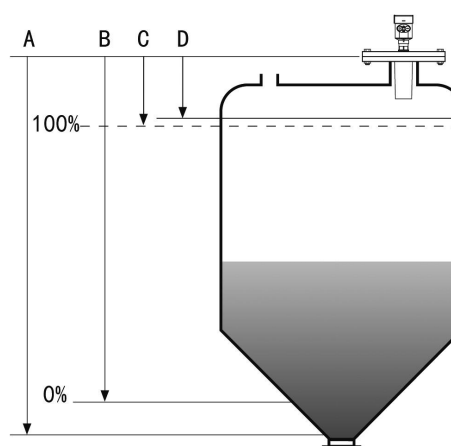
1. Product Overview

This series of radar level meter adopted 26G high frequency radar sensor, the maximum measurement range can reach up to 20 meters. Antenna is optimized further processing, the new fast microprocessors have higher speed and efficiency can be done signal analysis, the instrumentation can be used for reactor, solid silo and very complex measurement environment.

● Principle

Radar level transmitter antenna microwave pulse is narrow, the downward transmission antenna. Microwave exposure to the medium surface is reflected back again by the antenna system receives, sends the signal to the electronic circuit automatically converted into level signals (because the microwave propagation speed, electromagnetic wave to reach the target and the reflected back to the receiver this time is almost instantaneous).

- A Range set
- B Low adjustment
- C High
- D Blind area



Datum measurement: Screw thread bottom or the sealing surface of the flange.

Note: Make sure the radar level meter the highest level cannot enter the measuring blind area (Figure D shown below).

● The characteristics of 26G radar level meter:

- Small antenna size, easy to install; Non-contact radar, no wear, no pollution.
- Almost no corrosion, bubble effect; almost not affected by water vapor in the atmosphere, the temperature and pressure changes.
- Serious dust environment on the high level meter work has little effect.
- A shorter wavelength, the reflection of solid surface inclination is better.
- Beam angle is small, the energy is concentrated, can enhance the ability of echo and to avoid interference.

- The measuring range is smaller, for a measurement will yield good results.
- High signal-to-noise ratio, the level fluctuation state can obtain better performance.
- High frequency, measurement of solid and low dielectric constant of the best choice.

2. Product Introduction



Application: Corrosive liquids, vapors, volatile liquid
Measuring Range: 20 meters
Process Connection: Flange
Process Temperature: -40°C~130°C (Standard type)
-40°C~250°C (High temperature type)
Process Pressure: -0.1 ~ 2.0 MPa
Accuracy: $\pm 3\text{mm}$
Protection Grade: IP67
Frequency Range: 26GHz
Display: LED, Programmable
Supply: 2-wire (DC24V) / 4-wire (DC24V / AC220V)
Signal Output: 4... 20mA / HART (2-wire / 4-wire)
RS485/ Modbus
Outer Covering: Aluminum / Plastic / Stainless steel
Explosion-proof Grade: Exia II C T6 Ga / Exd II C T6 Gb

3. The Installation Requirements

● Installation guide:

This product used to measure corrosive liquids, vapors, volatile liquids and to prevent condensation during measurement.

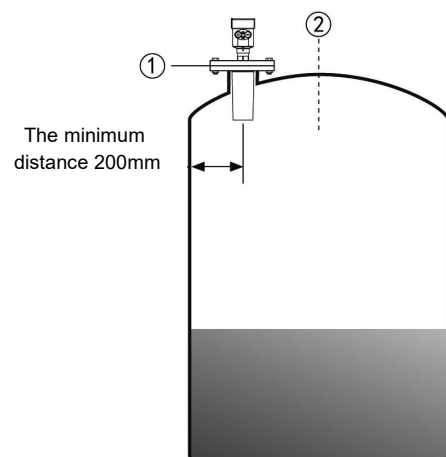
It needs to install flange connection.

Be installed in the diameter of the 1/4 or 1/6.

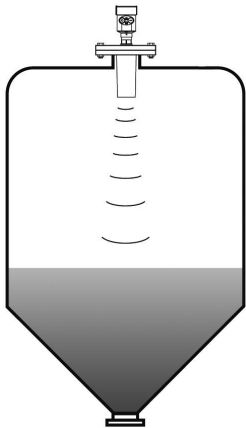
Note: The minimum distance from the tank wall should be 200mm.

Note: ① datum

②The container center or axis of symmetry



- For the top of the flat conical tank, meter can be installed in the middle of the tank top to the bottom of the cone to ensure measurement.

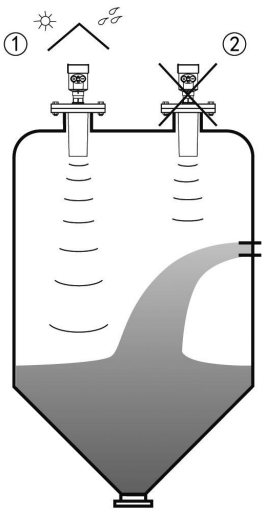


● **Typical installation errors:**

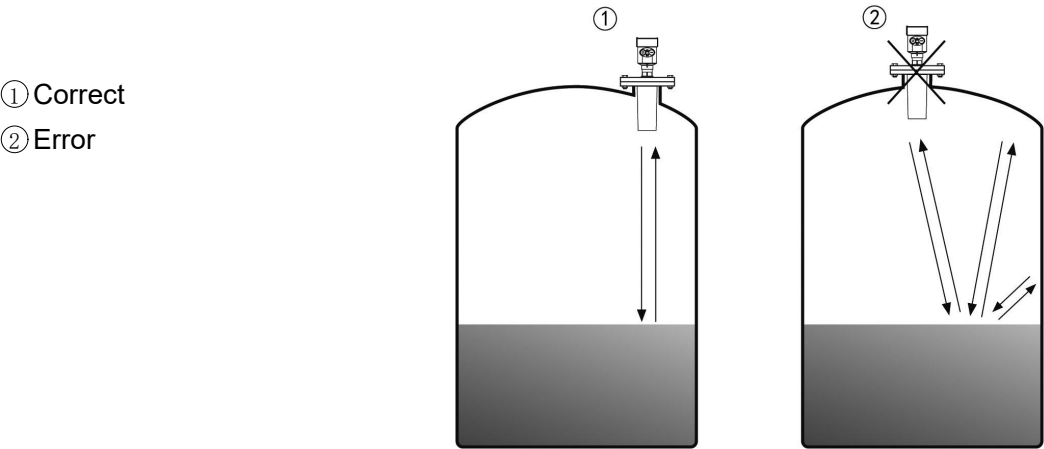
- Conical tank cannot be installed above the feed port.

Note: outdoor installation should adopt sunshade.

- ① Correct
- ② Error rainproof measures



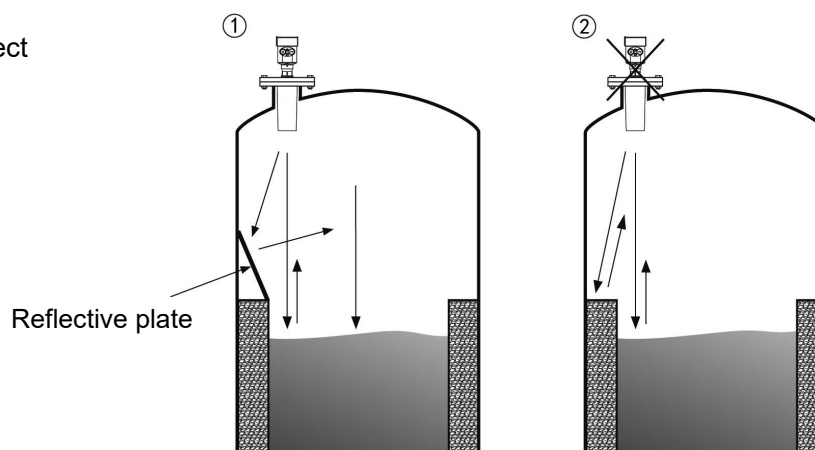
- The instrument cannot be installed in the arched or domed roof intermediate. In addition to produce indirect echo is also affected by the echoes. Multiple echo can be larger than the real value of signal echo, because through the top can concentrate multiple echo. So cannot be installed in a central location.



- ① Correct
- ② Error

- There are obstacles affecting measurement needed reflection plate.

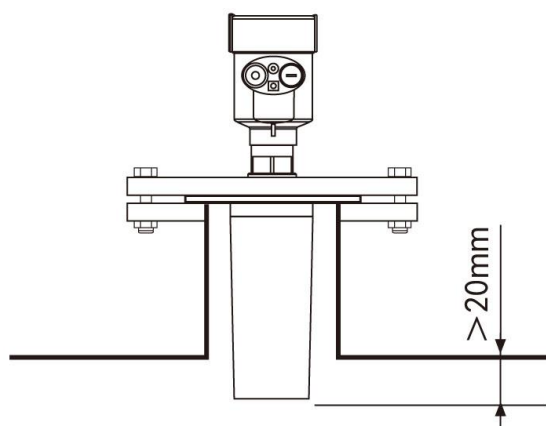
- ① Correct
- ② Error



The role of the reflecting plate is refracted away the obstacle signal.

- **Height of nozzle:**

Antenna extends into the tank at least 20mm distance.



4. The Electrical Connection

- **The power supply voltage:**

(4~20)mA/HART (Two wire system)

The power supply and the output current signal sharing a two core shield cable. The supply voltage range see technical data. For intrinsically safe type must be a safety barrier between the power supply and the instrument.

(4~20)mA/HART(Four wire system)

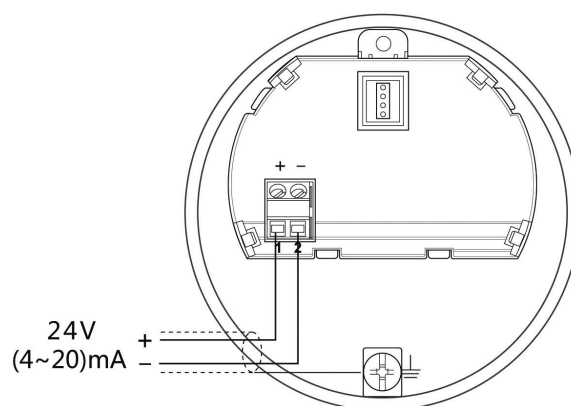
Separate power supply and the current signal, respectively using a two-core shielded cable. The supply voltage range see technical data.

RS485 / Modbus

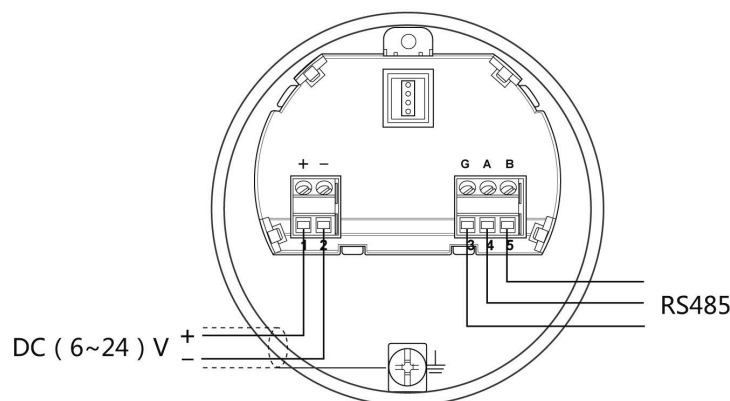
Power supply and Modbus signal line separated respectively using a two-core shielded cable, the power supply voltage range see technical data.

● **Connection mode:**

- 24V two wire wiring diagram as follows:



- 6~24V RS485/Modbus wiring diagram as follows:



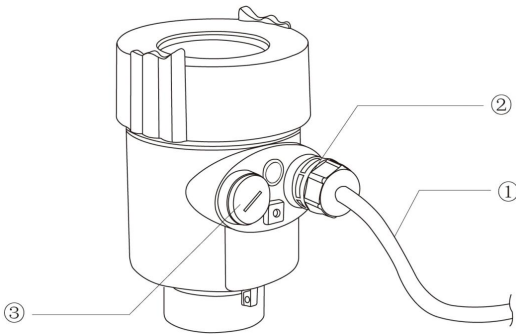
● **Safety instructions:**

- Please observe the local electrical code requirements!
- Please comply with local requirements for personnel health and safety regulations.
All electrical components of instrument operation must be completed by the formal training of professionals.
- Please check the instrument nameplate to provide product specifications meet your requirements. Please make sure that the power supply voltage and instrument nameplate on the requirements.

● **Protection grade:**

This instrument meets the protection class IP66/67 requirements, please ensure the waterproof cable sealing head. The following diagram:

:



How to install to meet the requirements of IP67:

- Please make sure that the sealing head is not damaged.
- Please make sure that the cable is not damaged.
- Please make sure that the cable for use with electrical connection specification.
- Cable into the electrical interface before its curved downward, ensure that the water will not flow into the shell, see the①
- Tighten the cable seal head, see the②
- Please electrical interface will not use blind plug tight, see the③

5. Instrument Commissioning

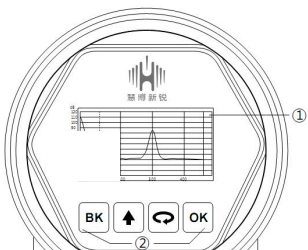
● **There are three kinds of debugging method:**

- 1) Display / Keyboard
- 2) Host debugging
- 3) HART handheld programmer

● **Display / Keyboard:**

Please debug the instrumentation by four buttons on the display screen. There are three debug menu languages optional. After debugging is generally used only for display, through the glass window can read measured value very clearly.

Display / Keyboard

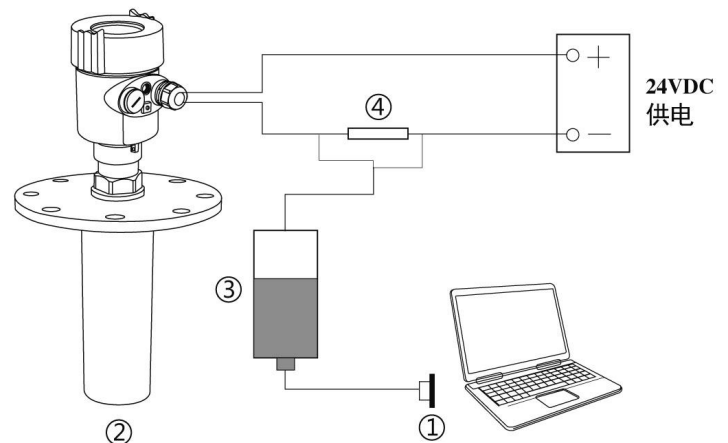


- ① Liquid crystal display(LCD)
- ② The key

● PC debugging:

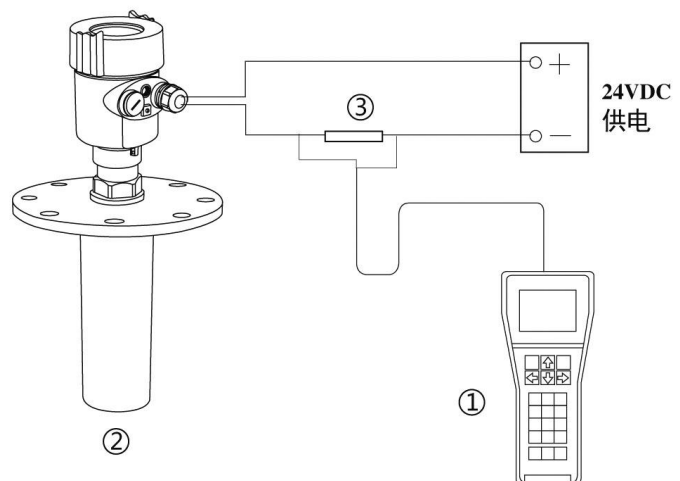
Connected to PC by HART

- ① RS232 interface or USB interface
- ② Radar level meter
- ③ HART adapter
- ④ 250 Ω resistor



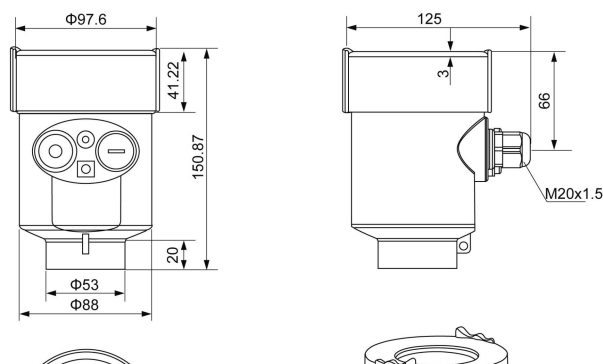
● HART handheld programmer:

- ① HART handheld programmer
- ② Radar level meter
- ③ 250 Ω resistor

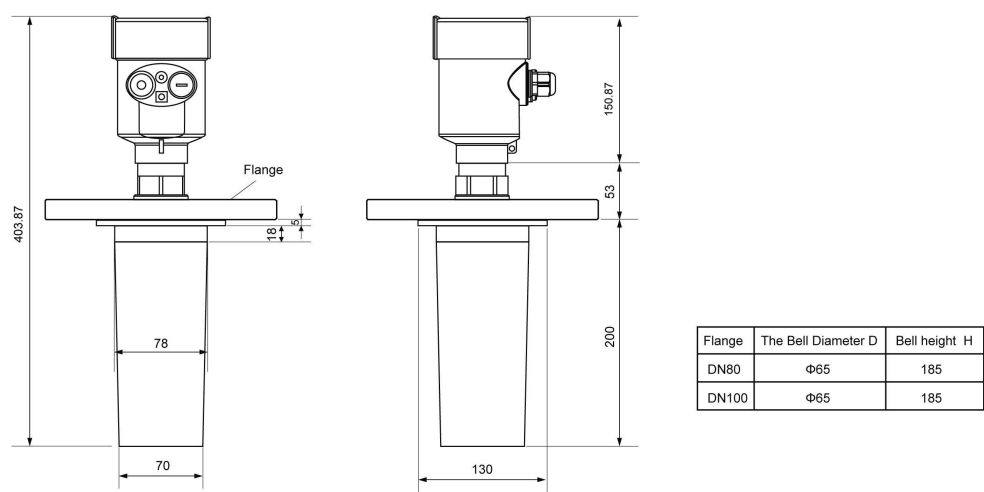


6. Structure Size (Unit: mm)

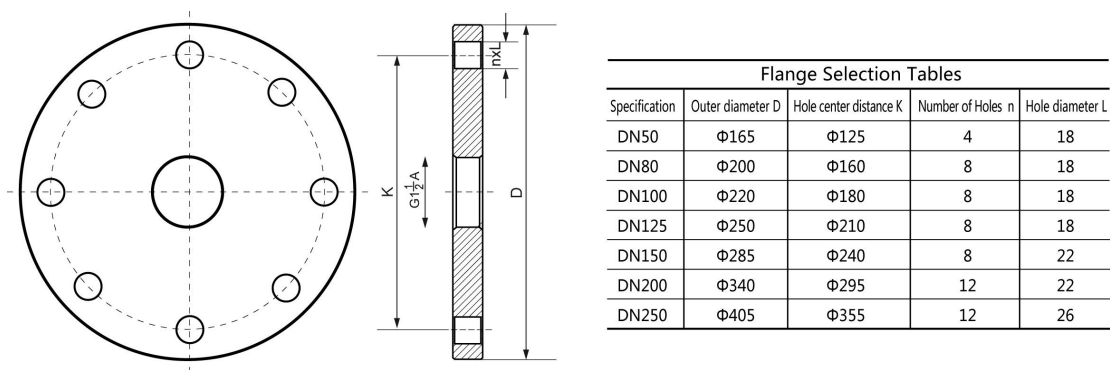
● The outer shell:



● **Appearance size:**



● **Flange type:**



7. Technical Parameters

Process Connection

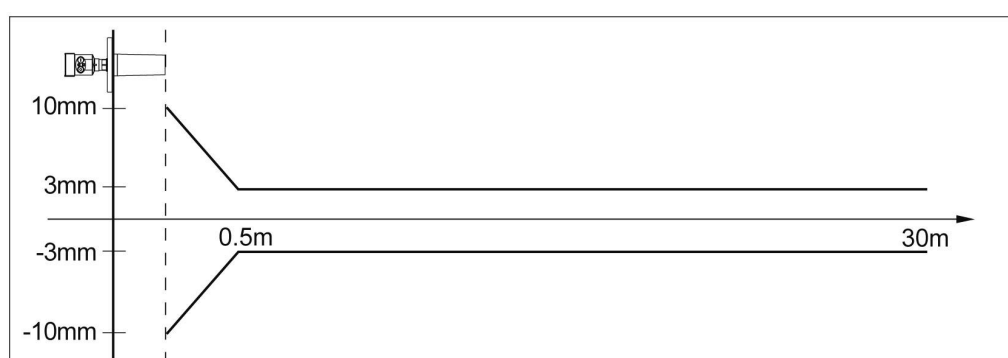
Thread G1½" A
Thread 1½" NPT

	Flange
Antenna Material	PVDF / PFA
The outer shell	
The seal between the shell and the shell cover	Silicone rubber
Casing window	Polycarbonate
The ground terminal	Stainless steel
The power supply voltage	
<i>Two wire system</i>	
The standard type	(16 ~ 26) V DC
Intrinsically safe	(21.6 ~ 26.4) V DC
Power dissipation	max 22.5mA / 1W
Allowable ripple	
- <100Hz	Uss<IV
- (100~100K) Hz	Uss<I0mV
<i>Flameproof</i>	
	(22.8 ~ 26.4) V DC 2-wire system
	(198 ~242)V AC 4-wire system / 110V AC 4-wire system
The cable parameters	
Cable entrance / plug	1 M20xI.5 cable entrance
	1 blind plug
Terminal	Conductor cross section 2.5mm²
Output parameters	
The output signal	(4 ~ 20) mA
Communication protocol	HART
Resolution	1.6 μ A
Fault signal	Constant current output;
	20. 5mA
	22mA
	3.9mA
The integral time	(0 ~ 36) s, adjustable
Blind area	the ends of the antenna

The maximum distance measurement	20 meters
Microwave frequency	26GHz
Communication interface	HART communication protocol
The measurement interval	about 1 second (depending on the parameter settings)
Adjust the time	about 1 second (depending on the parameter settings)
Display resolution	1 mm
Working storage and transportation temperature	(-40~100) °C
Process temperature (the temperature of the antenna part)	(-40~130)°C Standard type / (-40~250)°C High temperature type
Pressure	Max.4MPa
Seismic	Mechanical vibration 10m/s ² , (10 ~ 150) Hz

8. Meter Linearity

Emission angle	Depending on the size of the antenna
-ϕ 65mm	14°
Precision	See chart



9. Product Model Selection

License

P Standard (Non-explosion-proof)

Process Connection / Material

- A Flange DN80 / Stainless Steel 304
- B Flange DN100 / Stainless Steel 304
- Y Special Custom

Antenna Type / Material

- A Internal tapered rod antenna PVDF / 78mm
- B Internal tapered rod antenna PFA / 78mm

Seal Up / Process Temperature

- V Viton / (-40~130) °C
- P PFA / (-40~250) °C

The Electronic Unit

- 3 (4~20) mA / 24V DC / HART 2-wire system
- 4 (4~20) mA / 220V AC / HART 4- wire system
- 5 RS485 / Modbus / 6~24V/ Four wire system

Outer Covering / Protection Grade

- L Aluminum / Single chamber / IP67
- H Aluminum / Double chamber / IP67
- G Plastic / Single chamber / IP65
- K Stainless steel / Single chamber / IP67

Cable Line

- M M 20x1.5
- N ½" NPT

Field Display/The Programmer

- A With
- X Without