

Ultrasonic level meter



Directory

1、Product Overview.....	1
2、Product Introduction.....	2
3、The Installation Requirements.....	2
4、The Electrical Connection.....	5
5、Instrument Commissioning.....	6
6、Structure Size.....	6
7、Technical Parameters.....	6
8、Meter Linearity.....	7
9、Product Model Selection.....	9
Material level meter selection parameter table.....	10

Ultrasonic Level Meter

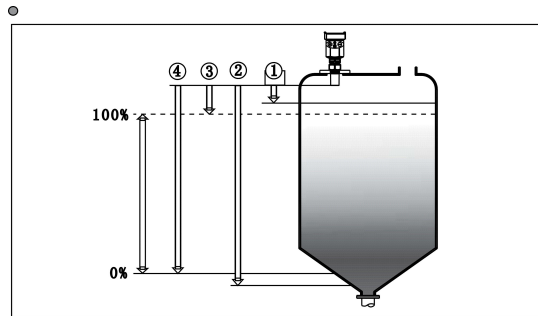
1. Product Overview

This series of Ultrasonic level meter adopted 26G high frequency Ultrasonic sensor, the maximum measurement range can reach up to 80 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

Ultrasonic 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).

- 4 Range set
- 3 Blind area
- 2 Low adjustment
- 1 High



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

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

● The characteristics of 26G Ultrasonic level meter:

- Small antenna size, easy to install; Non-contact Ultrasonic, 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: All kinds of corrosive liquid

Measuring Range: 10 meters

Process Connection: Thread, Flange

Medium Temperature: $-40^{\circ}\text{C} \sim 130^{\circ}\text{C}$

Process Pressure: -0.1~0.3 MPa

Accuracy: $\pm 5\text{mm}$

Protection Grade: IP67

Frequency Range: 26GHz

Signal Output: 4... 20mA/HART (Two-wire / Four)

RS485/ Modbus

Explosion-proof Grade: Exia II C T6 Ga

Exd ia II C T6 Gb

Exd ia II C T6 Gb

3. The Installation Requirements

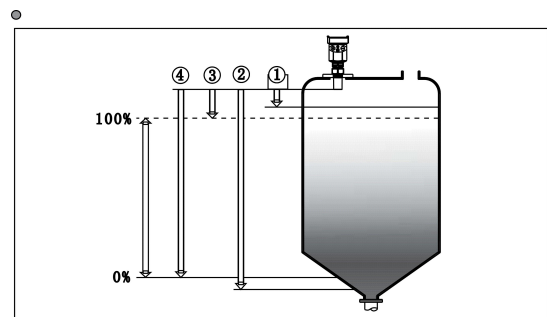
- **Installation guide:**

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

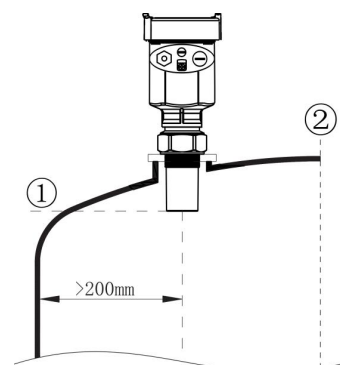
Note: The minimum distance from the tank wall should be 200mm.

Note: ① datum

②The container center or axis of symmetry



- The top conical tank level, can be installed at the top of the tank is intermediate, can guarantee the measurement to the conical bottom.

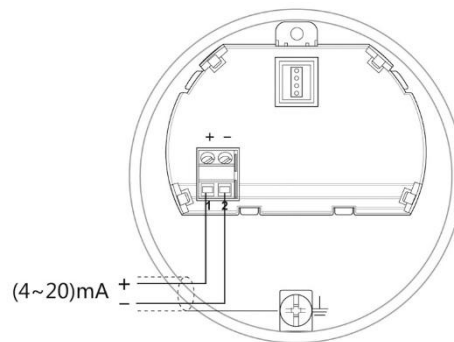


- **The power supply voltage:**

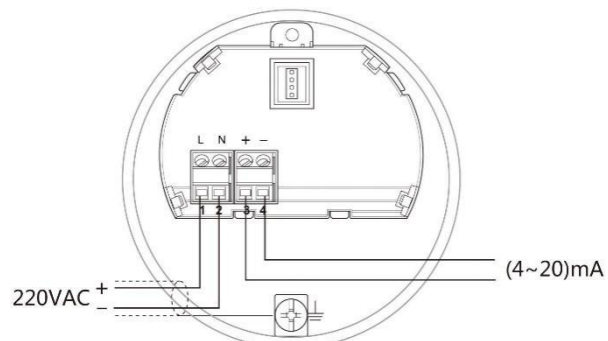
(4~20)mA/HART (Two wire system)	The power supply and the output current signal sharing a two core shield cable. The supply voltage range see technical data. For intrinsically safe type must be a safety barrier between the power supply and the instrument.
(4~20)mA/HART(Four wire system)	Separate power 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 separate respectively using a two-core shielded cable, the power supply voltage range see technical data.

- **Connection mode:**

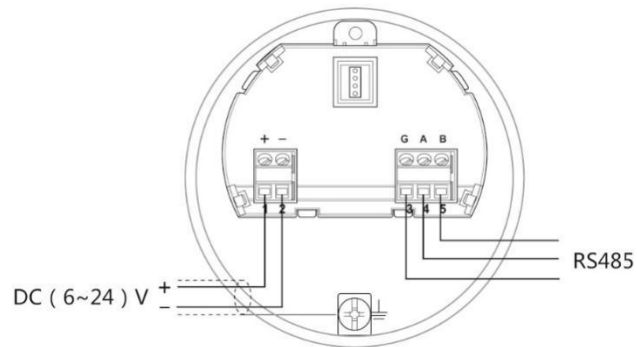
- 24V two wire wiring diagram as follows:



- 220V four wire connection is as below:



- 24V RS485/Modbus wiring diagram as follows:



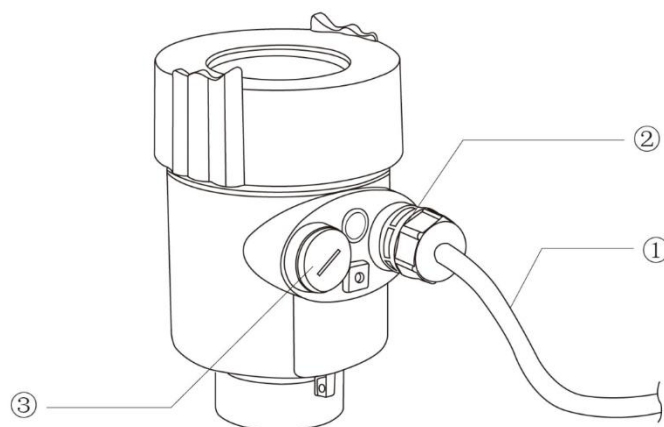
- **Safety instructions:**

- 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

4. Instrument Commissioning

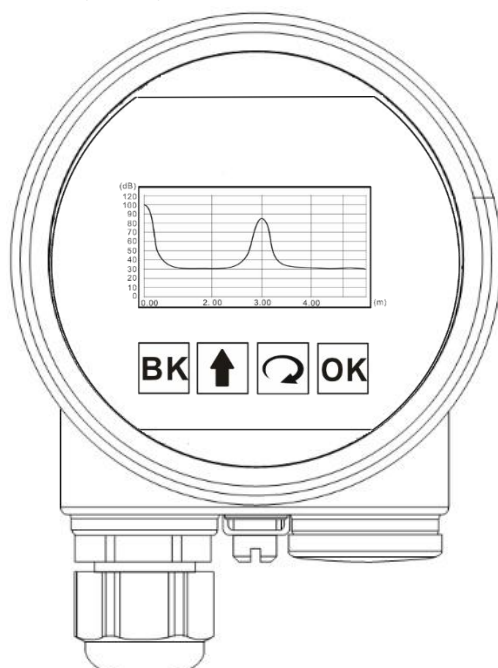
- There are three kinds of debugging method:

- 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



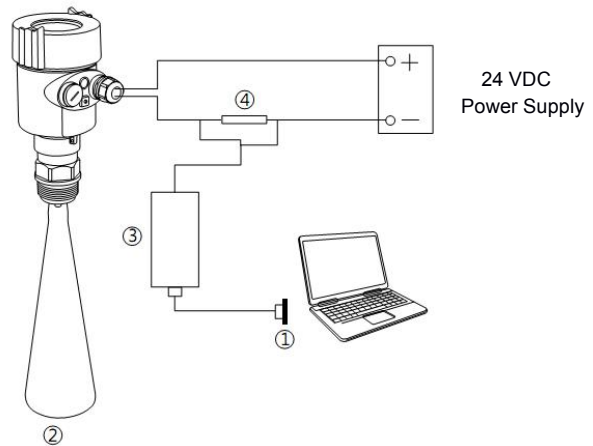
① Liquid crystal display(LCD)

② The key

- **PC debugging:**

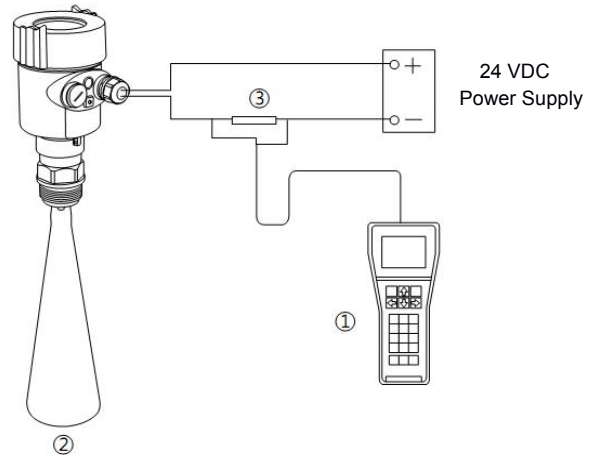
Connected to PC by HART

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



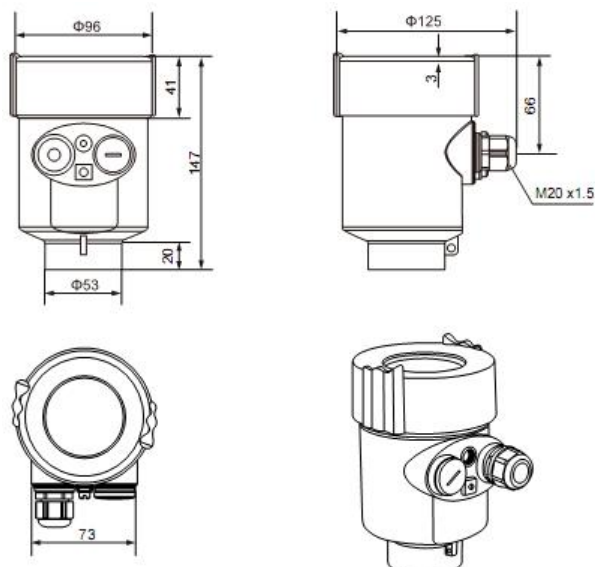
- **HART handheld programmer:**

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

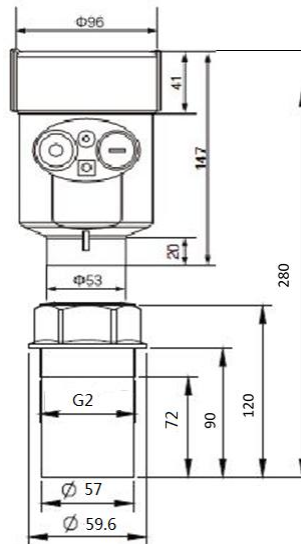


5. Structure Size (Unit: mm)

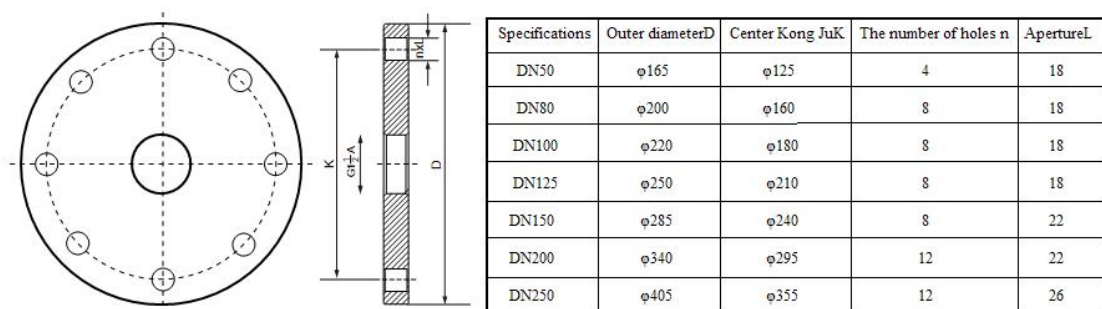
- **The outer shell:**



● **Appearance size:**



● **Flange type:**



6. Technical Parameters

The outer shell

The seal between the shell and the shell cover
Casing window
The ground terminal

Silicone rubber
Polycarbonate
Stainless steel

The power supply voltage

Two wire system

The standard type
Intrinsically safe

(16 ~ 26) V DC
(21.6 ~ 26.4) V DC

Power dissipation	max 22.5mA / 1W
Allowable ripple	
- <100Hz	Uss<IV
- (100 ~ 100K) Hz	Uss<10mV

The cable parameters

Cable entrance / plug	1 M20xl.5 cable entrance 1 blind plug
Terminal	Conductor cross section 2.5mm ²

Output parameters

The output signal	(4 ~ 20) mA/RS485
Communication protocol	HART
Resolution	1.6 μ A
Fault signal	Constant current output; 20. 5mA 22mA 3.9mA
The integral time	(0 ~ 50) s, adjustable

Blind area	the ends of the antenna
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The maximum distance measurement	80 meters
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Microwave frequency	26GHz
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Communication interface	HART communication protocol
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The measurement interval	about 1 second (depending on the parameter settings)
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Adjust the time	about 1 second (depending on the parameter settings)
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Display resolution	1 mm
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Working storage and transportation temperature	(-40 ~ 100) °C
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Process temperature (the temperature of the antenna part)

911	(-40 ~ 130)°C
912/913/914/915	(-40 ~ 250)°C
916	(-40 ~ 150)°C

Pressure	Max.4MPa
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Seismic	Mechanical vibration 10m/s ² , (10 ~ 150) Hz
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7. Meter Linearity

Material level meter selection parameter table:

Customer information

Company: _____ Contact: _____
Address: _____ Zip code: _____
The Telephone: _____ Fax: _____ Mobile phone: _____
E-mail: _____ Date: _____

License

- ☐ The standard type (Non-explosion-proof) ☐ Intrinsically safe (Exia IIB T5)
☐ Intrinsically safe (Exia IIC T6 Ga) ☐ Intrinsically safe+marine license (Exia IIC T6 Ga)
☐ Intrinsically safe and Flame proof (Exd ia IIC T6 Gb)

Tank / Container Information

The Types of Tank:

- ☐ Tank ☐ Reaction Tank ☐ Separation Tank ☐ Marine Tank

The Tank Structure:

Material of Tank: _____ Pressure: _____

Tank size:

Tank Height: _____ m Diameter: _____

The top of the tank:

- ☐ Vault ☐ Flat ☐ Open ☐ Cone type

The bottom of the tank:

- ☐ Cone bottom ☐ Flat ☐ Slope bottom ☐ Arc bottom

Installation:

- ☐ Top installation ☐ Side installation
☐ The bypass pipe mount ☐ Guided wave pipe installation

Installation takes over the top of the tank (information):

Height of take over : _____ mm Diameter of take over :: _____ mm

Measurement of Medium

Media name: ☐ Lliquid ☐ Solid ☐ Mixed Media

Medium temperature: _____ °C

Dielectric Constant: _____

Linked material: ☐ Yes ☐ No

Mixing: ☐ Yes ☐ No

Process Connection

Thread: ☐ G1½" A ☐ 1½" NPT

Flange ☐ Flange (DN= _____) ☐ Flange (ANSI= _____)



Power supply:

- ☐ 24V DC Two wire system ☐ 24V DC Four wire system ☐ 220V AC Four wire system

Output: ☐ 4-20mA ☐ HART

Display: ☐ Take the meter display program ☐ Without meter display program