Tel: 86-15158063876 E-mail: info@supmea.com

Supmea

www.supmea.com

Radar level meter

Committed to process automation solutions

Datasheet

SUP-RD

Add : 5th floor, Building 4, Singapore Hangzhou Science Technology Park, Hangzhou Economic Development Area, 310018, Hangzhou, China

This series of radar level meter adopted 26G high frequency radar sensor, the maximum measurement range can reach up to 60 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

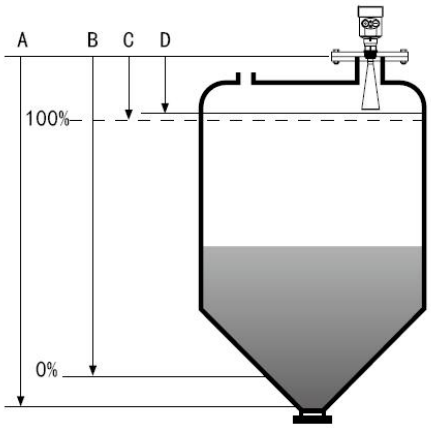
Radar level transmitter antenna microwave pulse is narrow, the downward transmission antenna. Microwave exposure to the medium surface is reflected back again by the antenna system receives, sends the signal to the electronic circuit automatically converted into level signals (because the microwave propagation 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.

Product Introduction

For liquid

SUP-RD901

Application：Slightly corrosive liquid

Measuring Range：10 meters

Process Connection：Thread, flange

Medium Temperature：-40℃ ~ 130℃

Process Pressure：-0.1 ~ 0.3MPa

Accuracy：± 5mm

Protection Grade：IP67

Frequency Range：26GHz

Signal Output：4... 20mA/HART (Two-wire / Four)
RS485/ Modbus

SUP-RD902T

Application：Slightly corrosive liquid, volatile liquid tank

Measuring Range：20 meters

Process Connection：Flange

Medium Temperature： -40℃ ~ 130℃(Standard),
-40℃ ~ 250℃(High temp type)

Process Pressure：-0.1 ~ 2MPa

Accuracy：± 3mm

Protection Grade：IP67

Frequency Range：26GHz

Signal Output：4... 20mA/HART (Two-wire / Four)
RS485/ Modbus

SUP-RD906

Application：Hygienic liquid storage tank, highly corrosive tank

Measuring Range：20 meters

Process Connection：Flange

Medium Temperature： -40℃ ~ 130℃(Standard),
-40℃ ~ 200℃(High temp type)

Process Pressure：-0.1 ~ 4MPa

Accuracy：± 3mm

Protection Grade：IP67

Frequency Range：26GHz

Signal Output：4... 20mA/HART (Two-wire / Four)
RS485/ Modbus

SUP-RD908

Application：Rivers, lakes, shoals

Measuring Range：30 meters

Process Connection：Thread, flange

Medium Temperature： -40℃ ~ 100℃

Process Pressure：Natural pressure

Accuracy：± 3mm

Protection Grade：IP65/ IP67

Frequency Range：26GHz

Signal Output：4... 20mA/HART (Two-wire / Four)
RS485/ Modbus

SUP-RD909

Application：Rivers, lakes, shoals

Measuring Range：70 meters

Process Connection：Thread, flange

Medium Temperature： -40℃ ~ 100℃

Process Pressure：Natural pressure

Accuracy：± 10mm

Protection Grade：IP65/ IP67

Frequency Range：26GHz

Signal Output：4... 20mA/HART (Two-wire / Four)
RS485/ Modbus

For powder, granules, lumps

SUP-RD903

Application：powder, granules, lumps

Measuring Range：

DN80: granules 12 meters, lumps 12 meters;

DN100:powder 20 meters, granules 25 meters, lumps 25 meters;

DN125:powder 45 meters, granules 35 meters, lumps 40 meters;

Process Connection：Standard flange, universal flange

Medium Temperature： -40℃ ~ 130℃(Standard),
-40℃ ~ 200℃(High temp type)

Process Pressure：-0.1 ~ 4MPa(Standard flange),
-0.1 ~ 0.3MPa(Universal flange)

Accuracy：± 15mm

Protection Grade：IP65/ IP67

Frequency Range：26GHz

Signal Output：4... 20mA/HART (Two-wire / Four)
RS485/ Modbus

SUP-RD904

Application：powder, granules, lumps

Measuring Range：

196mm :powder 35 meters, granules 40 meters, lumps 40 meters;

246mm :powder 45 meters, granules 50 meters, lumps 50 meters;

Process Connection：Thread, universal flange

Medium Temperature： -40℃ ~ 130℃(Standard),

-40℃ ~ 200℃(High temp type)

Process Pressure：-0.1 ~ 0.3MPa

Accuracy：± 15mm

Protection Grade：IP67

Frequency Range：26GHz

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

RS485/ Modbus

SUP-RD905

Application：powder, granules, lumps

Measuring Range：

DN80: granules 8 meters, lumps 8 meters;

DN100:powder 12 meters, granules 15 meters, lumps 15 meters;

DN125:powder 15 meters, granules 20 meters, lumps 20 meters;

Process Connection：Standard flange, universal flange

Medium Temperature： -40℃ ~ 130℃(Standard),

-40℃ ~ 200℃(High temp type)

Process Pressure：-0.1 ~ 4MPa(Standard flange),

-0.1 ~ 0.3MPa(Universal flange)

Accuracy：± 15mm

Protection Grade： IP67

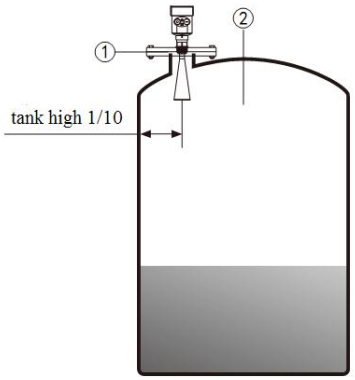
Frequency Range：26GHz

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

RS485/ Modbus

Installation Requirements

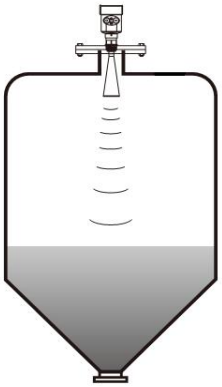
Installation guide:



Be installed in the diameter of the 1/4 or 1/6.
Note: The minimum distance from the tank wall should be 200mm.

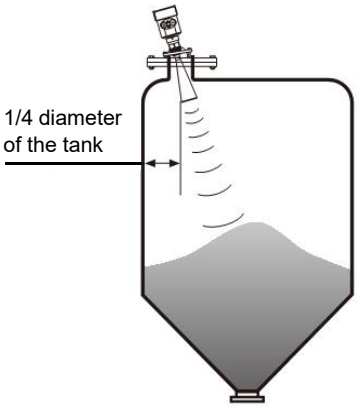
Note: ① Datum
② The container center or axis of symmetry

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



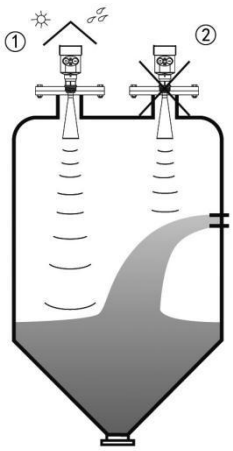
- A feed antenna to the vertical alignment surface. If the surface is rough, stack angle must be used to adjust the angle of cardan flange of the antenna to the alignment surface.

  (Due to the solid surface tilt will cause the echo attenuation, even Loss of signal.)



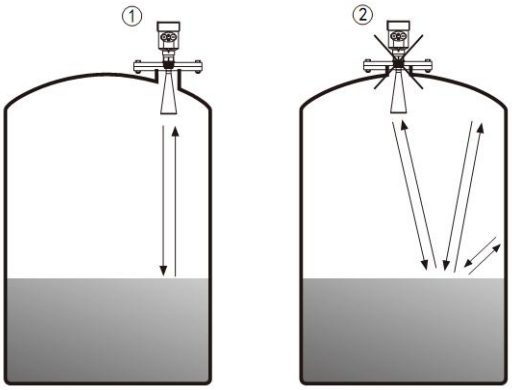
- **Typical installation errors：**

➢ Conical tank cannot be installed above the feed port.
Note: outdoor installation should adopt sunshade.



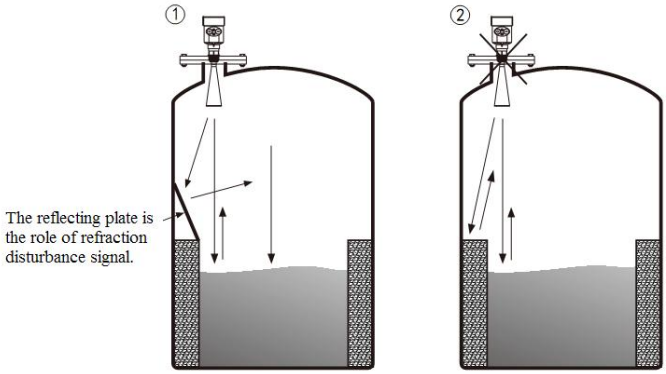
- The instrument cannot be installed in the arched or domed roof intermediate. In addition to produce indirect echo is also affected by the echoes. Multiple echo can be larger than the real value of signal echo, because through the top can concentrate multiple echo. So cannot be installed in a central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

① Correct
② Error



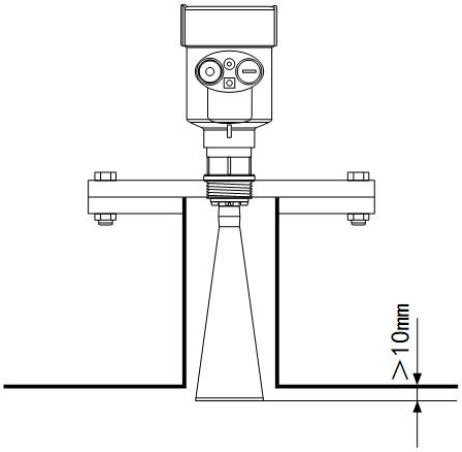
- There are obstacles affecting measurement needed reflection plate.

① Correct
② Error



■ Height of nozzle:

Antenna extends into the tank at least 10mm distance.



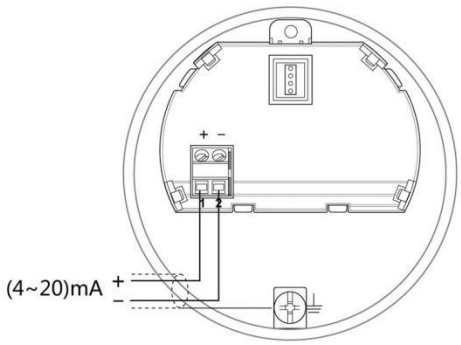
Electrical Connection

The power supply voltage:

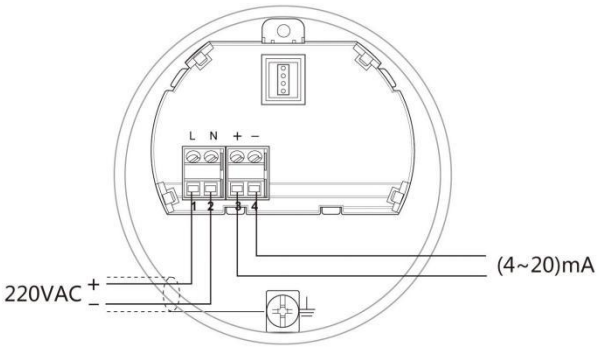
(4~20)mA/HART (Two wire system)	The power supply and the output current signal sharing a two core shield cable. The supply voltage range see technical data. For intrinsically safe type must be a safety barrier between the power supply and the instrument.
(4~20)mA/HART(Four wire system)	Separate power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

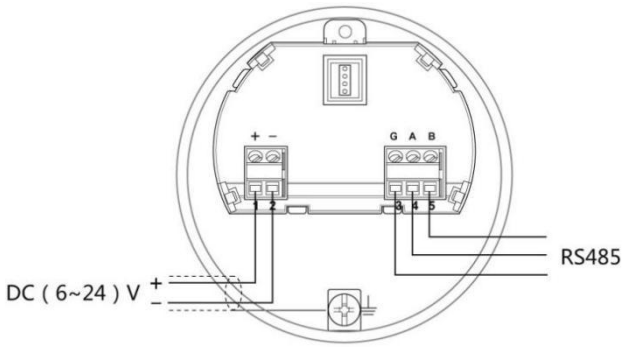
➢24V two wire wiring diagram as follows:



➢220V four wire connection is as below:



➢24V RS485/Modbus wiring diagram as follows:

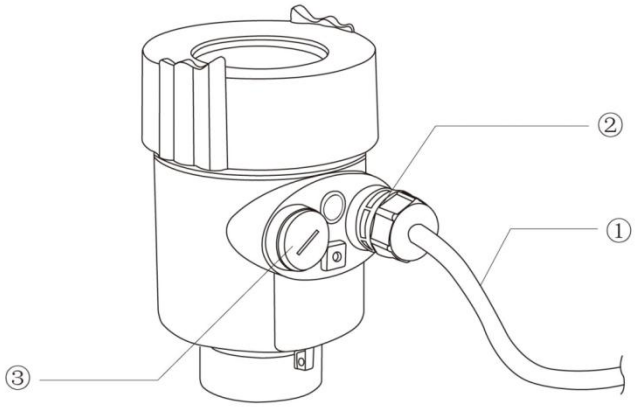


■ Safety instructions:

- ➢ 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 the ①

Tighten the cable seal head, see the ②

Please electrical interface will not use blind plug tight, see the ③

Instrument Commissioning

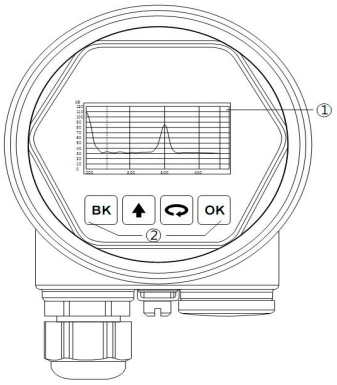
■ **There are three kinds of debugging method:**

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



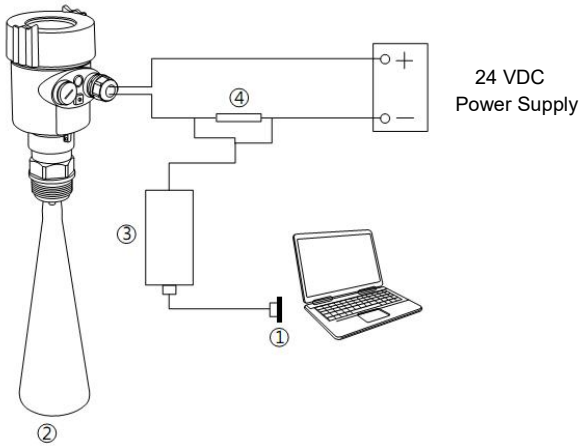
① Liquid crystal display(LCD)

② The key

■ **PC debugging:**

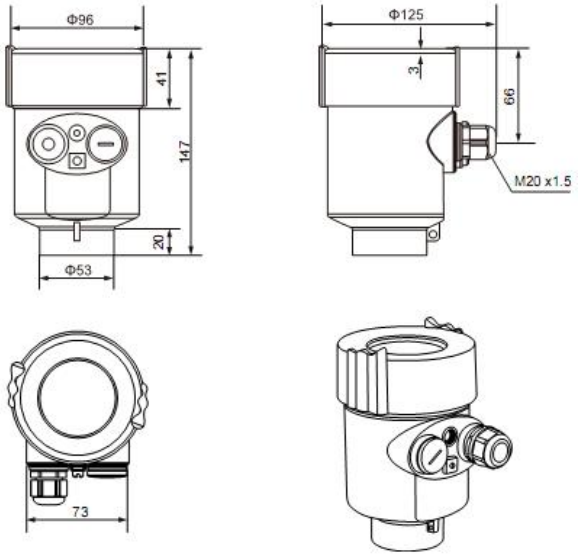
Connected to PC by HART

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

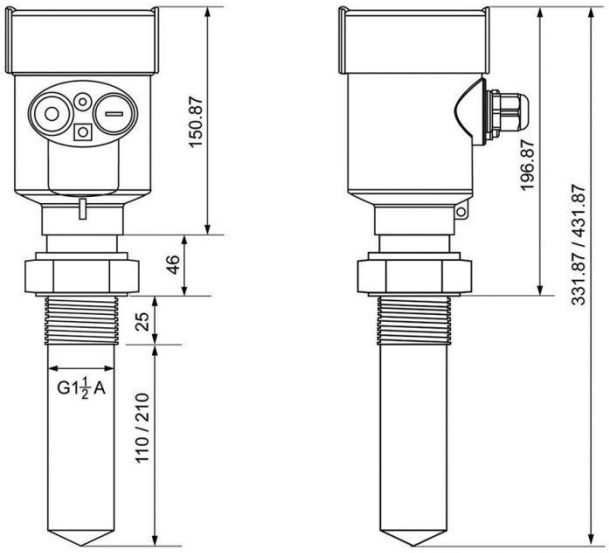


Structure Size

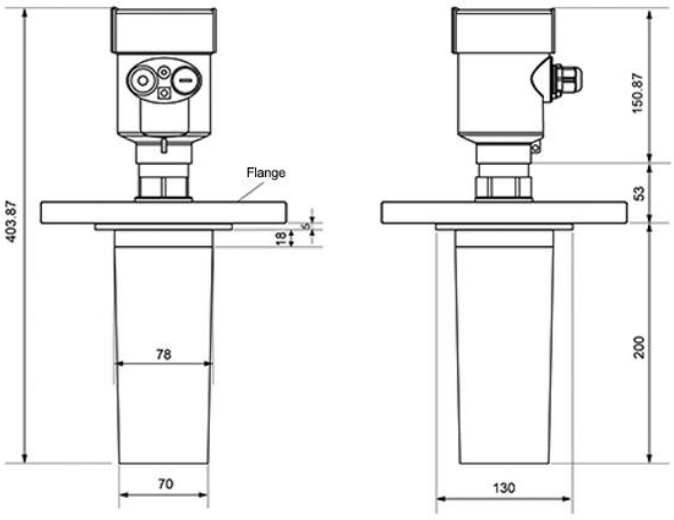
■ **The outer shell**:



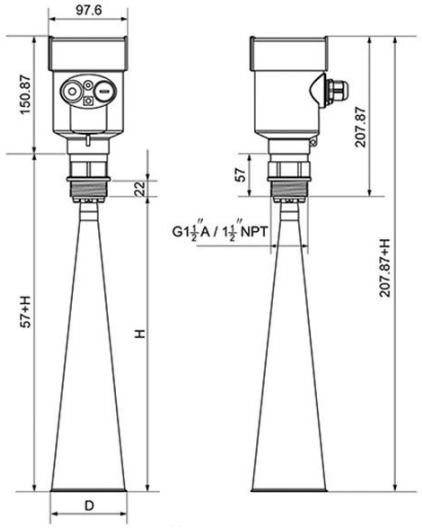
SUP-RD901



SUP-RD902T

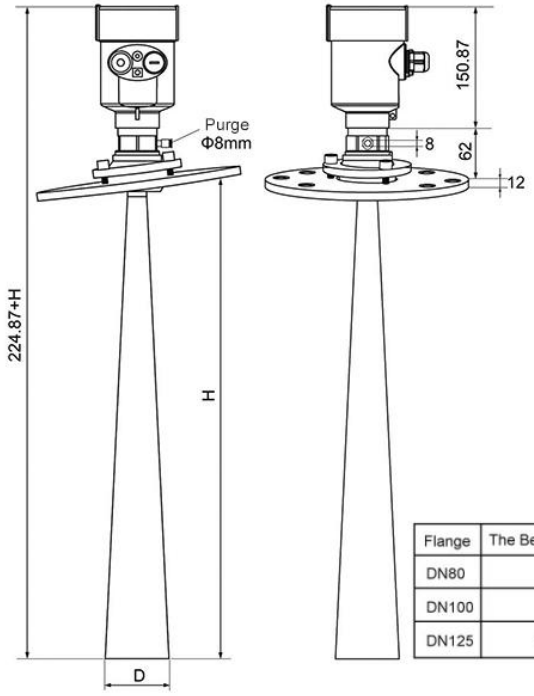


SUP-RD908/909



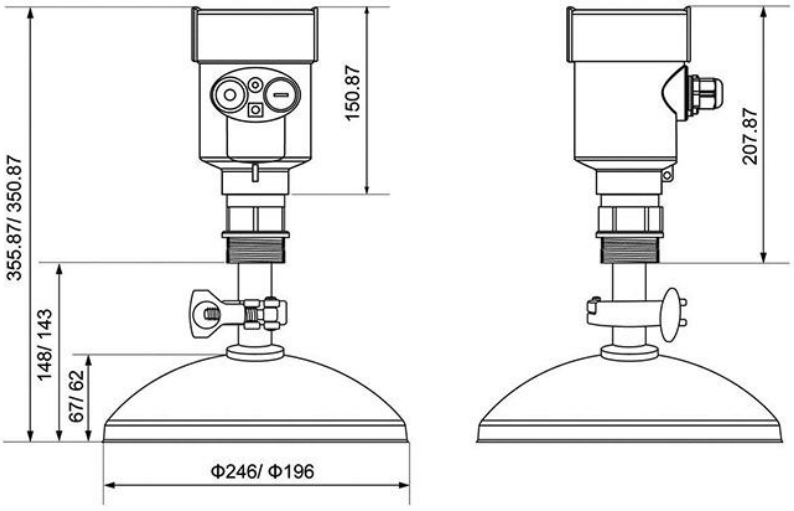
Flange	Diameter	Height
DN80	Φ76	205
DN100	Φ96	290
DN125	Φ121	610

SUP-RD903

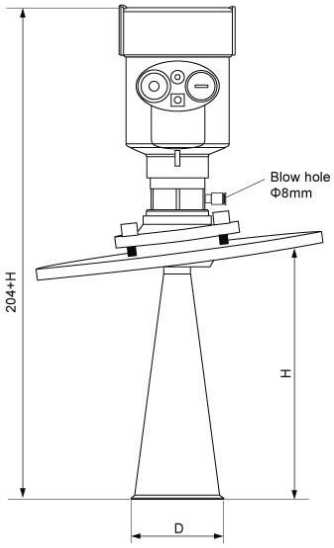


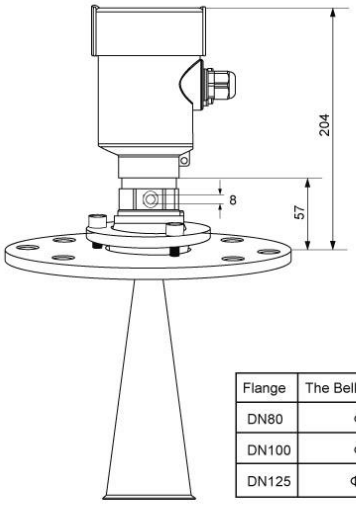
Flange	The Bell Diameter D	Bell height H
DN80	Φ76	205
DN100	Φ96	290
DN125	Φ121	610

SUP-RD904



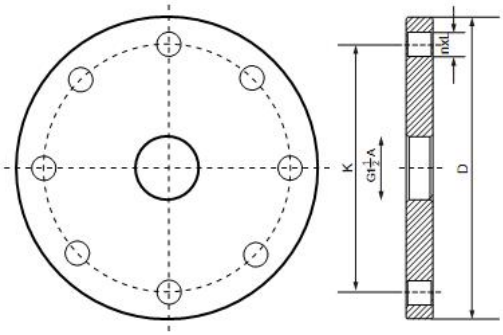
SUP-RD905





Flange	The Bell Diameter D	Bell height H
DN80	Φ76	227
DN100	Φ96	288
DN125	Φ121	620

■ Flange type:



Specifications	Outer diameterD	Center Kong JuK	The number of holes n	ApertureL
DN50	φ165	φ125	4	18
DN80	φ200	φ160	8	18
DN100	φ220	φ180	8	18
DN125	φ250	φ210	8	18
DN150	φ285	φ240	8	22
DN200	φ340	φ295	12	22
DN250	φ405	φ355	12	26

Technical Parameters

The outer shell

The seal between the shell and the shell cover	Silicone rubber
Casing window	Polycarbonate
The ground terminal	Stainless steel

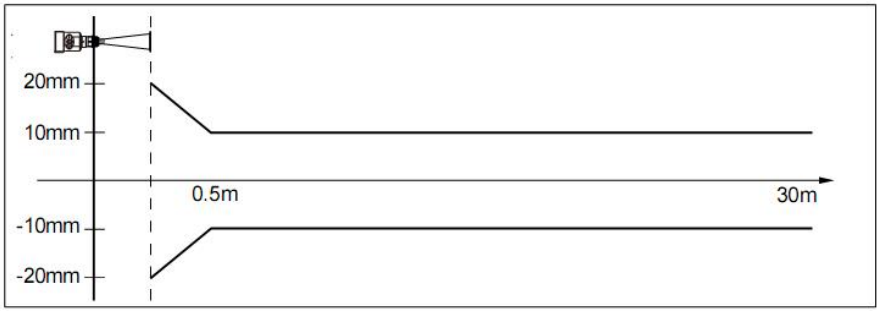
The power supply voltage

Two wire system		
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<lV
	- (100～100K) Hz	Uss<l0mV

The cable parameters	
Cable entrance / plug	1 M20xl.5 cable entrance 1 blind plug
Terminal	Conductor cross section 2.5mm²
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 ~ 36) s, adjustable
Blind area	the ends of the antenna
The maximum distance measurement	80 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) ℃
Process temperature (the temperature of the antenna part)	(-40～250)℃
Pressure	Max.4MPa
Seismic	Mechanical vibration l0m/s², (10 ~ 150) Hz

Meter Linearity

Emission angle	Depending on the size of the antenna
- ¢ 76mm	12°
- ¢ 96mm	8°
- ¢ 121mm	6°
Precision	See chart



Company:_____Contact:_____
Address:_____ZIP code:_____
The Telephone:_____Fax:_____Mobile phone:_____
Email:_____Date:_____

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: ☐Liquid ☐Solid ☐Mixed Media
Medium temperature：_____℃
Dielectric Constant：
Linked material: ☐Yes ☐No
Mixing: ☐Yes ☐No

Process Connection
Thread: ☐G1'A ☐1%"NPT
Flange: ☐Flange（DN= ） ☐Flange（ANSI= ）
Power supply：
☐24VDC Two wire system ☐24VDC Four wire system ☐220V AC Four wire system
Output: ☐4-20mA ☐HART
Display：☐Take the meter display program ☐ Without meter display program

Supmea

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