26G High Frequency Radar Level Meter

1. Product Overview

This series of radar level meter adopted 26G high frequency radar 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

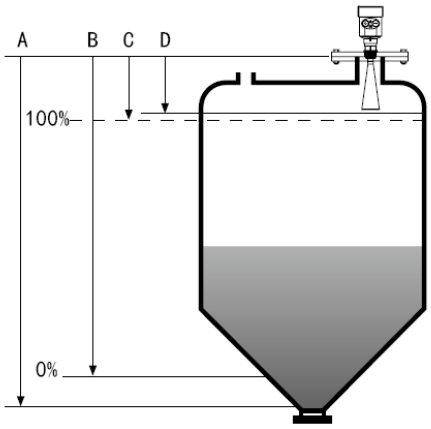
Radar level transmitter antenna microwave pulse is narrow, the downward transmission antenna. Microwave exposure to the medium surface is reflected back again by the antenna system receives, sends the signal to the electronic circuit automatically converted into level signals (because the microwave propagation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

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Application： All kinds of corrosive liquid
Measuring Range：10 meters
Process Connection： Thread, Flange
Medium Temperature： -40℃ ~ 130℃
Process Pressure： -0.1~0.3 MPa
Accuracy： ± 5mm
Protection Grade： IP67
Frequency Range： 26GHz
Signal Output：4... 20mA/HART (Two-wire / Four)
RS485/ Modbus
Explosion-proof Grade：Exia ⅡC T6 Ga/ Exd ia IIC T6 Gb

20101915

Application：Anti-high temperature, Anti-high pressure Liquid,
Mildly corrosive liquid
Measuring Range：30 meters
Process Connection：Thread, Flange
Medium Temperature：-40℃ ~ 250℃
Process Pressure：-0.1 ~ 4.0 MPa
Accuracy： ± 3mm
Protection Grade：IP67
Frequency Range： 26GHz
Signal Output：4... 20mA/HART (Two-wire / Four)
RS485/ Modbus
Explosion-proof Grade：Exia ⅡC T6 Ga/ Exd ia IIC T6 Gb

20101916

Application：Solid material, Strong dust
Easy to crystallize, condensation occasion
Measuring Range： 70 meters
Process Connection：Universal Flange
Medium Temperature： -40℃ ~ 250℃
Process Pressure： -0.1 ~ 0.1 MPa
Protection Grade： IP67
Accuracy： ± 15mm
Frequency Range：26GHz
Signal Output：4... 20mA/HART (Two-wire / Four)
RS485/ Modbus
Explosion-proof Grade：Exia ⅡC T6 Ga/ Exd ia IIC T6 Gb

20101919

Application：Solid material, Strong dust,
easy to crystallize, condensation occasion
Measuring Range：80 meters
Process Connection：Universal Flange
Medium Temperature： -40℃ ~ 250℃
Process Pressure：-0.1 ~ 0.1MPa
Accuracy： ± 15mm
Protection Grade：IP67
Frequency Range：26GHz
Signal Output：4... 20mA/HART (Two-wire / Four)
RS485/ Modbus
Explosion-proof Grade：Exia ⅡC T6 Ga/ Exd ia IIC T6 Gb

20101921

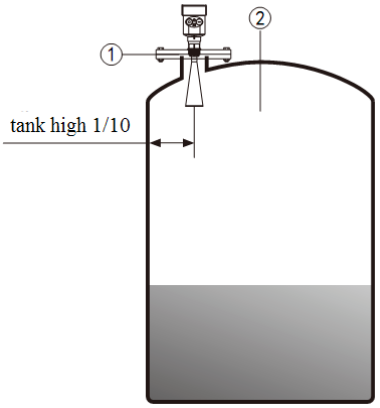
Application：Solid particles, Powder
Measuring Range：Liquid 30m/Solid 20m/powder 15m
Process Connection：Thread, Flange
Medium Temperature：-40℃ ~ 250℃
Process Pressure：-0.1 ~ 4.0MPa (Flat Flange)
-0.1 ~ 0.1MPa (Universal Flange)
Accuracy：± 10mm
Protection Grade：IP67
Frequency Range：26GHz
Signal Output：4... 20mA/HART (Two-wire / Four)
RS485/ Modbus
Explosion-proof Grade：Exia ⅡC T6 Ga/ Exd ia IIC T6 Gb

20101922

Application：Hygienic liquid storage,
Corrosive medium container
Measuring Range：20 meters
Process Connection：Flange
Medium Temperature：-40℃ ~ 130℃
Process Pressure：-0.1 ~ 4.0MPa
Accuracy：± 3mm
Protection Grade：IP67
Frequency Range：26GHz
Power Supply: Two-wire (DC24V) / Four-wire (DC24V/AC220V)
Signal Output：4... 20mA/HART (Two-wire / Four)
RS485/ Modbus
Explosion-proof Grade：Exia ⅡC T6 Ga/ Exd ia IIC T6 Gb

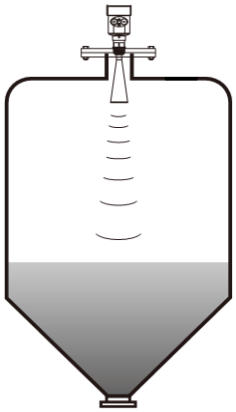
3. The Installation Requirements

- **Installation guide:**



Be installed in the place from diameter of the 1/4 or 1/6.
Note: The minimum distance from the tank wall should ＞ 1/10 of tank height.

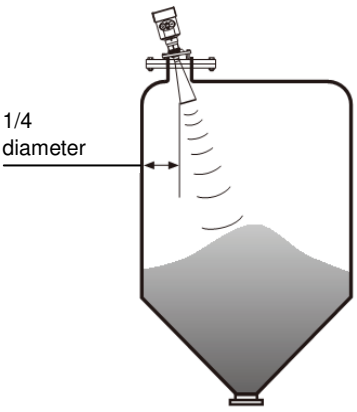
Note: ① datum
②The container center or axis of symmetry



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

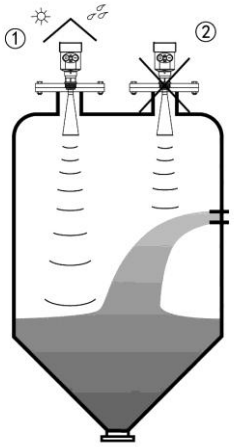
- A feed antenna to the vertical alignment surface. If the surface is rough, stack angle must be used to adjust the angle of cardan flange of the antenna to the alignment surface.

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



- **Typical installation errors：**

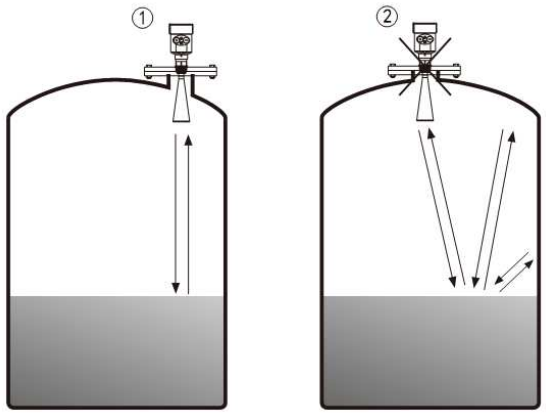
➢ Conical tank cannot be installed above the feed port.
Note: outdoor installation should adopt sunshade.



① Correct
② Error rainproof measures

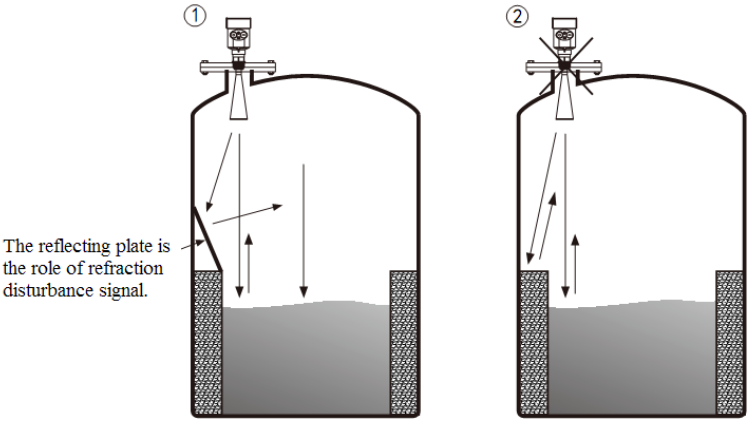
- The instrument cannot be installed in the arched or domed roof intermediate. In addition to produce indirect echo is also affected by the echoes. Multiple echo can be larger than the real value of signal echo, because through the top can concentrate multiple echo. So cannot be installed in a central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

① Correct
② Error



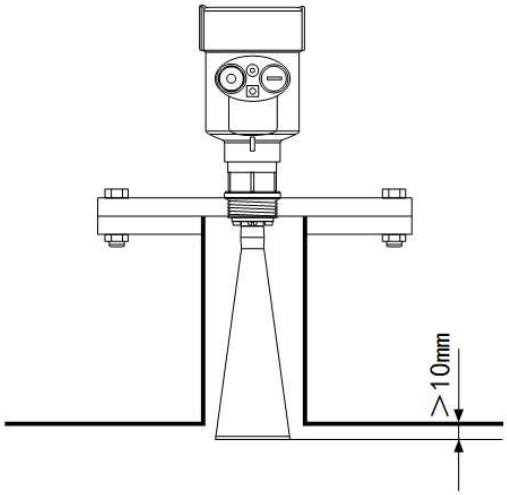
- There are obstacles affecting measurement needed reflection plate.

① Correct
② Error



- **Height of nozzle:**

Antenna extends into the tank at least 10mm distance.



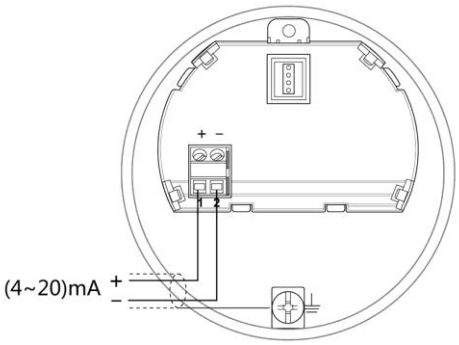
4. The Electrical Connection

- **The power supply voltage:**

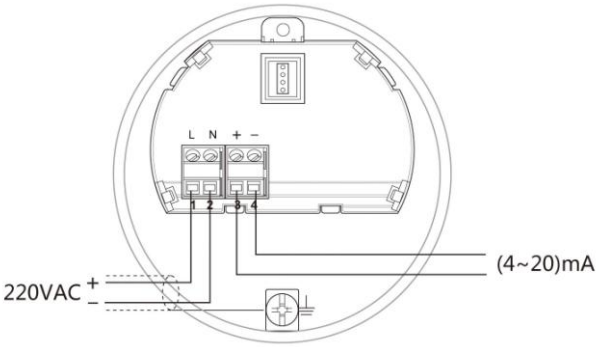
(4~20)mA/HART (Two wire system)	The power supply and the output current signal sharing a two core shield cable. The supply voltage range see technical data. For intrinsically safe type must be a safety barrier between the power supply and the instrument.
(4~20)mA/HART(Four wire system)	Separate power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

- **Connection mode:**

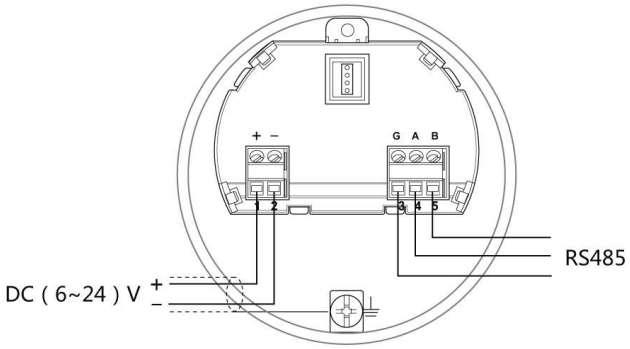
➢ 24V two wire wiring diagram as follows:



➢ 220V four wire connection is as below:



- 24V RS485/Modbus wiring diagram as follows:



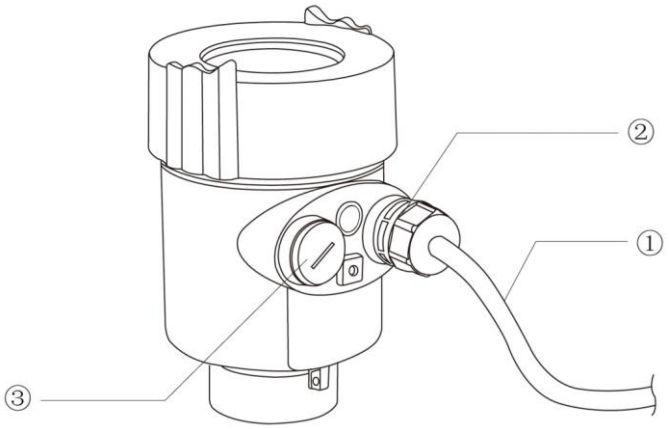
Safety instructions:

- 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

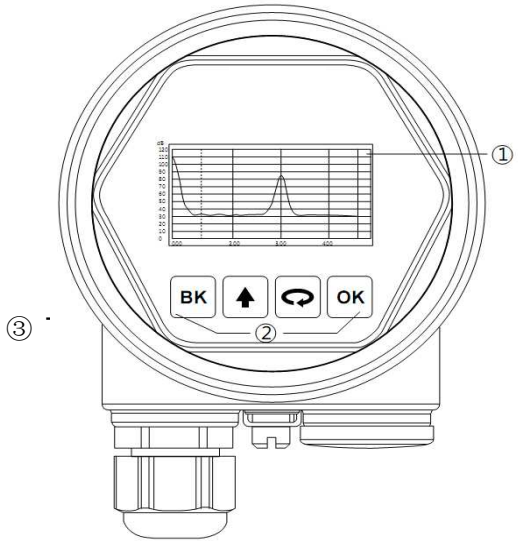
5. Instrument Commissioning

- **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

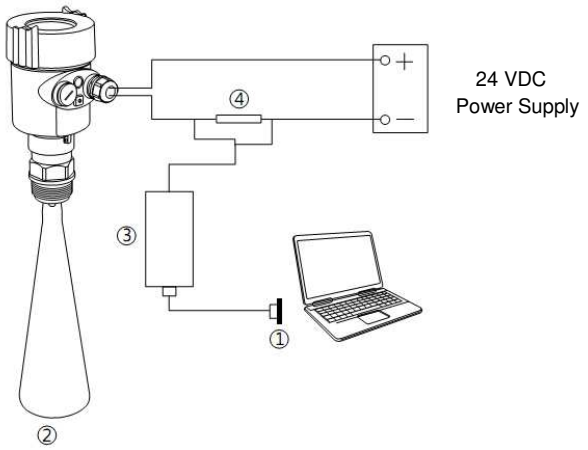


① Liquid crystal display(LCD)

- **PC debugging:**

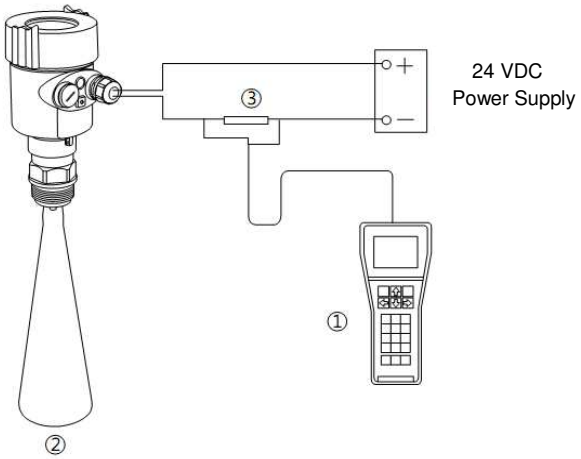
Connected to PC by HART

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



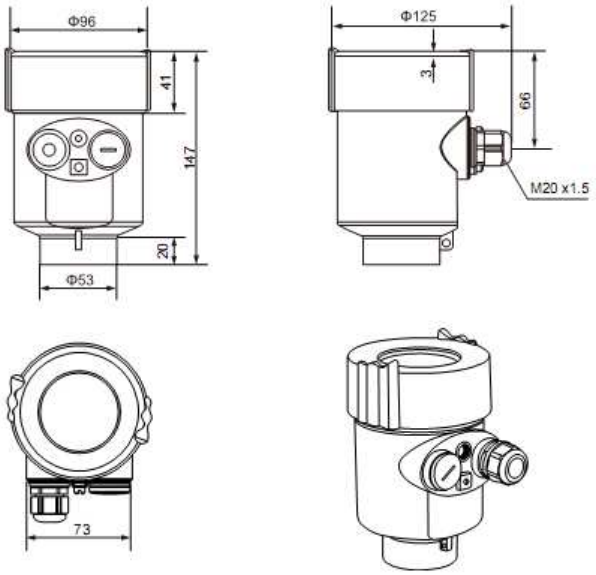
- **HART handheld programmer:**

① HART handheld programmer
② Radar level meter
③ 250 Ωresistor



6. Structure Size (Unit: mm)

- **The outer shell**:



- **Appearance size:**

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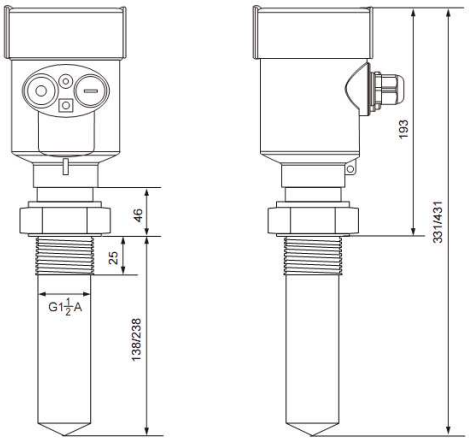

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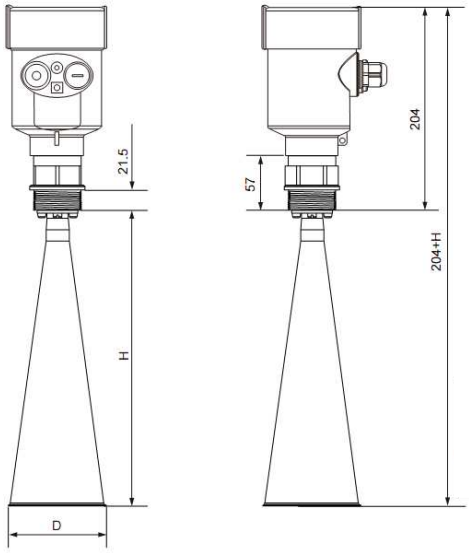

Flange	The Bell Diameter D	Bell height H
DN50	Φ46	140
DN80	Φ76	227
DN100	Φ96	288

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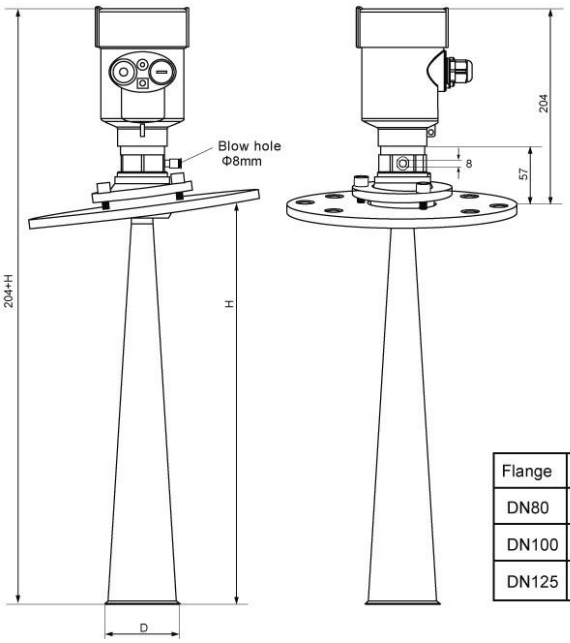

Flange	The Bell Diameter D	Bell height H
DN80	Φ76	227
DN100	Φ96	288
DN125	Φ121	620

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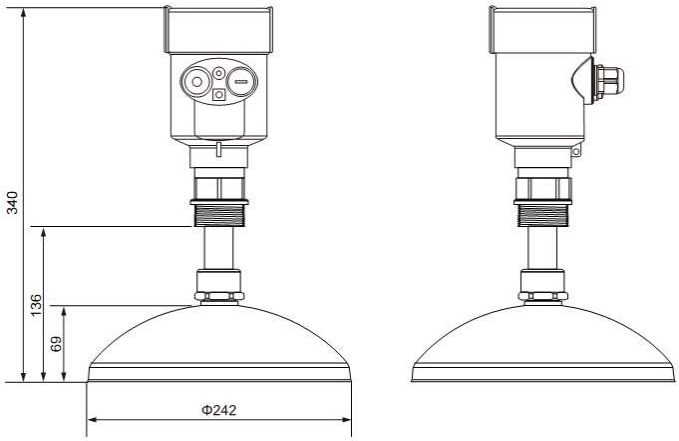

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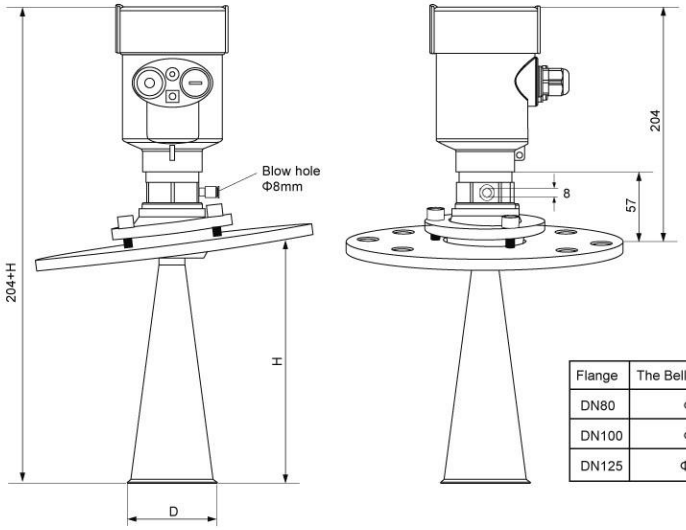

Flange	The Bell Diameter D	Bell height H
DN80	Φ76	227
DN100	Φ96	288
DN125	Φ121	620

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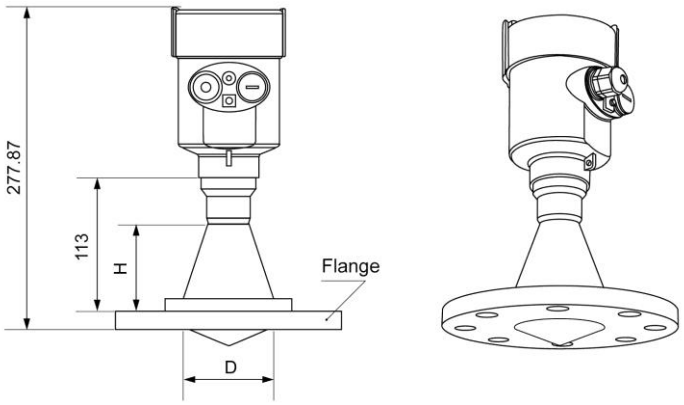
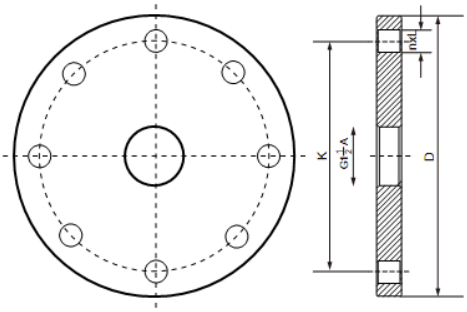


Flange	Trumpet diameter D	Trumpet height H
DN80	Φ76	80
DN100	Φ76	80

- **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

7. Technical Parameters

Housing		
Seal between housing and housing cover	Silicone rubber	
Housing window	Polycarbonate	
The ground terminal	Stainless steel	
The power supply voltage		
Two wire	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 1.0mm²	
Output	The output signal	(4 ~ 20) mA
	Communication protocol	HART
	Resolution	1.6μ A
	Fault signal	Constant current output; 20. 5mA, 22mA, 3.9mA
	The integral time	(0 ~ 50) s, adjustable
Blind zone	the ends of the antenna	
Max. measuring range	80m	
Microwave frequency	26GHz	
Communication interface	HART communication protocol	
The measurement interval	about 1 second (depending on the parameter settings)	
Adjustment 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	

8. Meter Linearity

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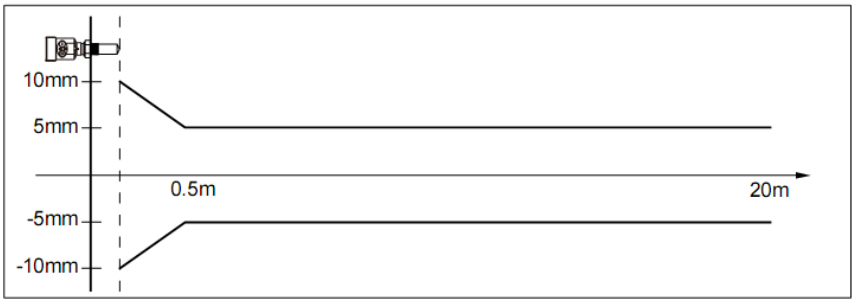
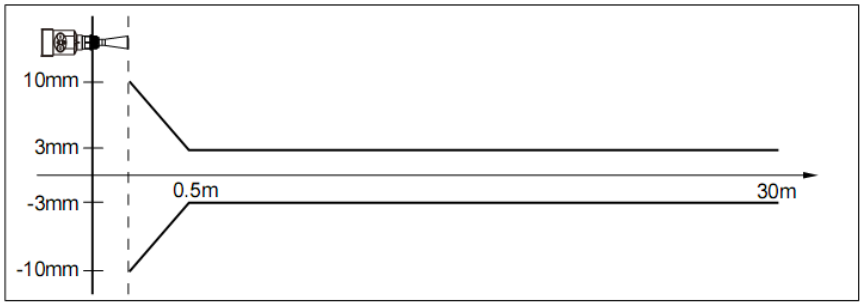
Emission angle	20°
Precision	See chart



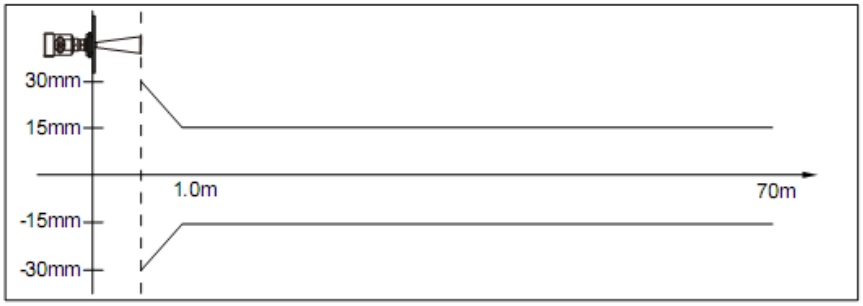
20101915

Emission angle	Depending on the size of the antenna
- ¢ 46mm	18°
- ¢ 76mm	12°
- ¢ 96mm	8°
Precision	See chart



20101916

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



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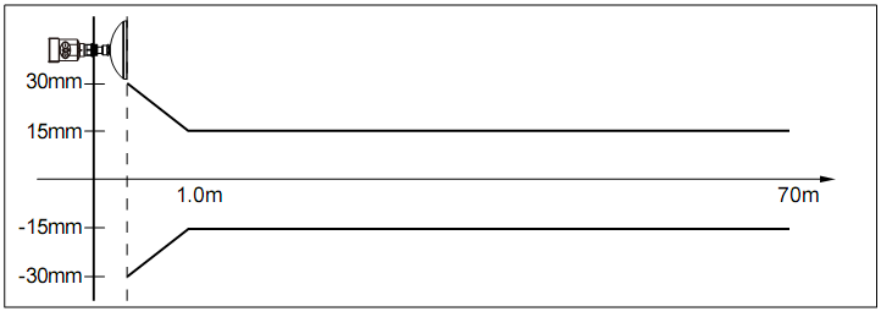
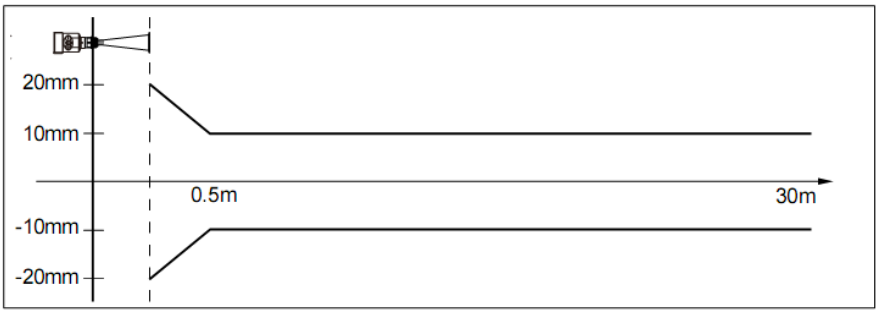
Emission angle	Depending on the size of the antenna
- ¢ 196mm	4°
- ¢ 242mm	4°
Precision	See chart



20101921

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



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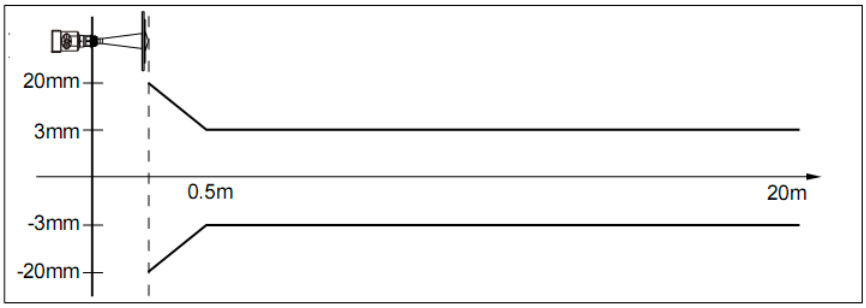
Emission angle	Depending on the size of the antenna
- ¢ 76mm	12°
Precision	See chart



9. Product Model Selection

- 20101914

License							
P Standard (Non-explosion-proof)							
I Intrinsically safe (Exib IIC T6 Ga)							
D Intrinsically safe and Isolated explosion proof (Exd (ia) IIC T6 Gb)							
	Antenna Type / Material / Temperature						
	F Sealing horn / PTEE / -40... 130 ℃						
		Process Connection / Material					
		G Thread G1½″ A					
		N Thread 1½″ NPT					
		A Flange DN50 /PP					
		B Flange DN80 /PP					
		C Flange DN100 /PP					
		Y Special custom					
			Vessel Connection Length				
			A connection 100mm				
			B customize				
				The Electronic Unit			
				2 (4~20) mA / 24V DC / Two wire			
				3 (4~20) mA / 24V DC / HART two wire			
				4 (4~20) mA / 220V AC / Four wire			
				5 RS485 / Modbus			
					Shell / Protection Grade		
					L Aluminum / IP67		
					G Stainless steel / IP67		
						Cable Line	
						M M 20x1.5	
						N ½″ NPT	
							Field Display/The Programmer
							A With
							X Without

- 20101915

License
P Standard (Non-explosion-proof)
I Intrinsically safe (Exiab IIC T6 Ga)
D Intrinsically safe and Isolated explosion proof (Exd (ia) IIC T6 Gb)

Process Connection / Material
G Thread G1½″A / Stainless Steel 304
N Thread 1½″ NPT / Stainless Steel 304
A Flange DN50 / Stainless Steel 304
B Flange DN80 / Stainless Steel 304
C Flange DN100 / Stainless Steel 304
Y Special Custom

Antenna Type / Material
A Horn Antenna Φ46mm / Stainless Steel 316L
B Horn Antenna Φ76mm / Stainless Steel 316L
C Horn Antenna Φ96mm / Stainless Steel 316L
Y Special Custom

Seal Up / Process Temperature
V Common Seal / (-40~150) ℃
K High Temperature Seal / (-40~250) ℃

The Electronic Unit
2 (4~20) mA / 24V DC / Two wire
3 (4~20) mA / 24V DC / HART two wire
4 (4~20) mA / 220V AC / Four wire
5 RS485 / Modbus

Shell / Protection Grade
L Aluminum / IP67
G Plastic / IP65

Cable Line
M M 20x1.5
N ½″ NPT

Field Display/The Programmer
A With
X Without

- 20101916

License
P Standard (Non-explosion-proof)
I Intrinsically safe (Exia IIC T6 Ga)
D Intrinsically safe and Isolated explosion proof (Exd (ia) IIC T6 Gb)

Process Connection / Material
G Thread G1½″A / Stainless Steel 304
N Thread 1½″ NPT / Stainless Steel 304
B Flange DN80 / Stainless Steel 304
C Flange DN100 / Stainless Steel 304
D Flange DN125 / Stainless Steel 304
E Flange DN150 / Stainless Steel 304
M Flange DN80 / Cardan joint
K Flange DN100 / Cardan joint
T Flange DN125 / Cardan joint
Y Special Custom

Antenna Type / Material
B Horn Antenna Φ76mm / Stainless Steel 316L
C Horn Antenna Φ96mm / Stainless Steel 316L
D Horn Antenna Φ121mm / Stainless Steel 316L
E Horn Antenna Φ76mm / Stainless Steel 316L/ Purging
F Horn Antenna Φ96mm / Stainless Steel 316L/ Purging
G Horn Antenna Φ121mm / Stainless Steel 316L/ Purging
H Horn Antenna Φ76mm / Stainless Steel 316L/ Dust cover
I Horn Antenna Φ96mm / Stainless Steel 316L/ Dust cover
J Horn Antenna Φ121mm / Stainless Steel 316L/ Dust cover
Y Special Custom

Seal Up / Process Temperature
V Common Seal / (-40~150) ℃
K High Temperature Seal / (-40~250) ℃

The Electronic Unit
2 (4~20) mA / 24V DC / Two wire
3 (4~20) mA / 24V DC / HART two wire
4 (4~20) mA / 220V AC / Four wire
5 RS485 / Modbus

Shell / Protection Grade
L Aluminum / IP67
G Plastic/ IP675

Cable Line
M M 20x1.5
N ½″ NPT

Field Display/The Programmer
A With
X Without

- 20101919

License
P Standard (Non-explosion-proof)
I Intrinsically safe (Exib IIC T6 Gb)
D Intrinsically safe and Isolated explosion proof (Exd (ib) IIC T6 Gb)

Process Connection / Material
G Thread G1½″A / Stainless Steel 304
N Thread 1½″ NPT / Stainless Steel 304
B Flange DN80 / Stainless Steel 304
C Flange DN100 / Stainless Steel 304
D Flange DN125 / Stainless Steel 304
E Flange DN150 / Stainless Steel 304
F Flange DN200 / Stainless Steel 304
H Flange DN250 / Stainless Steel 304
M Flange DN80 / Cardan joint
K Flange DN100 / Cardan joint
T Flange DN125 / Cardan joint
Z Flange DN150 / Cardan joint
W Flange DN200 / Cardan joint
V Flange DN250 / Cardan joint
Y Special Custom

Antenna Type / Material
B Paraboloid Antenna Φ196mm / Stainless Steel 316L
C Paraboloid Antenna Φ242mm / Stainless Steel 316L

Seal Up / Process Temperature
V Common Seal / (-40~150) ℃
K High Temperature Seal / (-40~250) ℃

The Electronic Unit
2 (4~20) mA / 24V DC / Two wire
3 (4~20) mA / 24V DC / HART two
4 (4~20) mA / 220V AC / Four wire
5 RS485 / Modbus

Shell / Protection Grade
L Aluminum / IP67
G Plastic/ IP65

Cable Line
M M 20x1.5
N ½″ NPT

Field Display/The Programmer
A With
X Without

- 20101921

License
P Standard (Non-explosion-proof)
I Intrinsically safe (Exia IIC T6 Gb)
D Intrinsically safe and Isolated explosion proof (Exd (ib) IIC T6 Gb)

Process Connection / **Material**
G Thread G1½″A / Stainless Steel 304
N Thread 1½″ NPT / Stainless Steel 304
B Flange DN80 / Stainless Steel 304
C Flange DN100 / Stainless Steel 304
D Flange DN125 / Stainless Steel 304
E Flange DN150 / Stainless Steel 304
M Flange DN80 / Cardan joint
K Flange DN100 / Cardan joint
T Flange DN125 / Cardan joint
Y Special Custom

Antenna Type / **Material**
B Horn Antenna Φ76mm / Stainless Steel 316L
C Horn Antenna Φ96mm / Stainless Steel 316L
D Horn Antenna Φ121mm / Stainless Steel 316L
E Horn Antenna Φ76mm / Stainless Steel 316L/ Purging
F Horn Antenna Φ96mm / Stainless Steel 316L/ Purging
G Horn Antenna Φ121mm / Stainless Steel 316L/ Purging
H Horn Antenna Φ76mm / Stainless Steel 316L/ Dust cover
I Horn Antenna Φ96mm / Stainless Steel 316L/ Dust cover
J Horn Antenna Φ121mm / Stainless Steel 316L/ Dust cover
Y Special Custom

Seal Up / **Process Temperature**
V Common Seal / (-40~150) ℃
K High Temperature Seal / (-40~250) ℃

The Electronic Unit
2 (4~20) mA / 24V DC / Two wire
3 (4~20) mA / 24V DC / HART two wire
4 (4~20) mA / 220V AC / Four wire
5 RS485 / Modbus

Shell / **Protection Grade**
L Aluminum / IP67
G Plastic / IP65

Cable Line
M M 20x1.5
N ½″ NPT

Field Display/The Programmer
A With
X Without

- 20101922

License
P Standard (Non-explosion-proof)
I Intrinsically safe (Exia IIC T6 Gb)
G Flameproof (Exd IIC T6 Gb)
Process Connection / Material
B Flange DN80 / PTFE
C Flange DN100 / PTFE
D Flange DN150 / PTFE
E Flange DN80 / Stainless Steel 304
F Flange DN100 / Stainless Steel 304
G Flange DN150 / Stainless Steel 304
Y Special Custom
Seal Up / Process Temperature
V Viton / (-40~130) ℃
The Electronic Unit
3 (4~20) mA / 24V DC / HART two wire
4 (4~20) mA / 220V AC /HART four wire
5 RS485 Modbus / 6~24V four wire
Shell / Protection Grade
L Aluminum / Single cavity / IP67
H Aluminum / Double cavity / IP67
G Plastic / Single cavity / IP65
K Stainless steel / Single cavity / IP67
Cable Line
M M 20x1.5
N ½″ NPT
Field Display/The Programmer
A With
X Without

Material level meter selection parameter table:

Customer information

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

Certificates

□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: _____ ℃
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