

26GHz Radar Level Meter

Model: 80X Series



Catalogue

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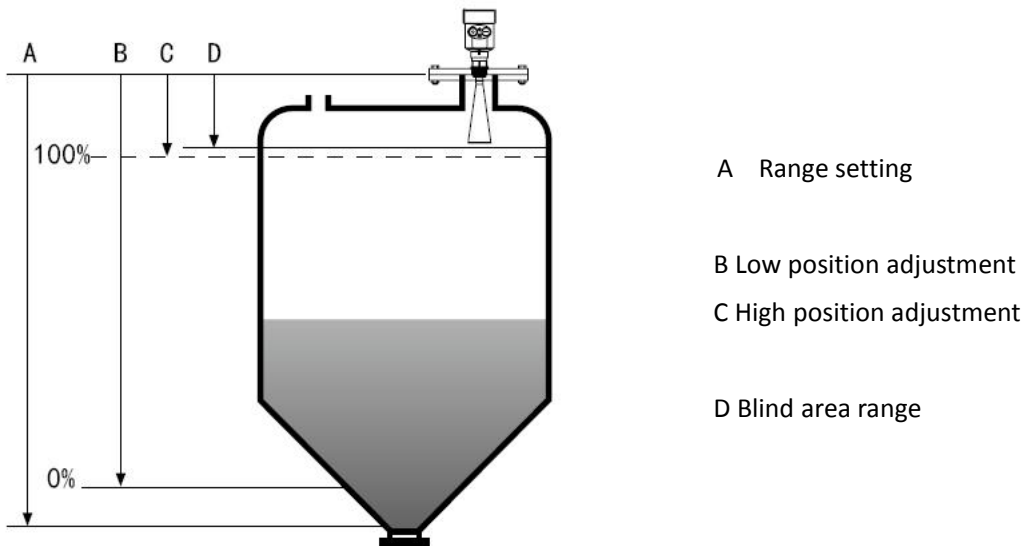
26GHz radar level meter

1. Product overview

The 80X series sensor is 26 G high frequency radar level measuring instrument, the maximum measuring distance can reach 80 meters. The antenna is further optimized, and the new fast microprocessor can be used for higher rate signal analysis, which makes the instrument can be used in some complex measurement conditions such as reactor, solid silos and so on.

principle

The radar object position antenna transmits narrower microwave pulse and transmits it down through the antenna. Microwave contact with the surface of the measured medium is reflected back and received by the antenna system again, transmitting the signal to the electronic circuit part of the automatic conversion to the object level signal (because of the speed of microwave propagation is extremely fast, The time taken for the electromagnetic wave to reach the target and return to the receiver through reflection is almost instantaneous).



The datum measured is the sealing surface of the thread underside or flange.

Note: when using radar level meters, it is important to ensure that the maximum material level does not enter the blind area of measurement (shown in figure D).

Features of 26 G radar level meter:

- Small antenna size, easy installation; non-contact radar, no wear, no pollution.
- Almost free from corrosion, foam; almost unaffected by atmospheric vapor, temperature, and pressure changes.
- Serious dust environment has little effect on the work of high frequency level meter.
- Shorter wavelengths reflect better on sloping solid surfaces.
- The beam angle is small and the energy is concentrated, which not only enhances the echo ability but also avoids the interference.
- The blind area of measurement is smaller, and good results will be obtained for the measurement of small tank.
- High signal-to-noise ratio, even under fluctuating conditions Get better performance.
- High frequency is the best choice for measuring solid and low dielectric constant medium.

2.Instrument introduction

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Should be used: various corrosion liquid

Measurement range: 10 m

Process connection: thread, Flange

Medium temperature: -40C 130C

Process pressure:-0.1~0.3MPa

Precision: ± 5 mm

Protection grade: IP67

Frequency range: 26GHz

Explosion-proof grade: Exia II C T6 Ga/ Exd ia IIC T6 Gb

Signal output: 4. 20mA/HART (two / four) RS485/Mod bus



Should be used: temperature resistance, pressure resistance, mild corrosion of liquid
 Measurement range: 30 m
 Process connection: thread, Flange
 Medium temperature: -40C 250 °C
 Process pressure:-0.1~4.0MPa
 Precision: ± 3 mm
 Protection grade: IP67
 Frequency range: 26GHz
 Explosion-proof grade: Exia II C T6 Ga/Exd ia IIC T6 G
 Signal output: 4. 20mA/HART (two / four) RS485/Mod bus

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To be used: sanitary liquid storage container,
 Measuring range of strongly corrosive vessel: 20m
 Process connection: flange medium temperature: -40C 150 °C
 Process pressure:-0.1~0.1MPa
 Precision: ± 3 mm
 Protection grade: IP67
 Frequency range: 26GHz
 Explosion-proof etc. Stage: Exia II C T6 Ga/Exd ia IIC T6 Gb
 Output: 4.20mA/HART (two-wire / four-wire) RS485/Mod bus

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Should be used: solid materials, strong dust, easy crystallization, Dew field
 Measurement range: 70m
 Process connection: universal flange medium
 Temperature: -40C 250 °C
 Process pressure:-0.1~0.1MPa
 Precision: ± 15 mm
 Protection grade: IP67

Frequency range: 26GHz

Explosion-proof Grade: Exia II C T6

Ga/Exd ia IIC T6 Gb output: 4.20mA/HART

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Should be used: solid particles, powder

Measurement range: liquid 30m / block 20m /
solid 15m

Process connection: thread, Flange

Medium temperature: -40C 250 °C

Process pressure:-0.1~4.0MPa (flat flange)-
0.1~0.1MPa (universal flange) fineness:
 $\pm 10\text{mm}$

Protection grade: IP67

Frequency range: 26GHz

Explosion-proof Grade: Exia II C T6 Ga/Exd ia IIC
T6 Gb

Output: 4.20mA/HA RT (two-wire / four-line)
RS485/Mod bus4...20mA/HART

810



Should be used: solid materials, strong dust,
easy crystallization, Dew field

Measurement range: 80m

Process connection: universal flange

Medium temperature: -40C 250 °C

Process pressure:-0.1~0.1MPa

Precision: $\pm 15\text{mm}$

Protection grade: IP67

Frequency range: 26GHz

Prevention Explosive level: Exia II C T6

Ga/Exd ia IIC T6 Gb

Output: 4.20mA/HART (two-

wire / four-wire) RS485/Mod bus

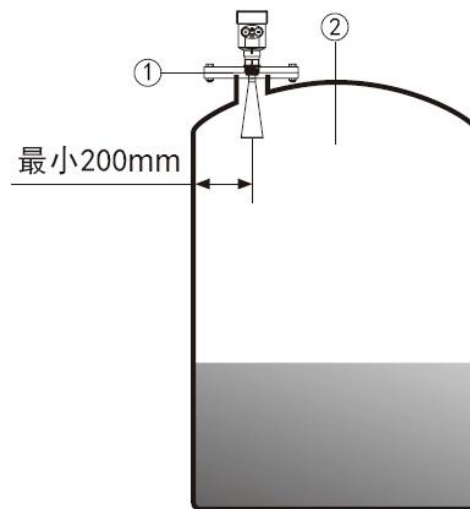
3、 Installation requirements

- Installation guidance

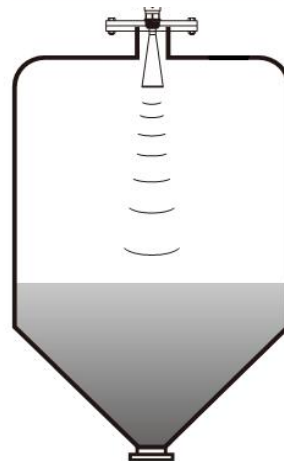
Install at 1 / 4 or 1 / 6 of the diameter.

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

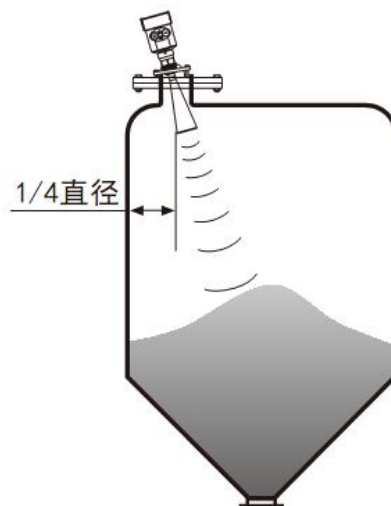
Note: 1 datum level 2 vessel center or symmetry axis.



- The top plane of the conical tank, which can be mounted in the middle of the top of the tank, is guaranteed to be measured at the bottom of the cone



- The antenna should be vertically aligned to the surface of the material when the stack is in

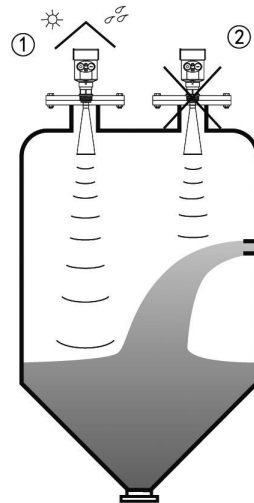


place. If the material surface is uneven, the wide flange must be used to adjust the horn angle so that the horn is as close as possible to the feed surface. (due to the problem of echo attenuation or even loss of signal due to sloping solid surface)

● **Typical error installation::**

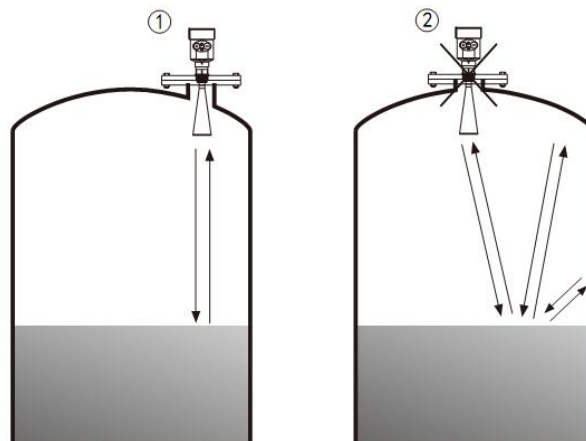
The conical tank cannot be mounted above the inlet. At the same time: outdoor installation should be taken to shade the sun, rain prevention measures.

- ① Exactness ② Wrong



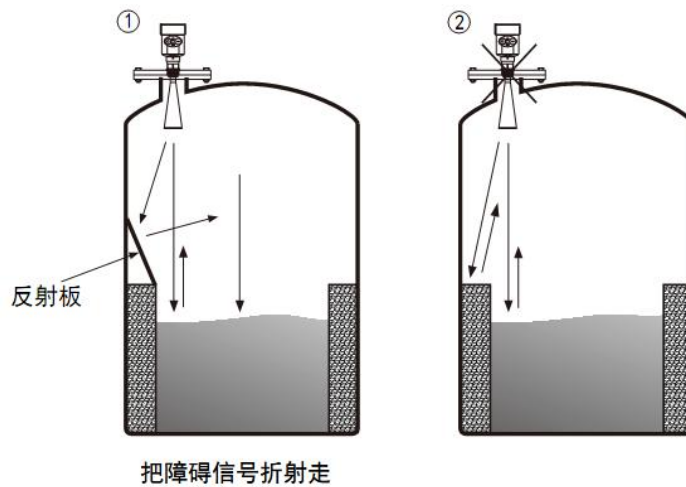
➤ Instruments should not be installed between arched or circular tank tops. In addition to the indirect echo will be generated by multiple echoes of the shadow. Multiple echo may be larger than the signal threshold of real echo because multiple echoes can be concentrated through the top. So you can't install

- ① Exactness ② Wrong

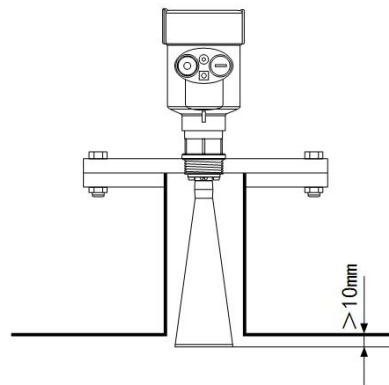


- When there are obstacles in the tank to affect the measurement, it is necessary to add a reflector to the normal measurement.

- ① Exactness ② Wrong



- Connection height requirement: must ensure the antenna into the tank at least 10mm distance.



4、 Electrical connection

Supply voltage

(4 ~ 20) mA/HART (two-wire system) power supply and output current signal share a two-core shielded cable. Specific range of power supply voltage see technical data. For the intrinsically safe type, a safety gate shall be added between

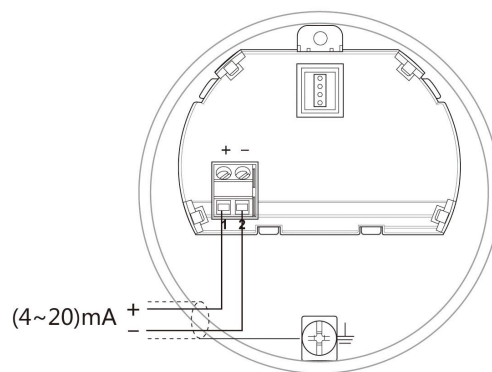
the power supply and the meter.

mA/HART (four wire system) power supply and current signal are separated, each using a two core shielded cable wire. Specific range of power supply voltage see technical data.

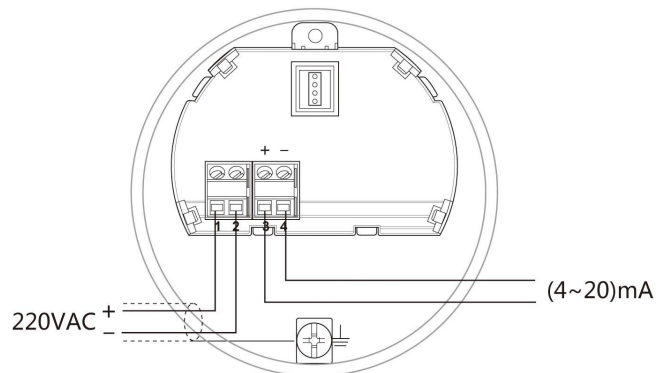
RS485/Modbus power supply and Modbus signal line are used separately Core shielding cable, specific range of supply voltage see technical data.

● Attended mode

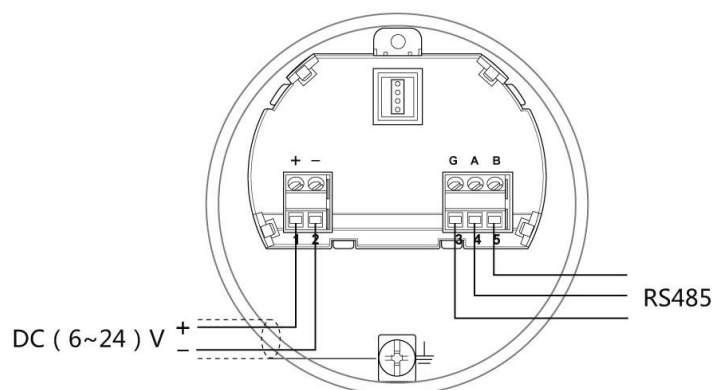
The 24V two-wire wiring diagram is as follows:



220V four-wire wiring as shown below::



The 24V RS485/Modbus wiring diagram is as follows::



Safety guidance

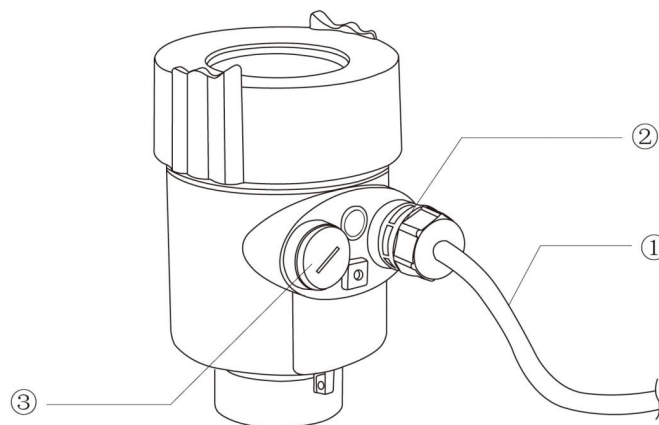
Please comply with the requirements of local electrical installation procedures!

Please comply with the local regulations for the health and safety of personnel. All Operation of instrument electrical components must be done by trained professionals.

Please check the nameplate of the instrument to ensure that the product specifications Meet your requirements. Please ensure that the supply voltage is consistent with the Requirements on the nameplate of the meter

Protective class

This instrument fully meets the requirements of the protective class IP66/67, please ensure the waterproofing of cable sealing head. As shown below



How to ensure that the installation meets the IP67 requirements:

Make sure the seal head is not damaged.

Please make sure the cable is not damaged.

Please ensure that the cables used comply with the requirements of the electrical connection specification.

Before entering the electrical interface, bend the cable downward to ensure that water does not flow into the housing, see 1 tighten the cable seal head see 2

Please close the unused electrical interface with blind plugging, see 3

5, Instrument debugging

Three debugging methods:

1 Display / Key

2 Host computer debugging

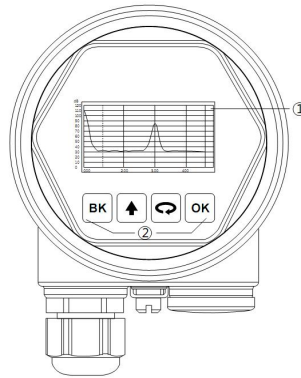
3 HART handheld programmer

The display / Key is debugged

By four buttons on the display screen. The language of the debug menu is optional. After debugging, generally used only for display, through the glass window can very clearly read out the measured values.

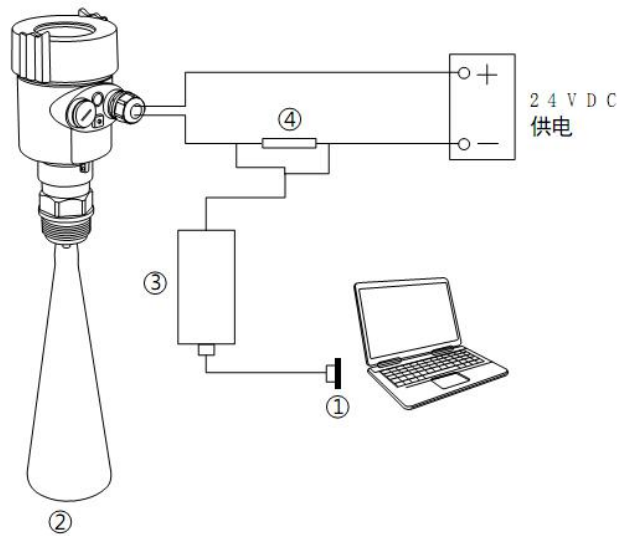
Display / Keystroke

1 LCD 2 key



- PC debugging is connected to host computer by HART

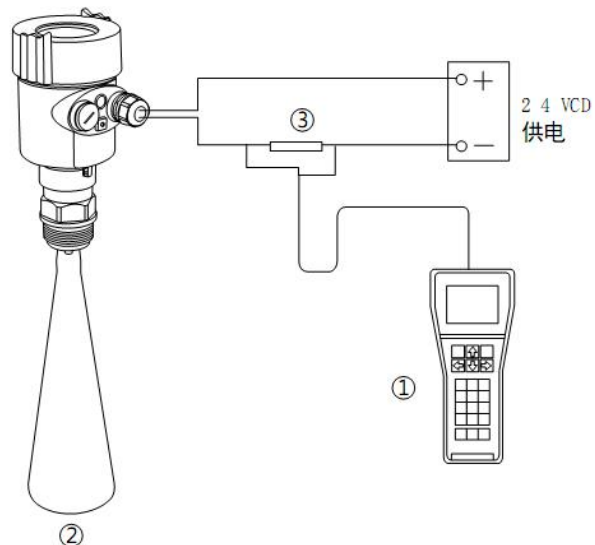
1 RS232 interface / or USB interface
2 radar level meter
3 HART adapter
4 250 Ω resistor



- HART handheld programmer

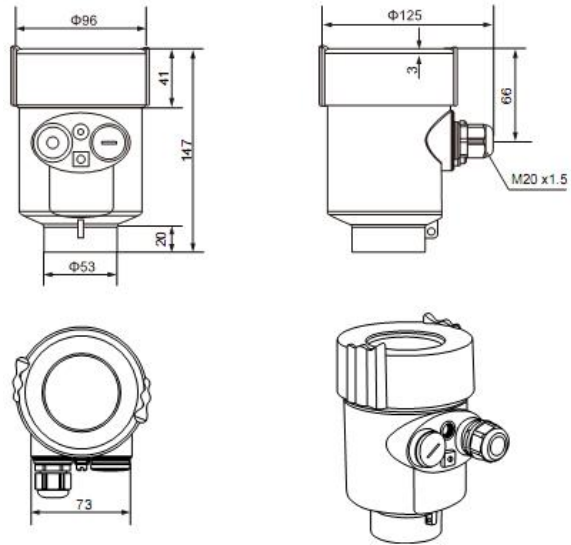
Programming

1 HART handheld programmer
2 radar level meter
3 250 Ω resistor



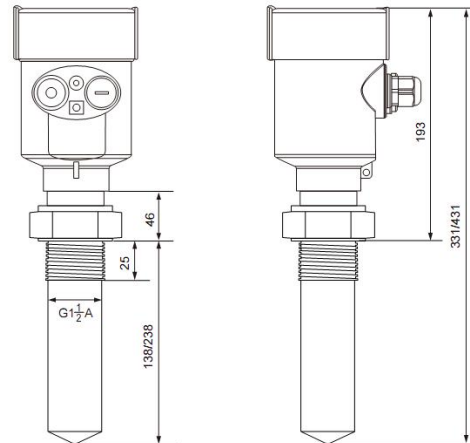
6. Structural dimensions (unit: mm)

- Watchcase

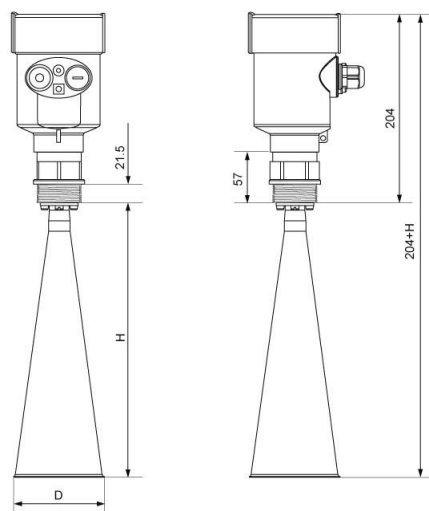


- Appearance dimension

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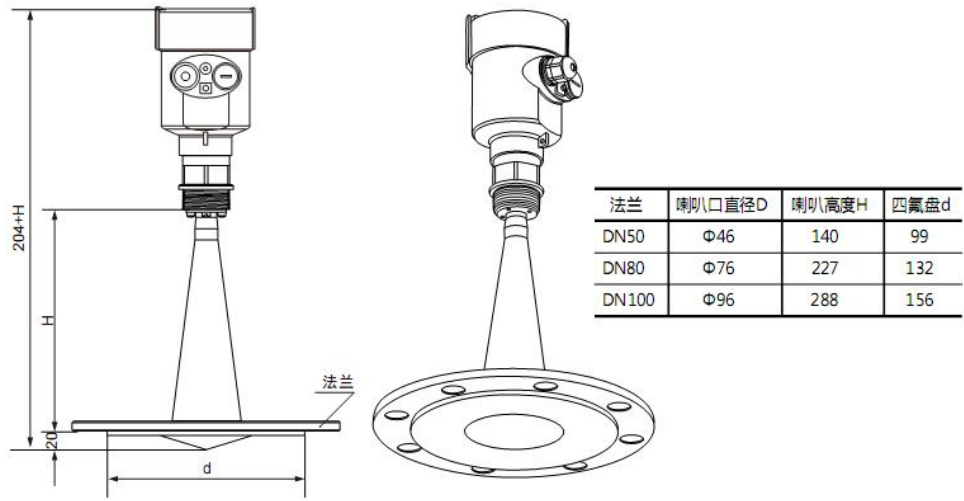


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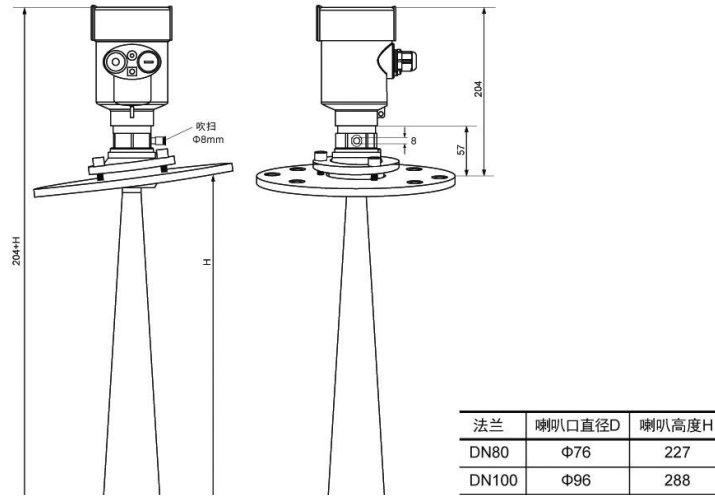


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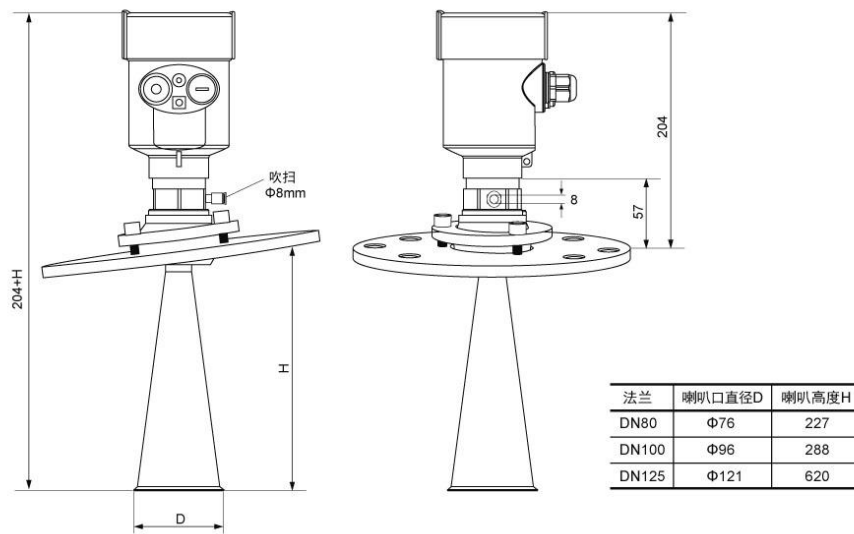
法兰	喇叭口直径D	喇叭高度H
DN50	Φ46	140
DN80	Φ76	227
DN100	Φ96	288



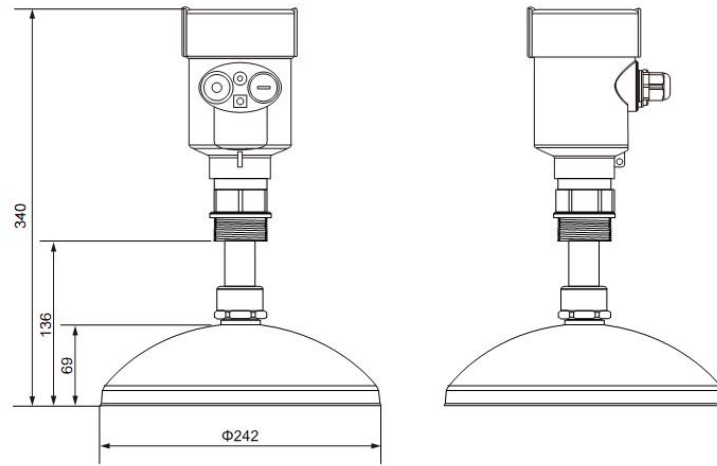
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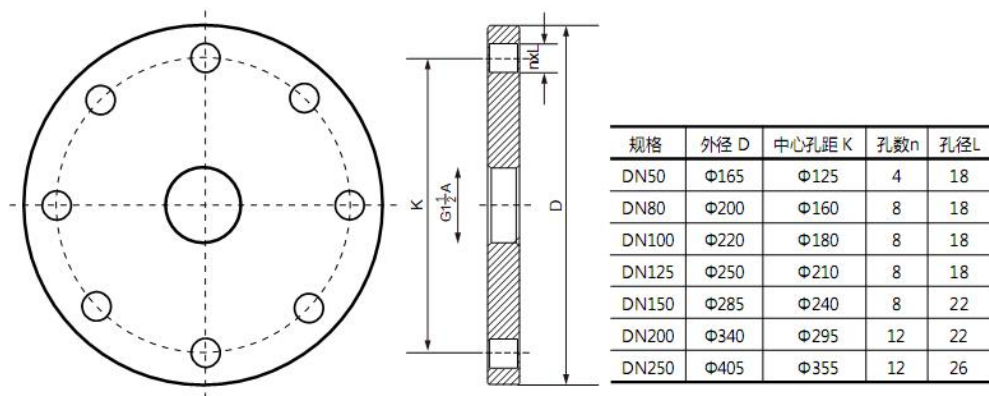
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Flange selection



7、 Technical parameter

Outer shell

Sealing between housing and housing cover

Silastic

Shell window polycarbonate

Merlon

Earth terminal

Stainless steel

Service voltage

Two-wire system

Normalized form

(16~26) V DC

Intrinsically safe type

(21.6~26.4) V DC

Power dissipation

max 22.5mA / 1W

Allowable ripple

- <100Hz

U_{ss} < IV

- (100~100K) Hz

U_{ss} < 10mV

Cable parameters

Cable inlet / plug

1 M20x1.5 cable inlet

A Blind plugging M20x1.5

Binding post

Traverse cross section 2.5mm

Out parameter

Output signal

(4~20) mA

Protocol

HART

Resolution

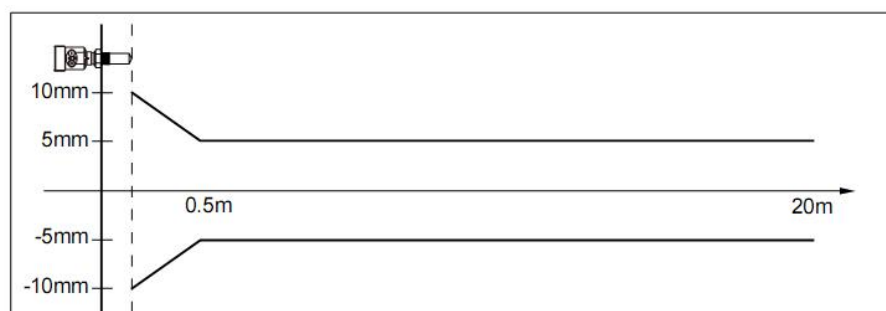
1.6 μA

	Breakdown signal	Current output invariance ; 20.5mA 22mA; 3.9mA
	Integration time	(0~50)s, Adjustable
Blind antenna end	Blind antenna end	
Maximum measuring distance	80 metres	
Microwave frequencies	26GHz	
Communication interface	HART communication protocol	
Measurement interval	About 1 second (depending on parameter settings)	
Adjust the time	About 1 second (depending on parameter settings)	1mm
Working Storage and Transportation temperature (-40 ~ 100)		(-40~100) °C
Process temperature (antenna part temperature)		(-40~250)°C
Pressure	Max. 4MPa	
Shatter-proof	Mechanical vibration 10m/s, (10 ~ 150) Hz	

8, Instrument linearity

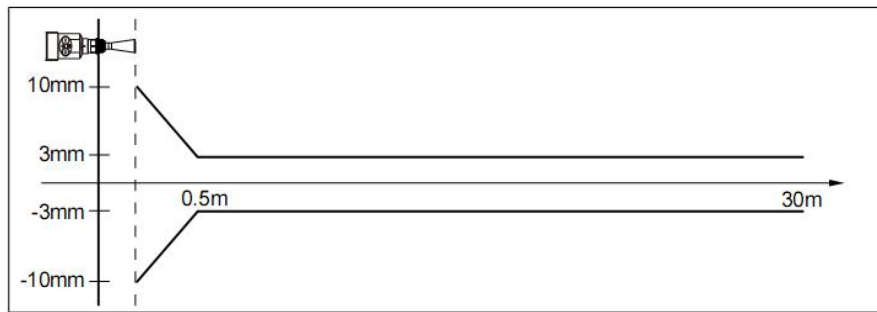
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Accuracy of emission angle
See below



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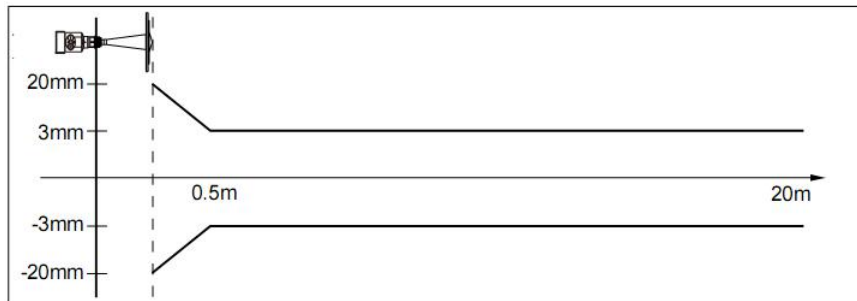
Angle of departure	Depending on the size of the antenna
- \varnothing 46mm	18°
- \varnothing 76mm	12°
- \varnothing 96mm	8°
precision	See below



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Accuracy of emission angle

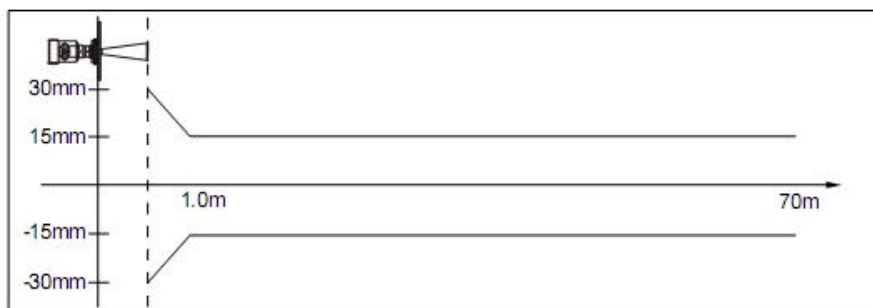
- \varnothing 46mm	18°
- \varnothing 76mm	12°
- \varnothing 96mm	8°
Precision	See below



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Accuracy of emission angle Depending on the size of the antenna

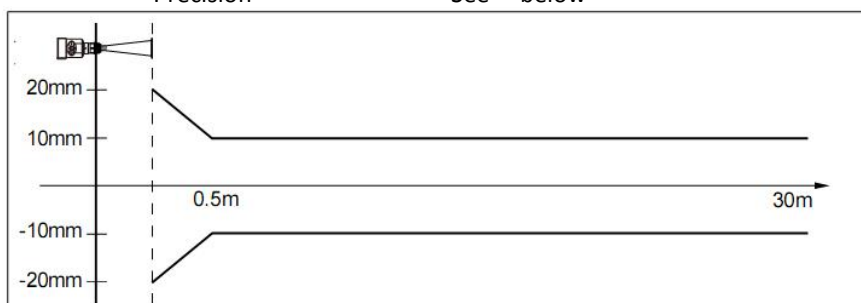
- \varnothing 76mm	12°
- \varnothing 96mm	8°
- \varnothing 121mm	6°
Precision	See below

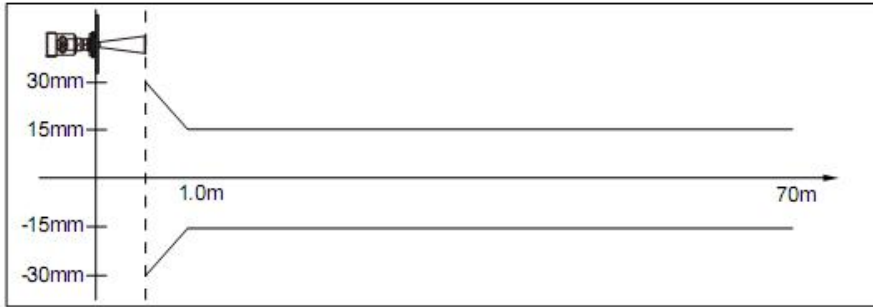


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Accuracy of emission angle Depending on the size of the antenna

- \varnothing 76mm	12°
- \varnothing 96mm	8°
- \varnothing 121mm	6°
Precision	See below

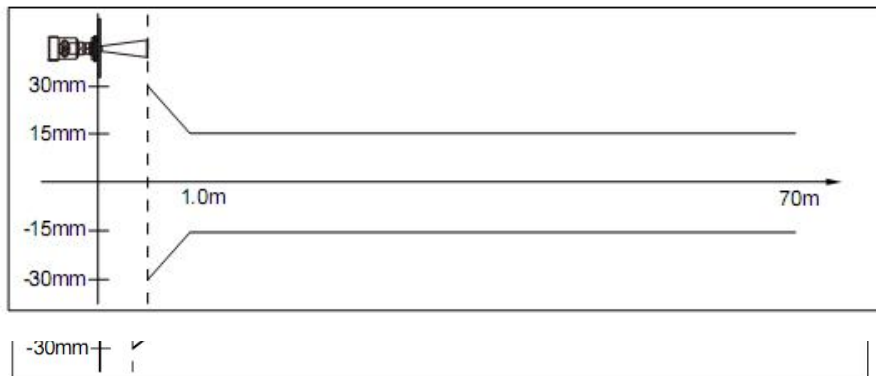




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Accuracy of emission angle Depending on the size of the antenna

	- \varnothing 196mm	4°
	- \varnothing 242mm	4°
Precision	See	below



9. Instrument selection table

● 805

licence

P standard (non-explosion-proof)

I (Exia IIC T6 Ga)

D Exd [ia] IIC T6 Gb

Antenna type / material / process temperature

F Sealed horn / PTFE (-40C 130C)

Process bonding / Material

G Thread G1 "A

N Thread 1" NPT

A Flange DN50/PP

B Flange DN80/PP

C Flange DN100/PP

Y Special custom

Vessel pipe length

A Take-over 100mm

B Special customization

Electronic unit

2 (4N 20) mA/24V DC 2 wire system

3 (4N 20) mA/24V DC/HART 2 wire system

4 (4N 20) mA/220V AC/ 4 wire system

5 RS485/Modbus

Housing / Protection grade

L AL/ IP67

G Plastics / IP65

Thread

M M20 x l. 5

N ½ " NPT

Field display / programming

A Belt

X Without

● **806**

licence

P Standard (non-explosion-proof)

I (Exia IIC T6 Ga)

D Exd [ia] IIC T6 Gb

Process bonding / material

G Thread G1 "A / stainless steel 304

N Thread 1" NPT/ stainless steel 304

A Flange DN50/ stainless steel 304B flange DN80/ stainless steel 304

C Flange DN100/ stainless steel 304

Y Special custom

Antenna type / material

- A. Special customization of Φ 46mm/ stainless Steel 316L**
- B. B Horn Antenna Φ 76mm/ stainless Steel 316L**
- C. C Horn Antenna Φ 96mm/ stainless 316L Y**

Sealing / process temperature

V Viton/ (-40~150) °C

K Kalrez/ (-40~250) °C

Electronic unit

2 (4N 20) mA/24V DC 2 Wire system

3 (4N 20) mA/24V DC/HART 2 Wire system

4 (4N 20) mA/220V AC/ 4 Wire system

5 RS485/Modbus

Housing / protection grade

L AL/ IP67

G Plastics / IP65

Cable feed lin

M M20 x l. 5

N ½ " NPT

Field display / Programming

A Belt

X Without

● **807**

Licence

P Standard (non-explosion-proof)

I (Exia IIC T6 Ga)

D Exd [ia] IIC T6 Gb

Process bonding / material

B Flange DN80/ stainless steel 304

C Flange DN100/ stainless steel 304

e Flange DN150/ stainless steel 304

Y Special custom

Antenna type / material

B Horn antenna Φ 46mm/ Stainless steel 316L

C Horn antenna Φ 76mm/ stainless steel 316L

D Horn antenna Φ 96mm/ stainless steel 316L

Sealing / Process temperature

V Viton/ (-40~150) °C

Electronic unit

2 (4N 20) mA/24V DC 2 wire system

3 (4N 20) mA/24V DC/HART 2 wire system

4 (4N 20) mA/220V AC/ 4 wire system

5 RS485/Modbus

Housing / protection grade

L AL / IP67

G plastics / IP65

Cable feed line

M M20 x l. 5

N 1/2" NPT

Field display / programming

A Belt

X Without

● **808**

Licence

P Standard (non-explosion-proof)

I (Exia IIC T6 Ga)

D Exd [ia] IIC T6 Gb

Process bonding / material

- G Thread G1 "A / stainless steel 304**
- N Thread 1" NPT/ stainless steel 304**
- B Flange DN80/ stainless steel 304**
- C Flange DN100/ 304D flange DN125/ 304E flange DN150/ Stainless steel 304**
- M Flange DN80/ Universal joint**
- K Flange DN100 / Universal Joint T-Flange
DN125/ Universal Joint**
- Y Special customization**

Antenna type / material
B Horn antenna Φ 76mm/ Stainless steel 316L
C Horn Φ 96mm/ Stainless steel 316L
D Horn Φ 121mm/ Stainless steel 316L
E Horn antenna Φ 76mm/ Stainless steel 316L / Blow swept
F Horn antenna Φ 96mm/ Stainless steel 316L / Blow
G Horn antenna Φ 121mm/ Stainless steel 316L / Blowing
H Horn antenna Φ 76mm/ Stainless steel 316L / Dust shield
I Horn antenna Φ 96mm/ Stainless steel 316L / Dust cover
J Special customization of Φ 121mm/ Stainless Steel 316
L / Dust cover Y for Horn Antenna
Sealing / Process temperature
V Viton/ (-40~150) °C
K Kalrez/ (-40~250) °C
Electronic unit
2 (4N 20) mA/24V DC 2 wire system
3 (4N 20) mA/24V DC/HART 2 wire system
4 (4N 20) mA/220V AC/ 4 wire system
5 RS485/Modbus
Housing / Protection grade
L AL / IP67
G Plastics / IP65
Cable feed line
M M20 x l. 5
N 1/2" NPT
Field display / programming
A Belt
X Without

● **809**

Licence

P Standard (non-explosion-proof)

I (Exia IIC T6 Ga)

D Exd [ia] IIC T6 Gb

Process bonding / material

G Thread G1 "A / stainless steel 304
N Thread 1" NPT/ stainless steel 304
B Flange DN80/ stainless steel 304C flange
DN100/ 304D flange DN125/ 304E flange DN150/ stainless steel 304
M Flange DN80/ Universal joint
K Flange DN100 / Universal Joint
T-Flange DN125/ Universal Joint
U- Y Special customization

Antenna type / material

B Horn antenna Φ 76mm/ Stainless steel 316L
C Horn antenna Φ 96mm/ Stainless steel 316L
D Horn antenna Φ 121mm/ Stainless steel 316L
E Horn antenna Φ 76mm/ Stainless steel 316L / Blowing
F Horn antenna Φ 96mm/ Stainless steel 316L / Blowing
G Horn antenna Φ 121mm/ Stainless steel Steel 316L / Blowing
H Horn antenna Φ 76mm/ Stainless steel 316L / Dust cover
I Horn antenna Φ 96mm/ Stainless steel 316L / Dust cover
J La Special customization of Φ 121mm/ Stainless steel 316L / Dust shield Y

Sealing / Process temperature

V Viton/ (-40~150) °C
K Kalrez/ (-40~250) °C

Electronic unit

2 (4N 20) mA/24V DC 2 wire system
3 (4N 20) mA/24V DC/HART 2 wire system
4 (4N 20) mA/220V AC/ 4 wire system
5 RS485/Modbus

Housing / protection grade

L AL/ IP67

V plastics / IP65

Cable feed line

M M20 x l. 5
N 1/2" NPT

Field display / programming

A Belt
X Without

● **810**

Licence

P Standard (non-explosion-proof)

I (Exia IIC T6 Ga)

D Exd [ia] IIC T6 Gb

Process bonding / material

G Thread G1 "A / Stainless steel 304
 N Thread 1" NPT/ Stainless steel 304DN100/ 304
 D Flange DN125/ 304E flange DN150/ 304F flange DN200/ 304
 H Flange DN250/ Stainless steel 304m flange DN80/ Universal joint
 K Flange DN100/ Universal joint T flange DN125/ Universal joint
 Z Method Special customization of W flange DN200
 V Flange DN250/ gimbal Y of Lan DN150/ universal joint

Antenna type / Material
B Parabolic antenna Φ 196mm/ Stainless steel 316L
C Parabolic antenna Φ 242mm/ Stainless steel 316L
Sealing / Process temperature
V Viton/ (-40~150) °C
K Kalrez/ (-40~250) °C
Electronic unit
2 (4N 20) mA/24V DC 2 wire system
3 (4N 20) mA/24V DC/HART 2 wire system
4 (4N 20) mA/220V AC/ 4 wire system
5 RS485/Modbus
Housing / Protection grade
L AL / IP67
G Plastics / IP65
Cable feed line
M M20 x l. 5
N ½" NPT
Field display / Programming
A Belt
X Without

10、 Physical level meter type selection parameter table

Customer information

Single bit:

Contacts :

Site:

Postal Code:

Postal Code:

True hand :

Mail box :

Date: month day year

Licence

Intrinsically safe (Exia IIB T5) Intrinsically safe (Exia IIC T6 Ga)

Standard type (non-explosion-proof) Intrinsically safe marine license (Exia IIC T6 Ga)

Exd [ia] IIC T6 Gb

Tank / container information

Tank type:

Storage tank Retort Knock-out drum Marine storage tank

Tank structure: Can material:: _____ Compression force: _____

Tank size: Tank height : _____m Diameter: _____m

Tank roof: Dome type Flat top type Open type Cone top type

Tank bottoms : Tapered bottom Flat base Slope bottom Arc bottom

Install: Top mounting Side mounting Bypass installation Guide tube

Installatio

Roof installation nozzle (important information)

Height of nozzle _____ mm Nozzle diameter _____ mm

Measuring medium

Medium name: liquid Solid Mixed medium

Medium temperature : _____ °C Medium temperature : _____

Hanging material: Yes No

Stir: Yes No

Procedure linkage

Snails: (G1½" 1½" NPT) Flange (DN=) Flange (ANSI=)

Electric source:

24V DC Two-wire system 24V DC Four-wire system 220V ACfour-wire

System

Output:: 4-20mA HART

Manifest: Head display programming No header display programming
