Ziasiot

# Instructions

## 80G FM radar bit meter

attestation

Please read this instruction manual carefully before installation

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# 80G FM radar bit meter

# Principle

The 80G radar bit meter adopts frequency modulation continuous wave (FMCW) technology.The antenna emits high-frequency FM radar signals, and the frequency of the radar signal increases linearly.The transmitted radar signal is received by the same- -antenna after being reflected by the measured medium.At the same time, the frequency difference between the transmitted signal frequency and the received signal frequency is proportional to the measured distance.The collected frequency difference signal obtains the frequency spectrum of the reflected echo by the fast Fourier transform (FF T), and thus calculates the distance o of the target to be measured

# Characteristic

For millimeter-wave radar, the measurement accuracy is up to ± 2mm, and the minimum measurement blind area is 0.05m.

1. Smaller antenna size, to meet the more working conditions of the measurement.
2. Multiple lens antennas, smaller emission angle, more concentrated energy, stronger echo signal, under the same industrial and mining conditions, compared to the
   Other radar products have higher reliability.
3. It is more penetrating, and can also be used normally with adhesion and condensation.
4. The dynamic signal range is larger and is more stable for measurements of low dielectric constant media.
5. A variety of measurement modes, and the radar response in the rapid measurement mod

# RD80G Series Product introduction

## RD80G01

Measurement medium: the liquid is without corrosion
Measuring range: 0.05m~10 / 20 / 30 / 60 / 100m
Process Connection: G1 ½ A / 1 ½ NPT thread / flange DN 40
Process temperature: -40~80℃
Process pressure: -0.1~0.3 MPa
Antenna dimensions: 32mm lens antenna
Antenna material: PTFE
accuracy:±1mm
Level of protection: IP67
Center frequency: 123GHz
Emission angle: 3°
Power supply: second-line system / DC24V
Four-wire system / DC12~24V
Four-wire system / AC220V
Enclosure: aluminum / plastic / stainless steel
Signal output: second line / 4... The 20mA / HART protocol was used
Four-wire system 4...20mA/ RS485 Modbus

## RD80G02

Measurement medium: no-corrosive liquid, slightly corrosive liquid
Measuring range: 0.1m~10 / 20 / 30 / 60 / 100m
Process Connection: flange DN80
Process temperature: -40~110℃
Process pressure: -0.1~1.6MPa
Antenna dimensions: 32mm lens antenna
Antenna material: PTFE
Accuracy: ± 1mm (range below 35m)
± 5mm (range from 35m-100m)
Level of protection: IP67
Center Frequency: 80GHz
Emission angle: 3°
Power supply: second-line system / DC24V

Four-wire system / DC12~24V
Four-wire system / AC220V
Enclosure: aluminum / stainless steel
Signal output: second line / 4... The 20mA / HART protocol was used
Four-wire system 4...20mA/ RS485 Modbus

## RD80G03

Measurement medium: strongly corrosive liquid, steam, foam
Measuring range: 0.1m~10 / 20 / 30 / 60 / 100m
Process Connection: flange D N 50
Process temperature: -40~130℃
Process pressure: -0.1~2.5MPa
Antenna size: 34mm lens antenna (determined by flange size)
Antenna material: PTFE
Accuracy: ± 1mm (range below 35m)
± 5mm (range from 35m-100m)
Level of protection: IP67
Center Frequency: 80GHz
Emission angle: 3°
Power supply: second-line system / DC24V
Four-wire system / DC12~24V
Four-wire system / AC220V
Enclosure: aluminum / stainless steel
Signal output: second line / 4... The 20mA / HART protocol was used
Four-wire system 4...20mA/ RS485 Modbus

## RD80G04

Measurement medium: strongly corrosive liquid, steam, foam
Measuring range: 0.1m~10 / 20 / 30 / 60 / 100m
Process Connection: flange DN 50
Process temperature: -40~130℃
Process pressure: -0.1~1.0MPa

Antenna dimensions: 76mm lens antenna
Antenna material: PTFE
accuracy:±1mm
Level of protection: IP67
Center Frequency: 80GHz
Emission angle: 3°
Power supply: second-line system / DC24V
Four-wire system / DC12~24V
Four-wire system / AC220V
Enclosure: aluminum / plastic / stainless steel
Signal output: second line / 4... The 20mA / HART protocol was used
Four-wire system 4...20mA/ RS485 Modbus

## RD80G05

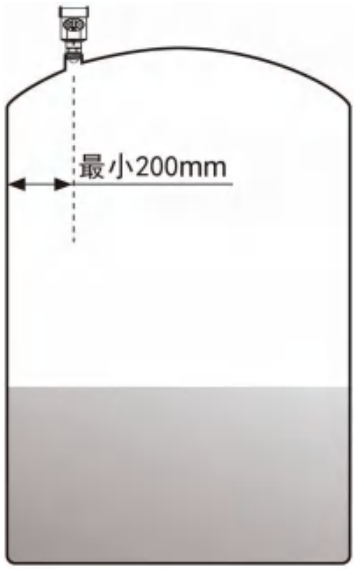
Measurement medium: strong corrosive liquid, steam, foam, high temperature and high pressure
Measuring range: 0.1m~10 / 20 / 30 / 60 / 100m
Process Connection: flange DN80
Process temperature: -40~200℃
Process pressure: -0.1~2.5MPa
Antenna size: 76mm lens antenna (customized to flange size)
Antenna material: PTFE / integral fill
accuracy:±1mm
Level of protection: IP67
Center Frequency: 80GHz
Emission angle: 3°
Power supply: second-line system / DC24V Four-line / DC12~24V four-line / AC220V
Enclosure: aluminum / plastic / stainless steel
Signal output: second line / 4... The 20mA / HART protocol was used
Four-wire system 4...20mA/ RS485 Modbus

# RD80G06

Measurement medium: solids, storage containers, process containers, or strong dust situations
Measuring range: 0.3m~10 / 20 / 30 / 60 / 100m
Process Connection: flange DN 100
Process temperature: -40~110℃
Process pressure: -0.1~0.3MPa
Antenna size: 76mm lens antenna + universal purge (Or without a purge)
Antenna material: PTFE
accuracy:±5mm
Level of protection: IP67
Center Frequency: 80GHz
Emission angle: 3°
Power supply: second-line system / DC24V Four-line / DC12~24V four-line / AC220V
Enclosure: aluminum / plastic / stainless steel
Signal output: second line / 4... The 20mA / HART protocol was used
Four-wire system 4...20mA/ RS485 Modbus

# The RD80G installation requirements

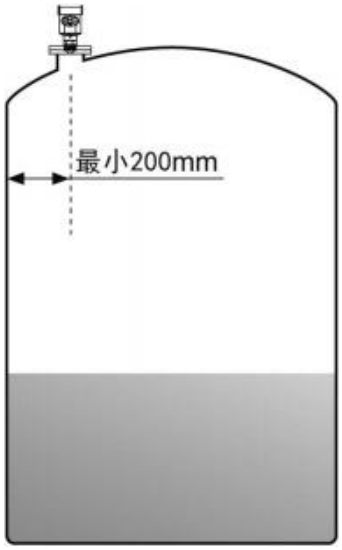
## Installation mode 1: Threaded installation (for RD80G01)

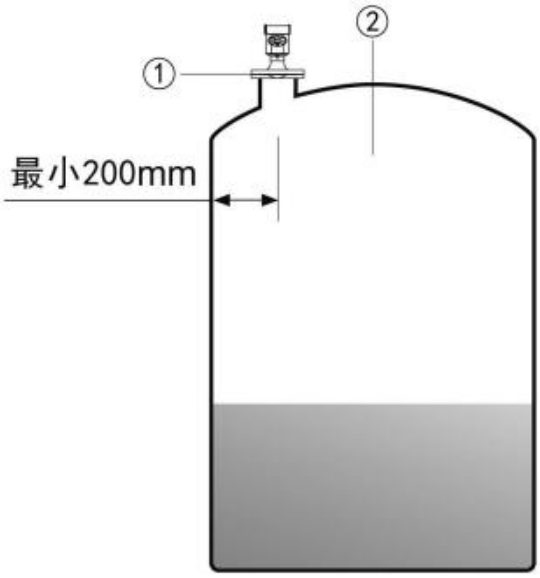



## Installation method 2: flange installation

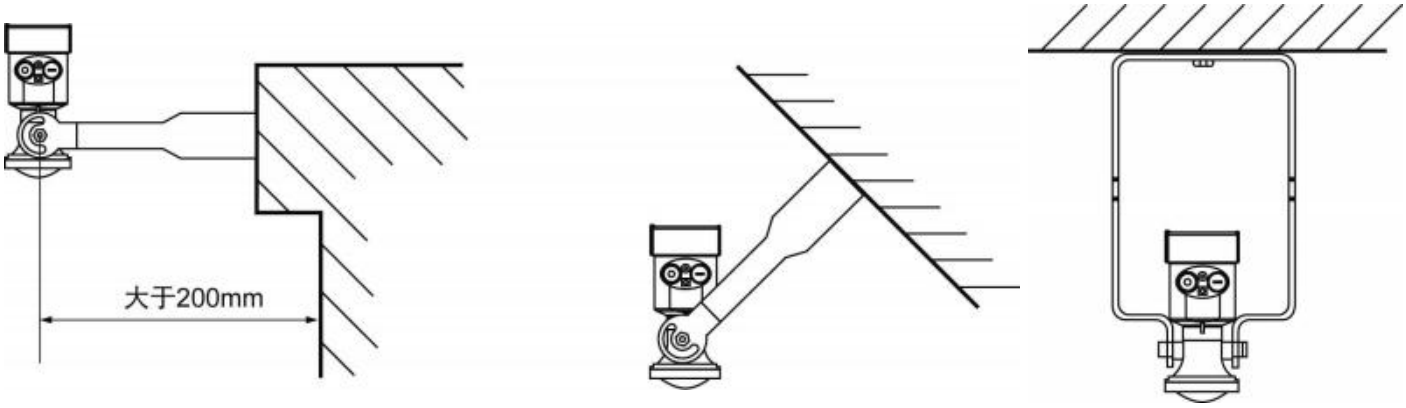
The minimum distance from the tank wall shall be 200mm.

The ① datum ② container has a central or symmetry axis

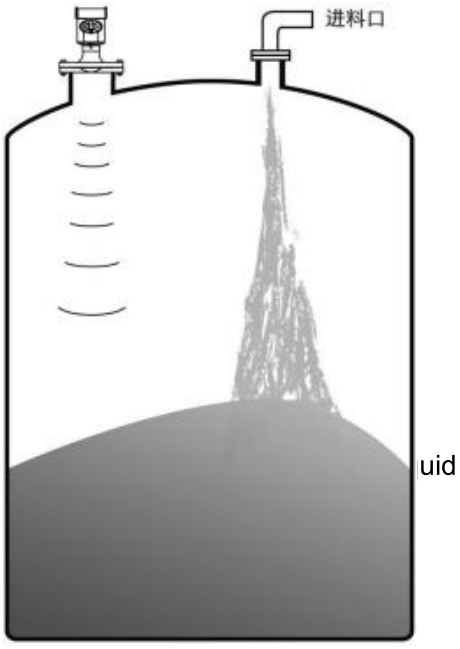


## Installation method 3: Lifting (selected according to the specific installation conditions)




Installation requirements: Avoid installing instruments above the material inlet, and try to avoid various influences Signaling objects such as mixing paddle etc

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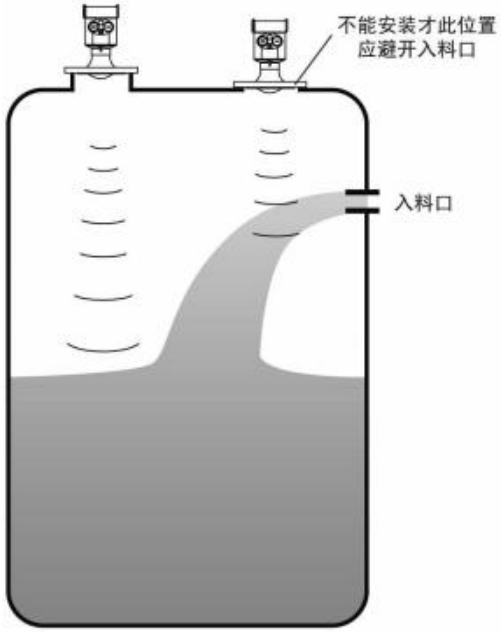
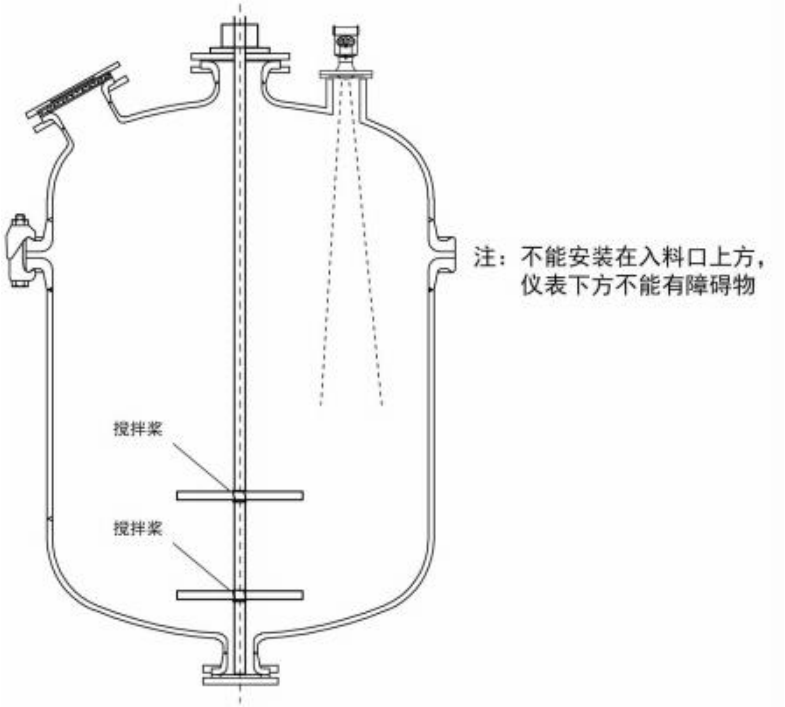
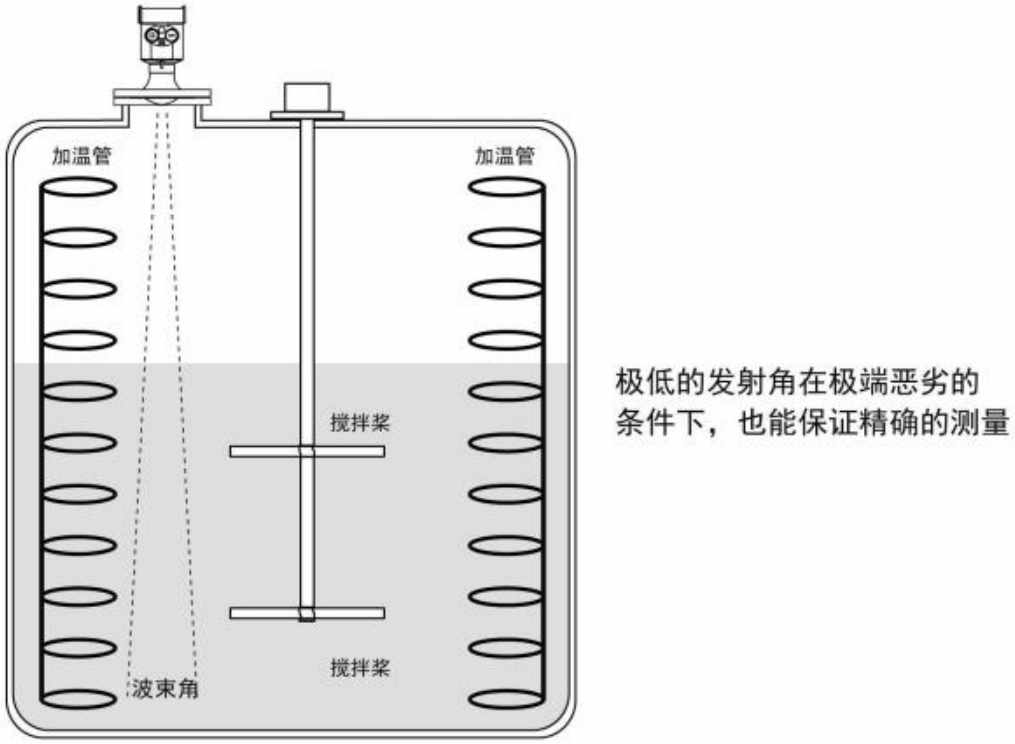


Do not install above feed opening

There must be no obstacles under the instrument




Under extremely complex working conditions, the instrument can work normally with the radar installation point and no obstacles in the radius of 20cm.

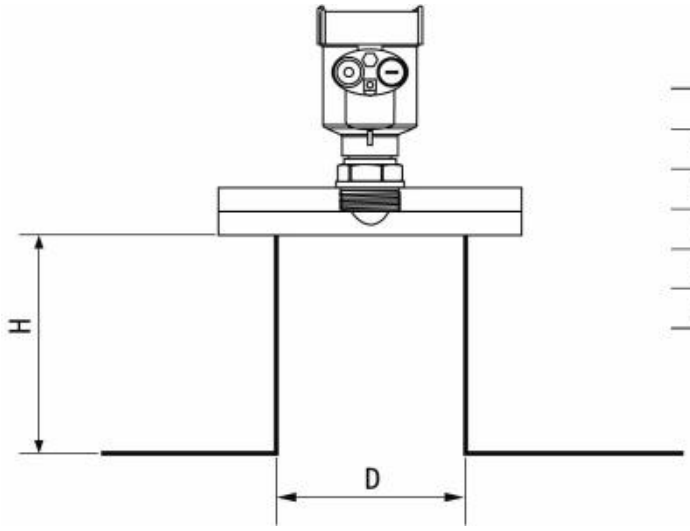


## Installation takeover schematic diagram:

The maximum height of H max depends on the diameter D and the size of the launch angle of the product.

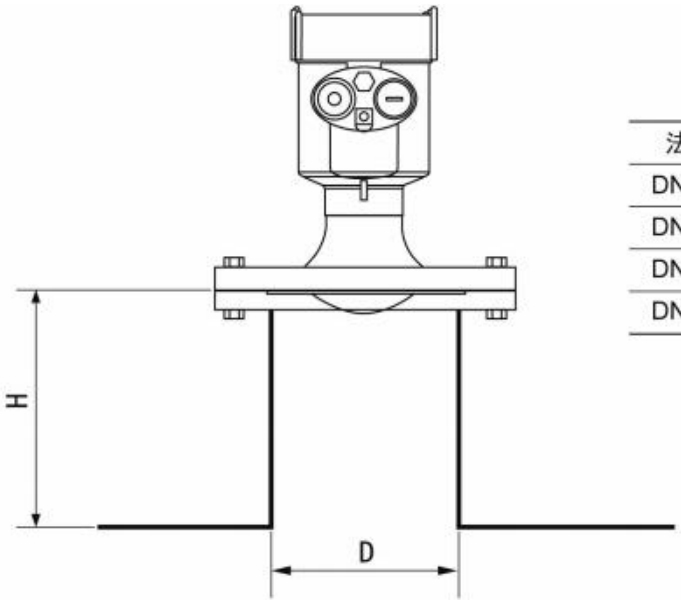
**Too long the installation take-over will affect the radar performance.**

## RD80G01/02



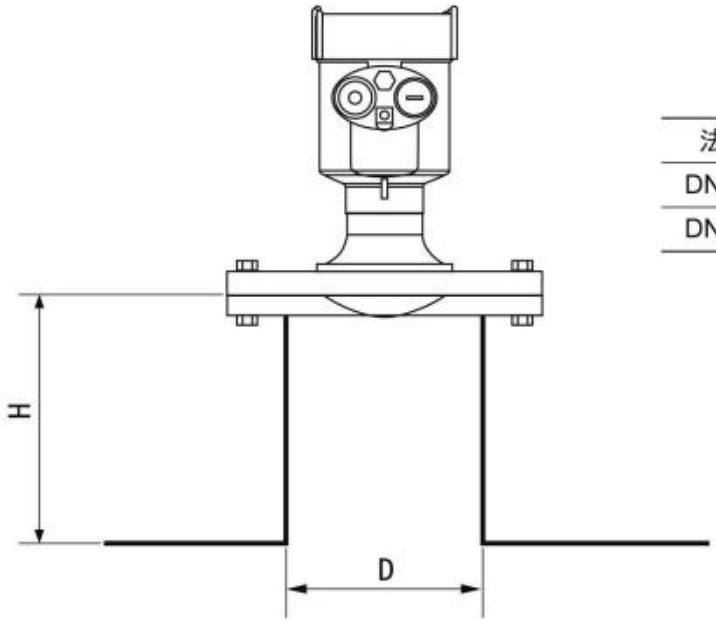

| 法兰 | D | H max |
|---|---|---|
| DN65 | 65mm (2.5″) | 600mm |
| DN80 | 80mm (3″) | 800mm |
| DN100 | 100mm (4″) | 1000mm |
| DN125 | 125mm (5″) | 1200mm |
| DN150 | 150mm (6″) | 1400mm |

## RD80G03/RD80G04/RD80G05




| 法兰 | D | H max |
|---|---|---|
| DN80 | 80mm (3″) | 1200mm |
| DN100 | 100mm (4″) | 1500mm |
| DN125 | 125mm (5″) | 2000mm |
| DN150 | 150mm (6″) | 2500mm |

# RD80G06




| 法兰 | D | H max |
|---|---|---|
| DN125 | 125mm (5″) | 4000mm |
| DN150 | 150mm (6″) | 5000mm |

# RD80G electrical connection

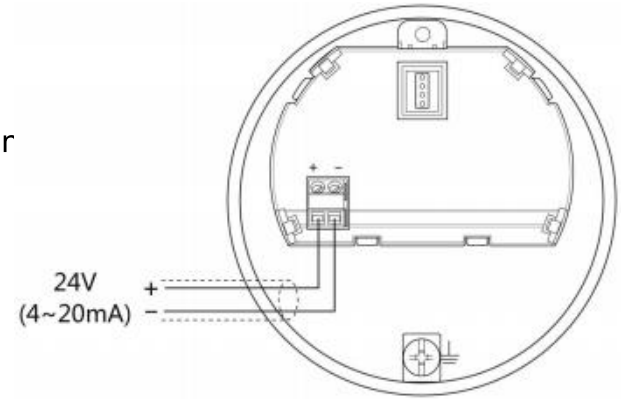
(4~20) mA / HART (two-wire system) power power supply and output current signal share a two-core shield cable. Refer to the technical data for the specific power supply voltage range.

(4~20) mA (four-wire / six-wire) power supply needs to be supplied separately, power supply and current signal using a four-core shielding cable (current signal and RS485 interface can be output simultaneously, and output needs using a six-core shielding cable).

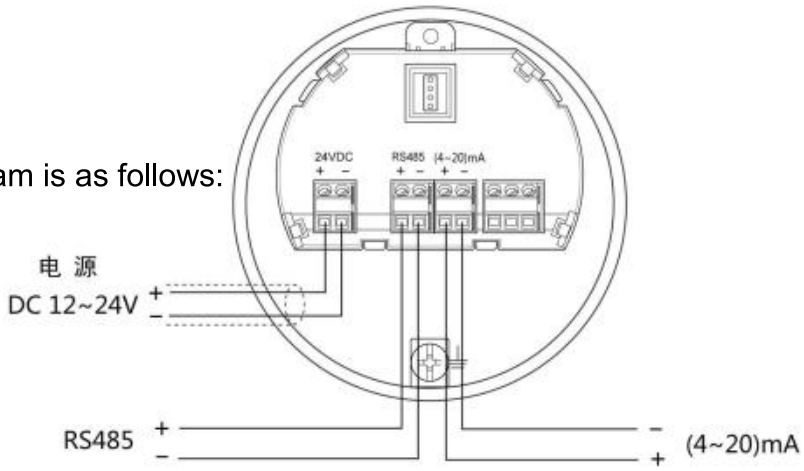
The RS485 / Modbus power supply shall be supplied separately, with a four-core shielded cable
(The current signal and RS485 interface can be simultaneously output with a six-core shielded cable).

**attended mode**

The 24V 2-wire manufacturing wirir




The 12~24V four-wire wiring diagram is as follows:

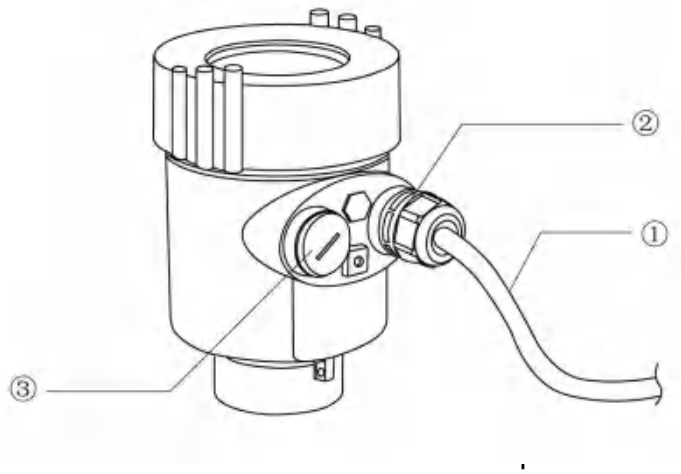


**Safety guidance**

Please follow the local electrical installation regulations!
Please follow the local regulations for personnel health and safety. All operation of instrument electrical components must be done by properly trained professionals.
Please check the nameplate of the instrument to ensure that the product specifications meet your requirements. Ensure that the supply voltage is consistent with the requirements on the instrument nameplate.

**levels of protection**

This instrument fully meets the requirements of protection grade IP66 / 67, please ensure that the cable seal head is waterproof.as illustrated in following figure:

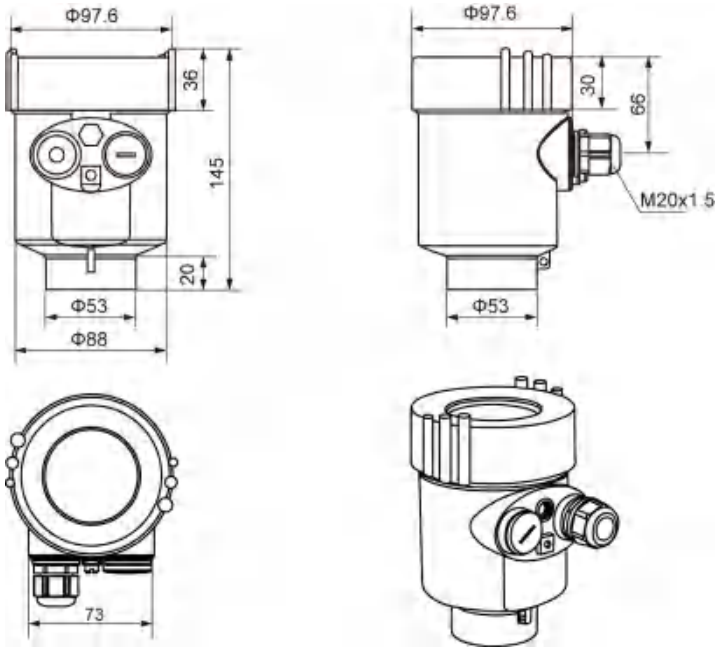



How to ensure tl .
Make sure that the sealing head is not damaged.
Make sure that the cable is not damaged.
Please ensure that the cables used comply with the electrical connection specification.
Before entering the electrical interface, bend the cable down to ensure that the water does not flow into the housing, see ①
Tighten the cable seal head, see ②
Please blind the unused electrical interface, see ③

# RD80G structure dimensions

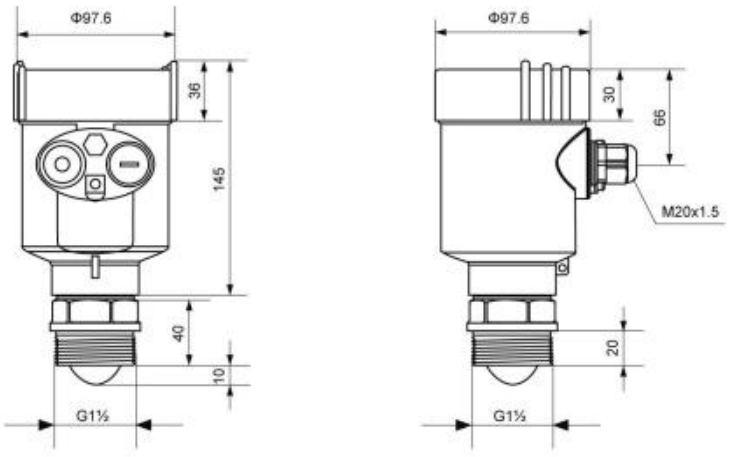
## Case dimensions (in unit: mm)

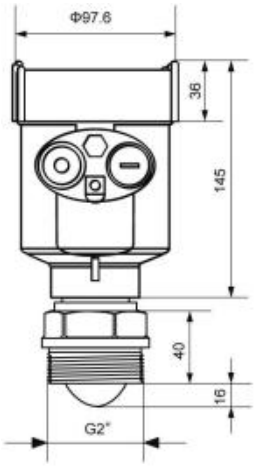
Casting aluminum case

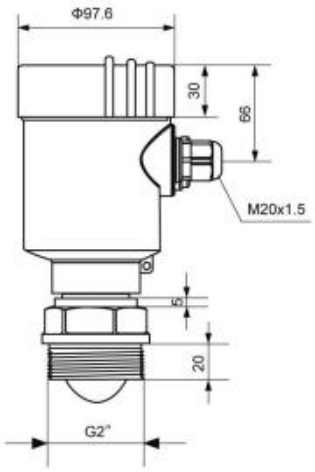



## Product Size (in unit: mm)

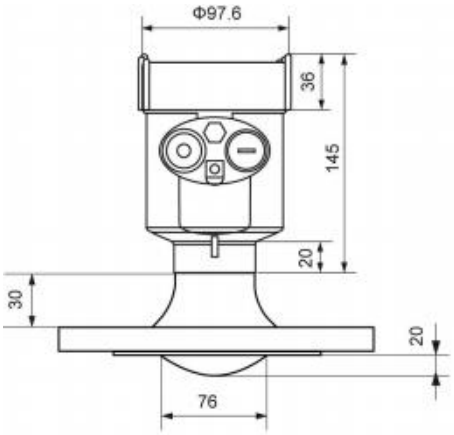
## RD80G01

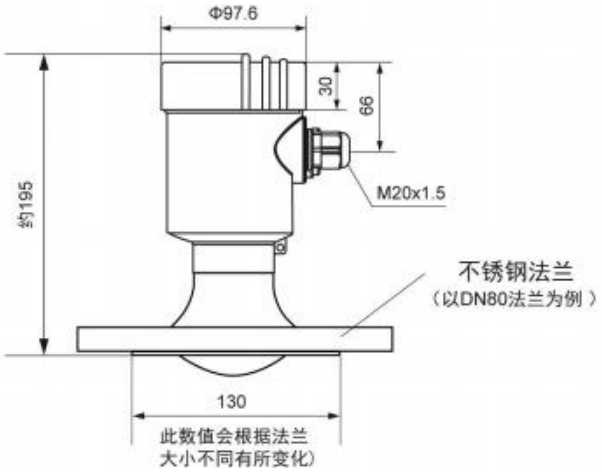


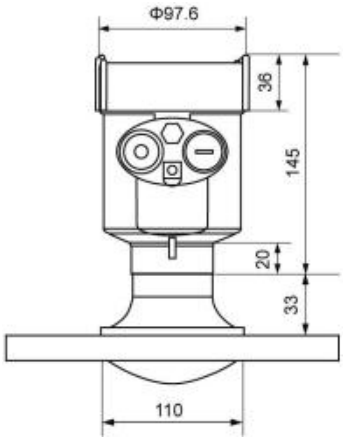

Φ97.6
36
145
40
16
G2"

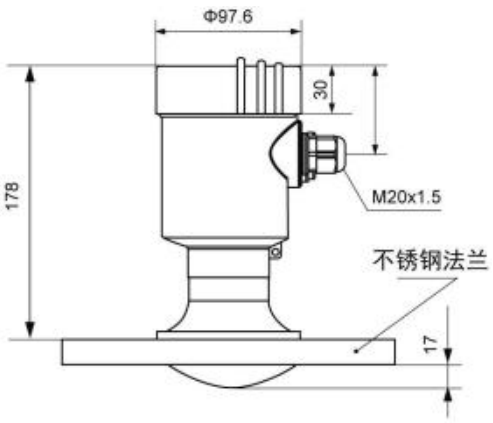

Φ97.6
30
66
M20x1.5
5
20
G2"

## RD80G02

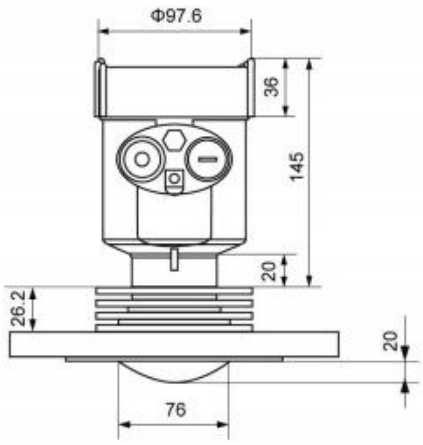

Φ97.6
36
145
20
30
20
76

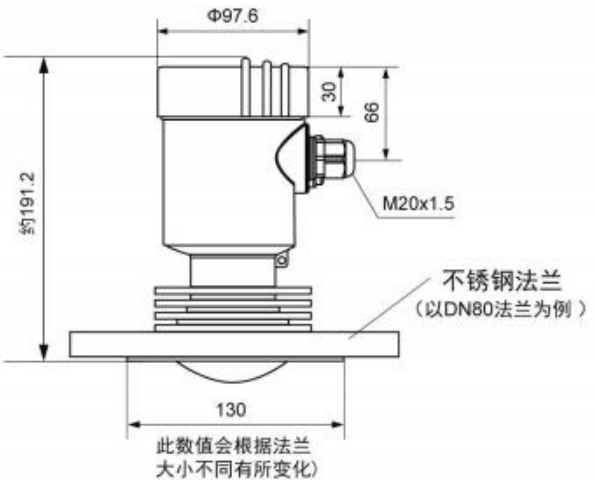

Φ97.6
30
66
M20x1.5
约195
不锈钢法兰
（以DN80法兰为例）
130
此数值会根据法兰
大小不同有所变化）


Φ97.6
36
145
20
33
110


Φ97.6
30
178
M20x1.5
不锈钢法兰
17

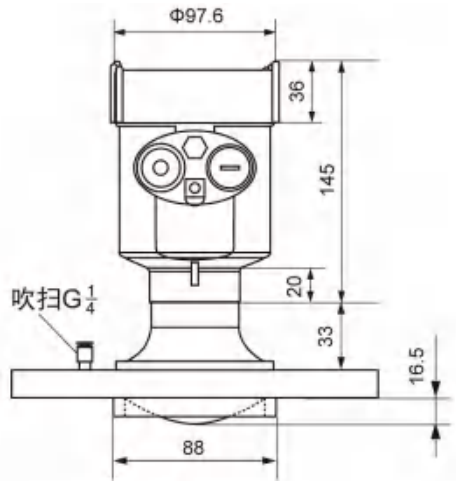
# RD80G03

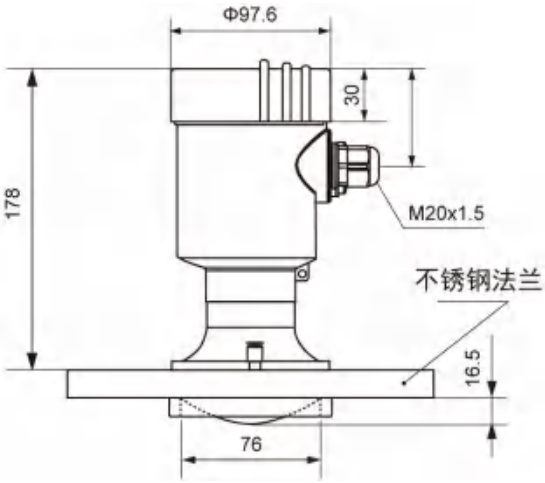


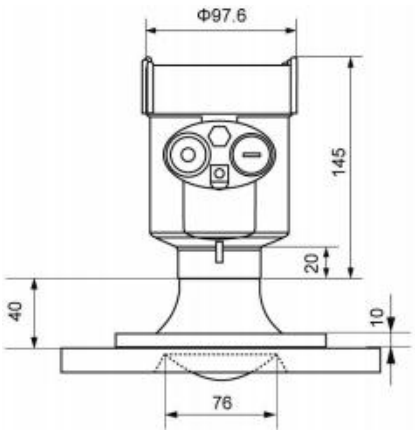



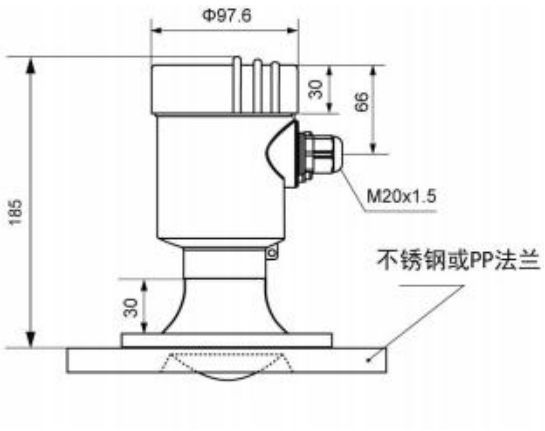

# RD80G06

With blowing type



# RD80G technical parameters

**general data**

Process connection flange / material 304 stainless steel, PP

Antenna profile, PTFE

Case for cast aluminum / stainless steel

Sealed FKM between the housing and the housing cover

Shell window, transparent PC

Ground terminal, stainless steel

**service voltage**

Two-line single cavity (4-20mA) standard (12-24) VDC intrinsically safe (12-24) VDC

power dissipation max.22.5mA

Allow ripple

- <100Hz U s s < I V

-(100～100K) Hz U s s < l0mV

Two line two cavities (4-20mA) Ann + explosive isolation (18-25) VDC

power dissipation max.22.5mA

Four-wire single cavity (RS485) standard type (9-27) VDC

power dissipation max.1.5W

Intrinsically safe type 24 (1 ± 10%) V DC

power dissipation max.12mA

Four-wire two cavity (4-20mA) Ben + 220V A C

power dissipation max.18mA

**Cable parameters**

Cable inlet / plug: 1 M 20xl.5 Cable inlet cable diameter 5...9MM

1 Blind Block of M20 l.5

Terminal conductor cross-section is 2.5mm²

**out parameter**

Output signal (4~20) mA / HART

RS 485/ Modbus

Resolution, 1mm m

Fault signal current output is unchanged; 20.5mA;22mA;3.9mA

Integral time (0~40) s, adjustable

Blind zone 0.1m/0.2m/0.3m

The maximum measurement distance is 150 m

Measurement interval of approximately 1 second (depending on the parameter settings)

Adjustment time is about 1 second (depending on the parameter settings)

Working storage and transportation temperature (-40~80) ℃

Relative humidity is < 95%

pressure Max.2.5MPa

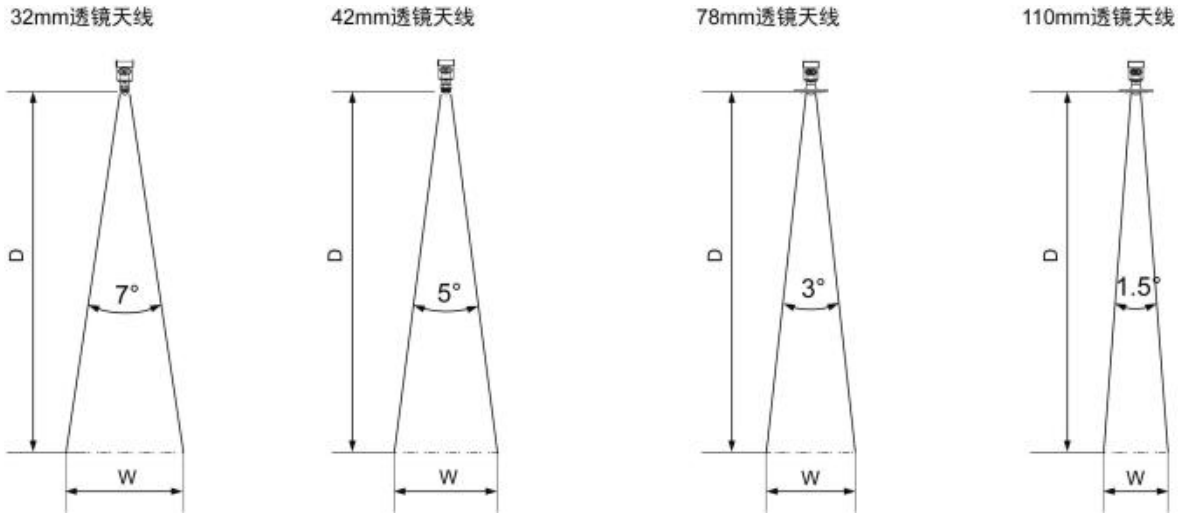
Shock-resistant mechanical vibration I 0 m/s², (10~150) Hz

# RD80G technical parameters

**beam angle**

The beam angle is the beam angle when the radar wave energy density reaches half its maximum value (3dB width). Microwaves emit a signal to the waves

Outside of the beam range, and can be reflected by the distractors.




| product model | 01 | 02 | 03 | 07 |
|---|---|---|---|---|
| Lens antenna diameter | Φ32mm antenna input resistance | Φ42mm antenna input resistance | Φ76mm antenna input resistance | Φ74.7mm Lens antenna band with a purge |
| beam angle | 7° | 6° | 3° | 3° |

The larger the antenna size, the smaller the beam angle, the less interference echo is generated.

For more accurate measurements, avoid installing any internal devices (e. g., limit switch, temperature sensor, base, vacuum ring, heating coil, baffle, etc.) within the range of the signal beam.


SHOT ON MI 8
AI DUAL CAMERA