

Guided Wave Radar Level gauge

Operation Instruction

Catalogue

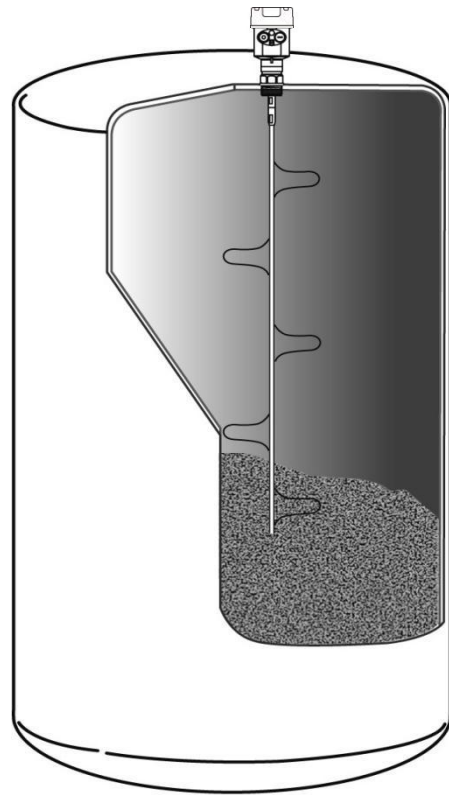
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Guided Wave Radar Level gauge

1. Measurement Principle

❖ principle:

A high-frequency microwave pulse emitted by a waveguide radar travels along a detecting assembly (steel cable or rod), encountering the medium under test, causing reflection due to a mutation in the dielectric constant, and a portion of the pulse energy is reflected back. The time interval between the emission pulse and the reflection pulse is proportional to the distance of the medium being measured.



❖ characteristic:

Due to the use of advanced microprocessor and unique Echo Discovery echo processing technology, guided wave radar level meter can be applied to a variety of complex conditions.

A variety of process connection methods and detection components make the 70X series guided wave radar level meter suitable for a variety of complex conditions and applications. Such as: high temperature, high pressure and small dielectric constant media.

Using pulse mode, the transmitting power of guided wave radar level meter is very low, and it can be installed in various metal and non-metal containers, without harm to human body and environment.

❖ instruction:

Guided wave radar is a measuring instrument based on the principle of time travel. Radar waves travel at the speed of light, and the running time can be converted into level signals through electronic components. The

probe emits a high-frequency pulse and travels along the cable or rod probe, and when the pulse hits the surface of the material, it is reflected back to be received by the receiver inside the meter, and the distance signal is converted into a level signal.

The reflected pulse signal is transmitted along the cable or rod probe to the electronic circuit part of the instrument, and the microprocessor processes the signal to recognize the echo generated by the microwave pulse on the surface of the material. The correct echo signal recognition is completed by the pulse software, and the distance D from the material surface is proportional to the time travel T of the pulse:

$$D=C \times T/2$$

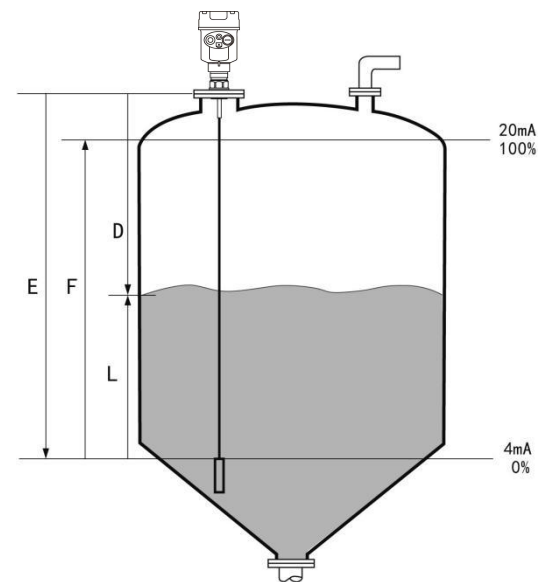
Where C is the speed of light

Since the distance E of the empty tank is known,

the level L is:

$$L=E-D$$

By input empty tank height E (= zero), full tank height F (= full scale) and some application parameters to set, the application parameters will automatically adapt the instrument to the measurement environment, corresponding to 4-20mA output.



❖ measurement range:

The top blind zone refers to the minimum distance between the highest level of the material and the measurement reference point.

The bottom blind zone is a distance near the very bottom of the cable that cannot be accurately measured.

The effective measurement distance between the top blind spot and the bottom blind spot is.

instruction:

H - Measurement range

L - Empty tank distance

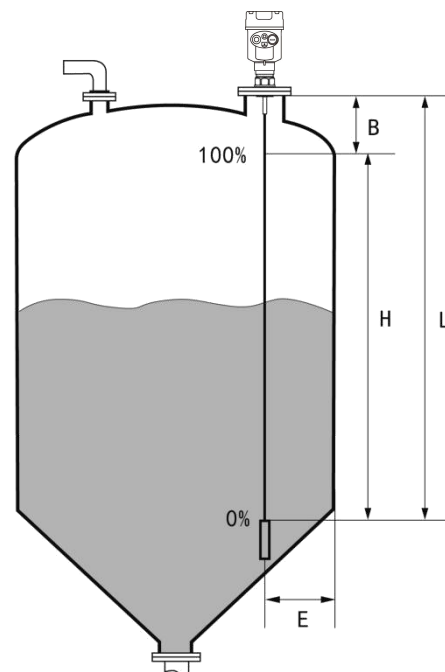
B - Top blind area

E - Minimum distance from the probe to the wall of the tank

Note:

Only the material is in the top blind area and the bottom blind area.

In order to ensure reliable measurement of the tank position.



2. Product Introduction

● 701



Suitable medium: liquid, solid powder

Applications: Measurement of liquid and solid powders, complex process conditions

Explosion Proof Certification: Exia IIC T6 Ga/Exd IIC T6 Gb

Measuring range: 0 ~ 30 m cable/0 ~ 6 m rod

Frequency range: 500MHz-1.8GHz

Antenna: single cable or single-pole antenna

Measurement accuracy: $\pm 5\text{mm}$

Process temperature: $-40 \sim 120 \text{ }^{\circ}\text{C}$ (standard)/ $-40 \sim 230 \text{ }^{\circ}\text{C}$ (high temperature type)

Process pressure: (0.1 ~ 4) MPa

Signal output: (4 ~ 20) mA HART/ Modbus-RS485

Live display: 4-bit LCD programmable

Power supply: two-wire (DC24V)/four-wire (DC24V/AC220V)

Housing: aluminum single cavity/aluminum double cavity/plastic single cavity/stainless steel single cavity

Process connection: thread/flange (optional)

● 702



Applicable medium: liquid, especially highly corrosive liquid
Should be used: acid, alkali or other corrosive media measurement

Explosion-proof certification: Exia II C T6 Ga/ Exd II C T6 Gb

Measuring range: cable type 0~20m/rod type 0~6m

Frequency range: 500MHz-1.8GHz

Antenna: full tetrafluorosealed cable or rod antenna

Measurement accuracy: $\pm 5\text{mm}$

Process temperature: $-40 \sim 120^{\circ}\text{C}$ (standard type) $-40 \sim 200^{\circ}\text{C}$ (high temperature type)

Process pressure: $(-0.1 \sim 0.3)\text{MPa}$ / $(-0.1 \sim 1.0)\text{MPa}$ (PFA)

Signal output: $(4 \sim 20)$ mA HART /Modbus-RS485

Field display: four-digit LCD programmable

Power source: Two-wire system (DC24V)/four-wire system (DC24V/AC220V)

Outer shell: aluminum single cavity/aluminum double cavity/plastic single cavity/stainless steel single cavity

Process connection: Thread/flange (optional)

● 703



Applicable medium: solid powder

Use: measurement of cement silo powder; Measurement of fly ash powder

Explosion-proof certification: Exia II C T6 Ga/ Exd II C T6 Gb

Measuring range: cable type 0~30m/rod type 0~6m

Frequency range: 500MHz-1.8GHz

Antenna: double cable or double pole antenna

Measurement accuracy: $\pm 5\text{mm}$

Process temperature: $-40 \sim 120^{\circ}\text{C}$ (standard type) $-40 \sim 200^{\circ}\text{C}$ (high temperature type)

Process pressure: $(-0.1 \sim 4)$ MPa

Signal output: $(4 \sim 20)$ mA HART /Modbus-RS485

Field display: four-digit LCD programmable

Power source: Two-wire system (DC24V)/four-wire system (DC24V/AC220V)

Outer shell: aluminum single cavity/aluminum double cavity/plastic single cavity/stainless steel single cavity

Process connection: flange

● 704



Applicable media: liquids, especially liquids with low dielectric constant

Should be used: non-ionized water, deoxidized water and other liquid measurement

Explosion-proof certification: Exia II C T6 Ga/ Exd II C T6 Gb

Measuring range: 0~6m

Frequency range: 500MHz-1.8GHz

Antenna: coaxial tube antenna

Measurement accuracy: ± 5 mm

Process temperature: -40 ~ 120°C (standard type)/-40 ~ 230°C (high temperature type)

Process pressure: (-0.1 ~ 4) MPa

Signal output: (4 ~ 20) mA HART /Modbus-RS485

Field display: four-digit LCD programmable

Power source: Two-wire system (DC24V)/four-wire system (DC24V/AC220V)

Shell: Aluminum single cavity/aluminum double cavity/plastic/stainless steel single cavity

Process connection: Thread/flange (optional)

● 705



Applicable medium: liquid, especially liquid in high temperature and high pressure environment

Should be used: sealed tank, high pressure liquid measurement

Explosion-proof certification: Exia II C T6 Ga/ Exd II C T6 Gb

Measuring range: cable type 0~15m/rod type 0~6m

Frequency range: 500MHz-1.8GHz

Antenna: ceramic single cable or single pole antenna

Measurement accuracy: ± 5 mm

Process temperature: (-200 ~ 400) °C

Process pressure: (-0.1 ~ 40) MPa

Signal output: (4 ~ 20) mA HART /Modbus-RS485

Field display: four-digit LCD programmable

Power source: Two-wire system (DC24V)/four-wire system (DC24V/AC220V)

Shell: Aluminum single cavity/aluminum double cavity/plastic/stainless steel single cavity

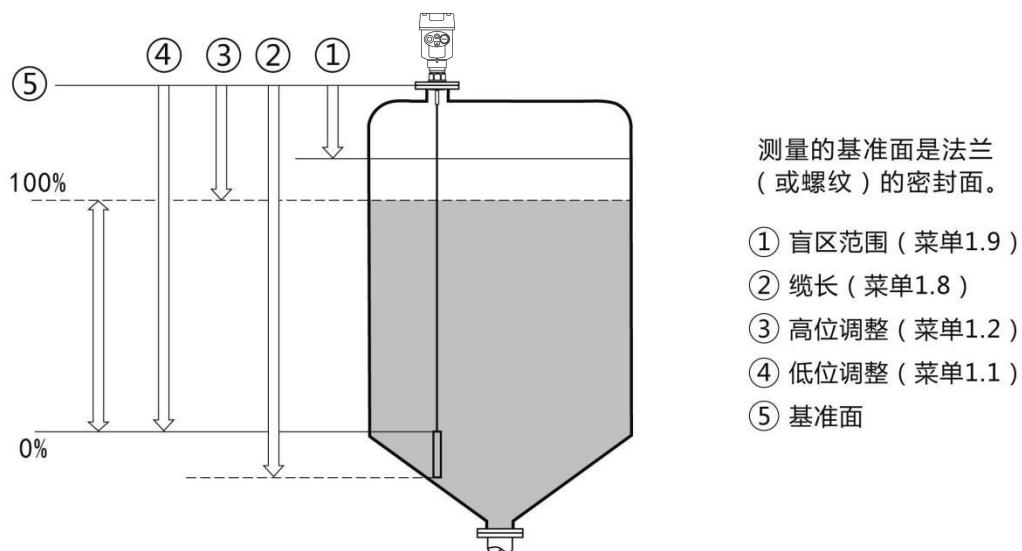
Process connection: Thread/flange (optional)

3. Installation Guide

Make sure that the cable or rod does not come into contact with internal obstacles in the entire range, so installation should avoid the facilities in the tank as much as possible, such as: ladder, limit switch, heating equipment, bracket, etc. In addition, it should be noted that the cable or rod must not intersect with the feed flow.

● installation notes:

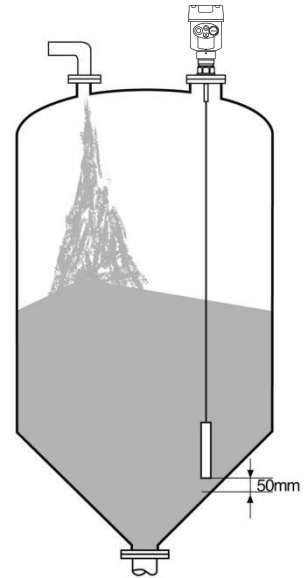
The highest material level shall not enter the measurement blind area; The instrument must be kept at a certain distance from the tank wall; The meter is installed so that the direction of the cable or rod is as perpendicular as possible to the surface of the measured medium. Instruments installed in explosion-proof areas must comply with the national explosion-proof danger zone installation regulations. The intrinsically safe shell is aluminum. This type of instrument can be installed in the explosion-proof requirements of the occasion, the instrument must be grounded.



● installation position:

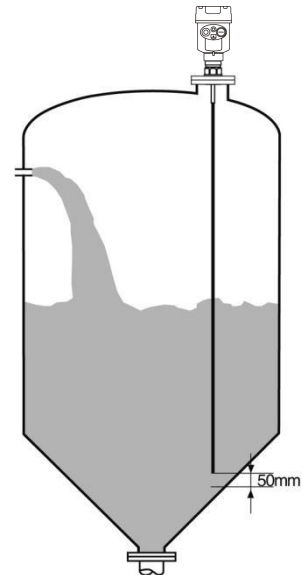
- Keep away from the discharge and feed ports as much as possible.
- Metal cans do not touch the wall and bottom of the tank in the entire range.
- It is recommended to install at 1/4 or 1/6 of the diameter of the bin, and

- The minimum distance between tank walls is 1/10 of the measuring range.
- Minimum distance of cable or rod probe from tank wall $\geq 300\text{mm}$.
- Probe bottom $\geq 30\text{mm}$ from tank bottom.
- The minimum distance between the probe and obstacles in the tank is not less than 200mm.
- If the bottom of the container is cone, you can install the center of the tank top.



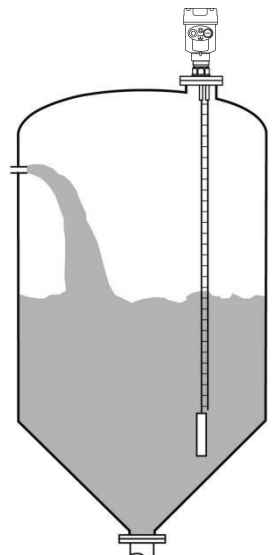
● Measurement Features of Rod Radar Position Meter:

- Any medium with dielectric constant ≥ 1.8 can be measured.
- Generally used for measuring viscosity $\leq 500\text{cst}$, and it is not easy to produce adhesive media.
- The maximum range of the rod radar can reach 6 meters, mainly used for liquid level measurement.
- Strong penetration of steam and foam, measurement is not affected.
- In the liquid measurement environment with large foam, the single-rod guided wave radar level meter should be selected for measurement.



● Measurement Characteristics of Dual-Cable Radar Position Meter

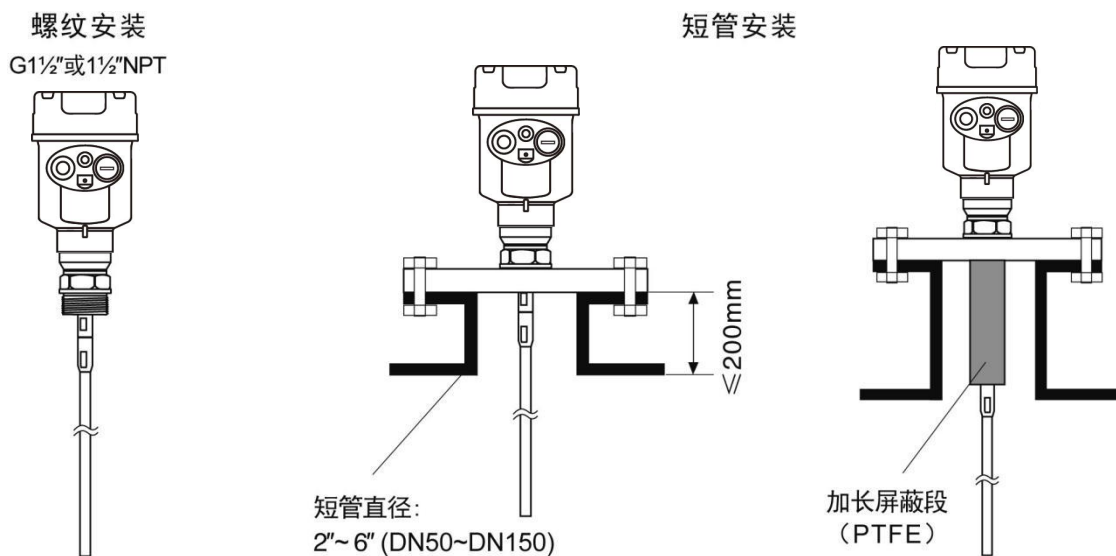
- For liquid and light solid powder with relatively small dielectric constant, double-cable guided wave radar level meter can be used to ensure accurate measurement effect.
- Any medium with dielectric constant ≥ 1.6 can be measured.
- Generally used for measuring viscosity $\leq 500\text{cst}$, and it is not easy to produce adhesive media.
- The maximum range of the double-cable radar level meter can reach 30 meters.



- **installation position:**

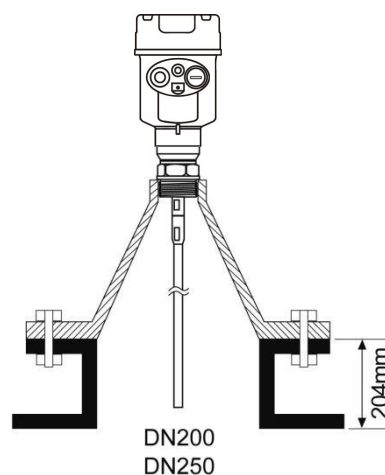
- **Proper installation ensures long-term reliable and accurate measurement of the instrument:**

Guided wave radar level meter is threaded and flanged and can be installed on a short tube. The smaller the diameter of the nozzle, the shorter the length of the nozzle and the more stable the measurement. When the diameter of the short pipe is 2" to 6", the height of the short pipe should be less than 200mm. If the short tube is long, it is best to cut the short tube or lengthen the sensor shielding section.



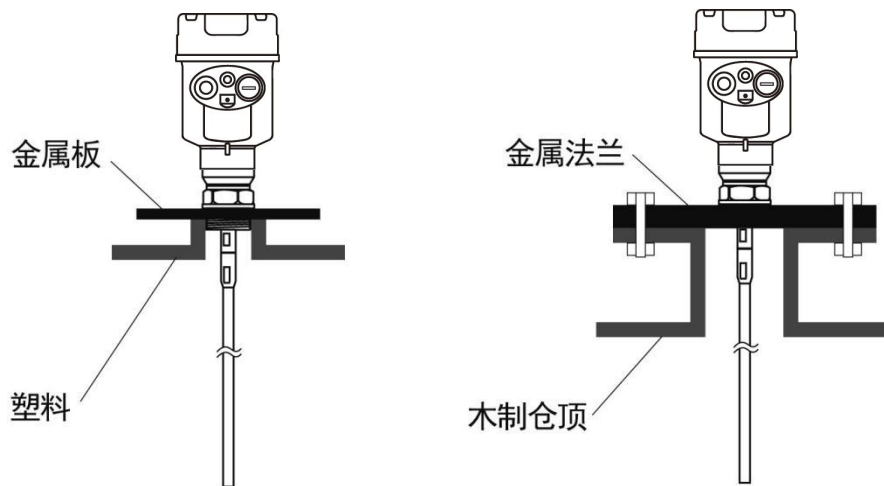
- **DN200 or DN250 in-tube installation:**

When the guided wave radar needs to be installed in a short tube with a diameter greater than 200mm, the inner wall of the short tube will generate echoes, which will cause measurement errors when the dielectric constant of the medium is low. Therefore, for a short tube with a diameter of 200mm or 250mm, a special flange with a "horn interface" is required.



➤ **Installation on plastic tanks:**

Whether cable or pole, for a guided wave radar to work properly, the process connection surface is generally metal. When the guided wave radar is mounted on a plastic tank, if the tank top is also plastic or other non-conductive material, the meter needs to be equipped with a metal flange, if threaded connection, need to be equipped with a metal plate.



● **installation instruction:**

- ✧ The rod probe can be up to 6 meters long, and the cable probe can be selected for the storage tank with a measuring distance of more than 6 meters.
- ✧ If there are more obstacles in the tank or if they are too close to the probe sensor, a waveguide can be installed for measurement.

➤ **The downforce of the cable**

During feeding and discharging, the medium exerts a downward tension on the cable probe, and the magnitude of the downward tension depends on the following factors:

- | | |
|----------------------------|------------------------------|
| A. Cable length | B. Density of material |
| C. Diameter of storage bin | D. The diameter of the cable |

➤ **Optimization of Interference**

- ✧ Interference echo suppression: Programming debugging software can realize the suppression of interference echo, so as to achieve the ideal measurement

effect.

- ✧ For medium with viscosity not greater than 500cst (only applicable to liquids), bypass tubes or waveguides can be used to avoid interference.

➤ **Installation of low dielectric constant liquids**

For dielectric constant greater than 1.3, viscosity \leq 500cst and not easy to produce adhesion medium, can install a waveguide for measurement, can achieve the following effects:

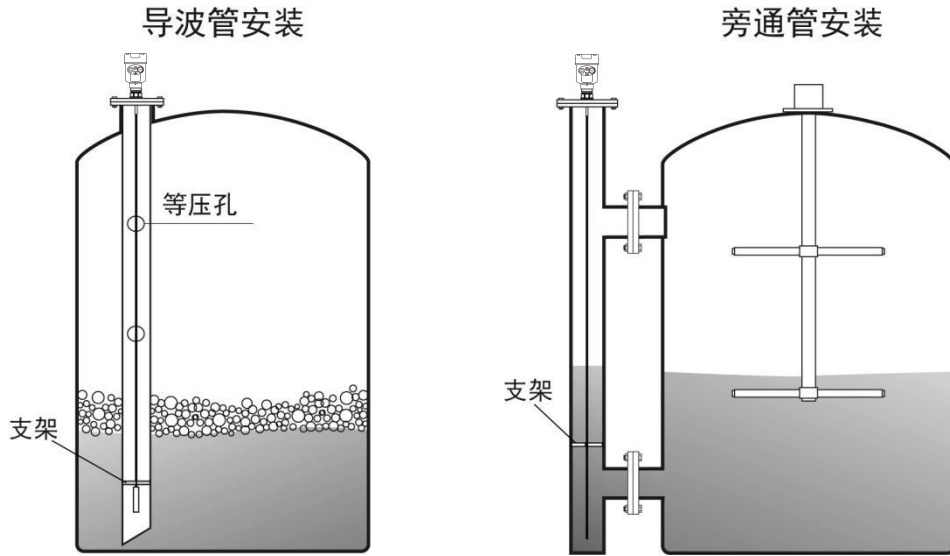
- ✧ Excellent reliability and high precision
- ✧ It can be used for any medium with dielectric constant \geq 1.3, and the measurement is independent of the conductivity of the medium
- ✧ Obstacles in the tank and the size of the short pipe do not affect the measurement

➤ **Corrosive media measurement**

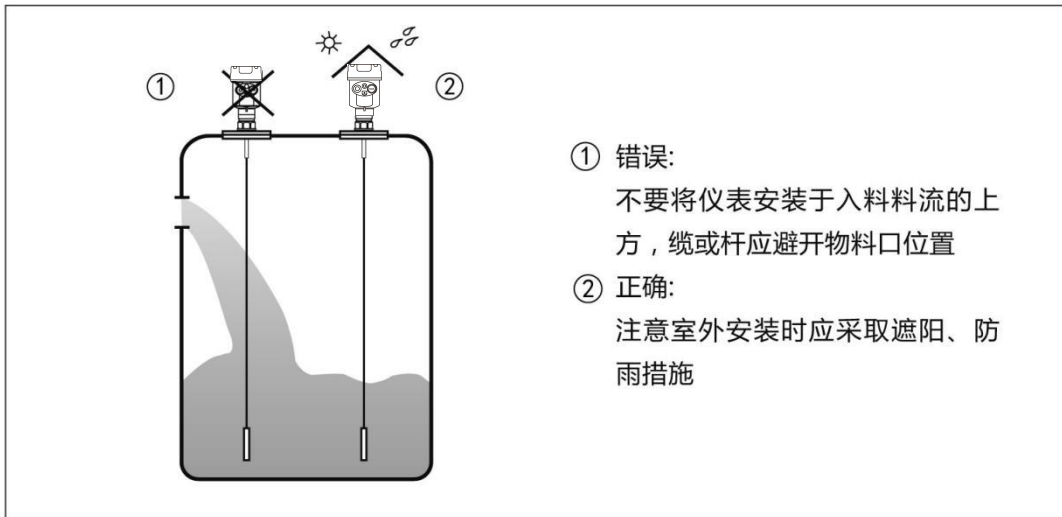
If measuring corrosive media, you can choose rod or cable probe sleeve PTFE, PFA sleeve for measurement

● **Special instructions and precautions during installation:**

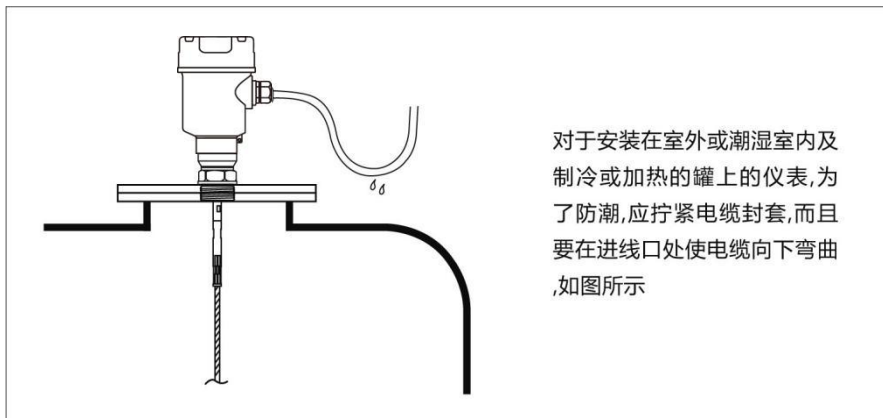
- For the field use of the cable is too long guided wave radar, the excess part of the cable needs to be cut off to ensure correct measurement, and the cable cannot be knotted, twisted or attached to other objects.
- When cutting the cable, first cut off the power supply of the instrument, remove the cable, remove the screws on the weight, and cut the instrument from the bottom of the cable. After the cutting is complete, reinstall the weight, and then power on the instrument and reset the parameters.
- For the cable guided wave radar with casing, when the cable is too long, it shall not be intercepted by itself, and it shall be returned to the original factory for interception.
- For the instrument installed in the waveguide tube, the radar probe should be fixed with an insulating bracket to ensure that the radar probe (rod/cable) is concentric with the waveguide tube, otherwise the measurement will be affected by vibration or false echoes.



● **Installation Diagram:**



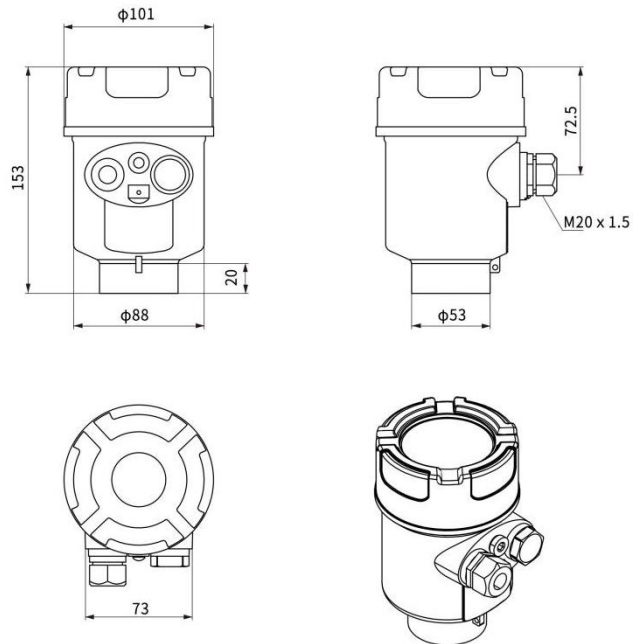
● **Moisture proof:**



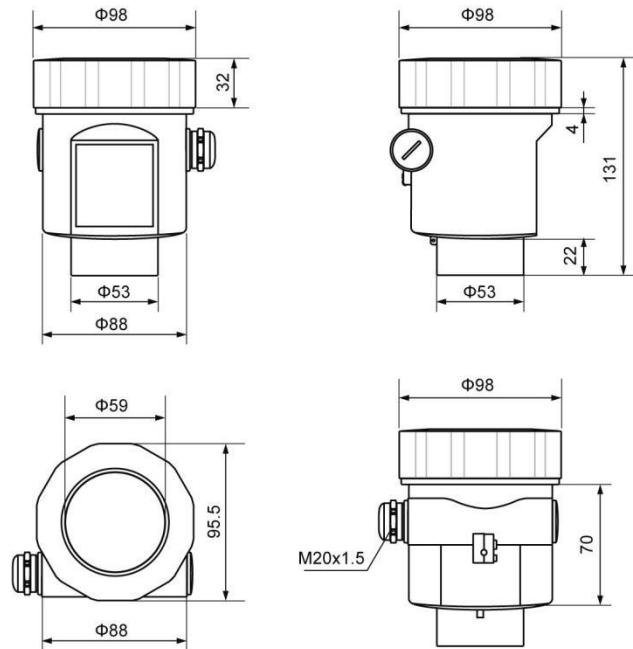
4. Structure Size (unit: mm)

- case size

- Cast aluminum case

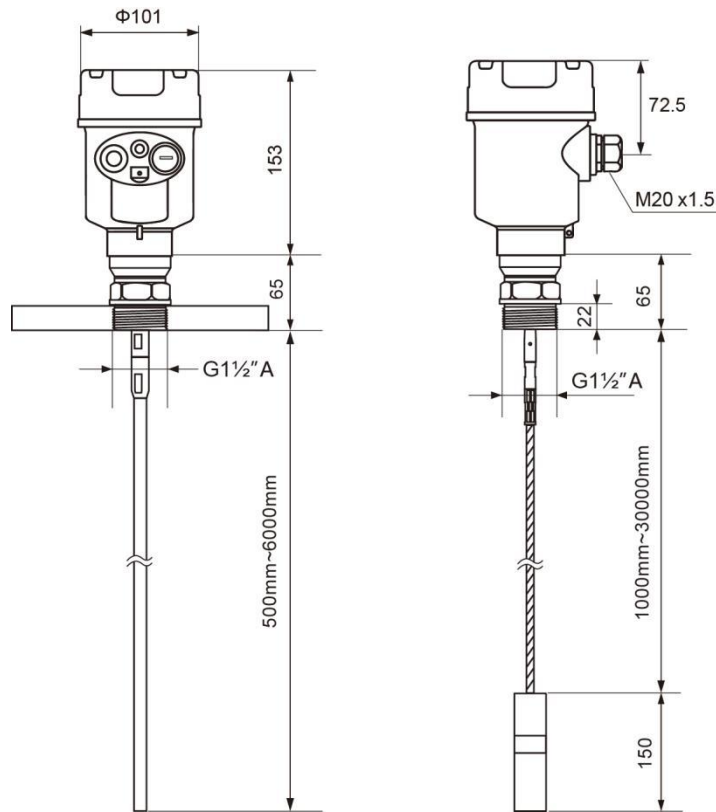


- Plastic case

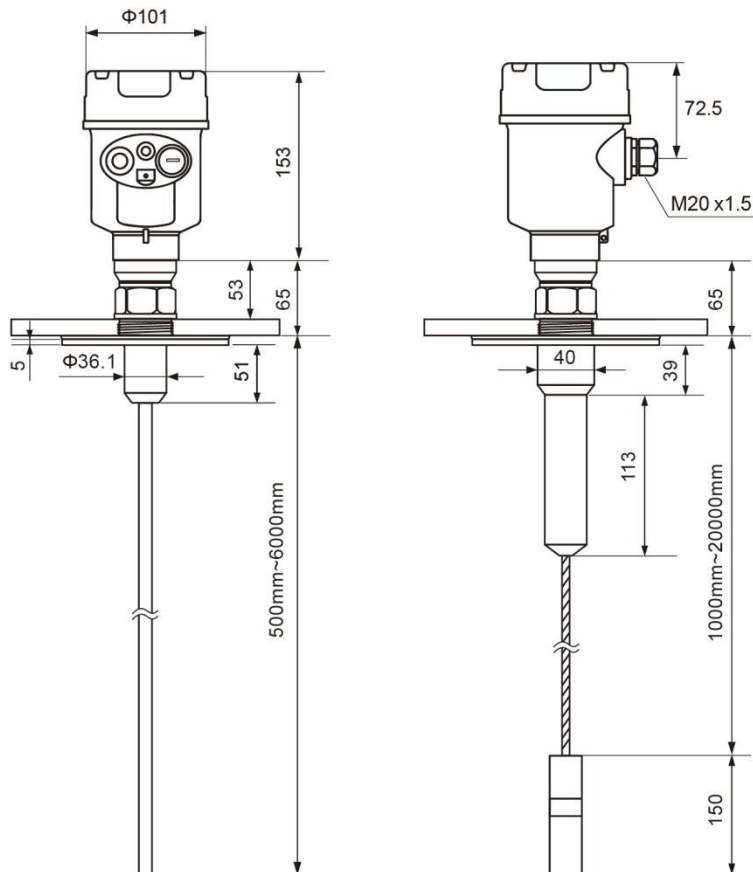


- **Product size**

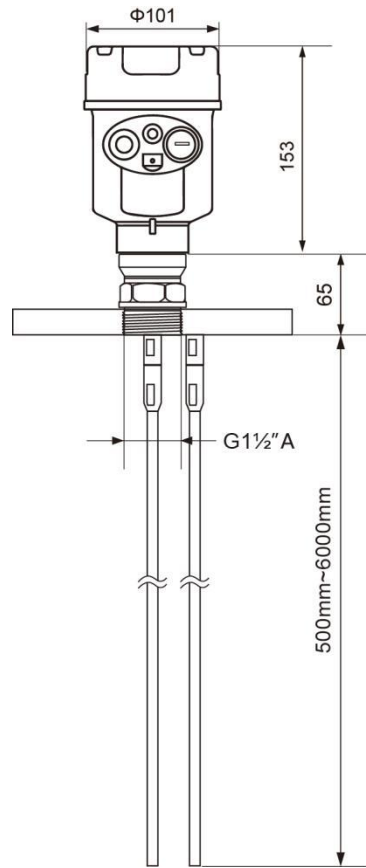
- **701**



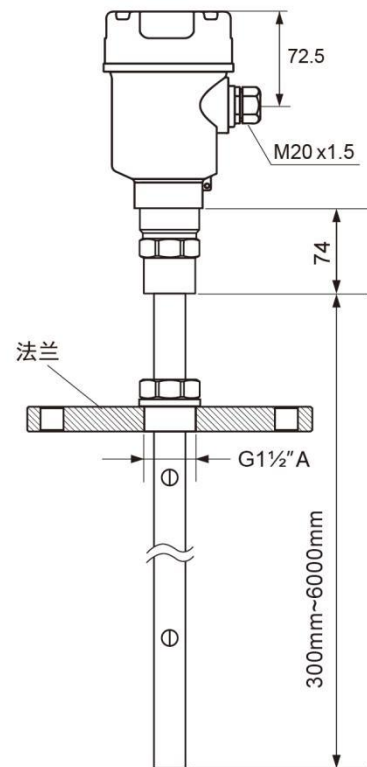
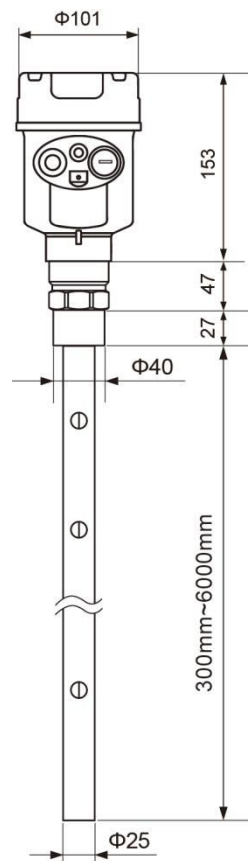
- **702**



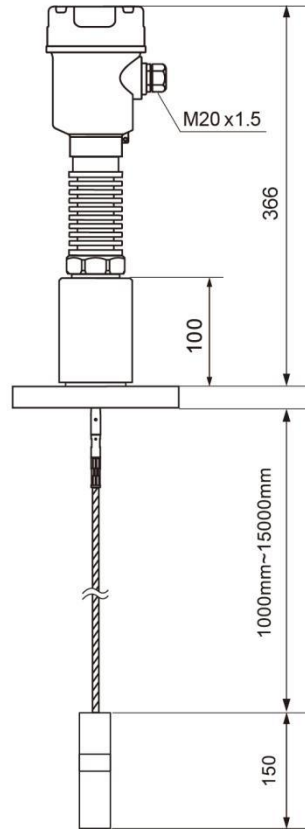
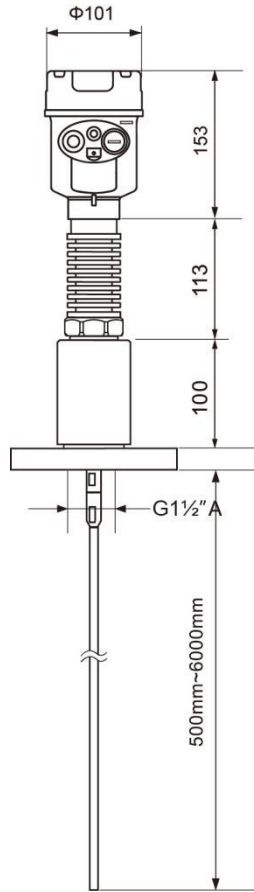
➤ 703



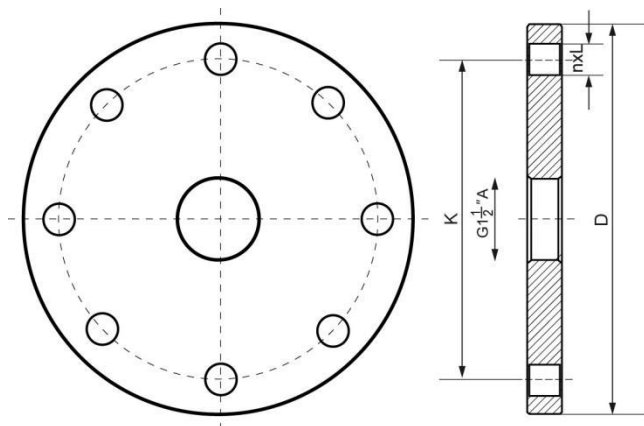
➤ 704



➤ 705



● Flange Selection



法兰标准：HG/T20592-2009 PN16 RF

法兰选型表				
规格	外径 D	中心孔距 K	孔数 n	孔径 L
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

5. Electrical Connection

- **Power supply**

(4 ~ 20) mA/HART (two-wire system)

The power supply and output current signal share a two-core shielded cable. For details about the power supply voltage range, see technical data. For intrinsic safety, a safety grid must be added between the power supply and the instrument.

(4 ~ 20) mA/HART (four-wire system)

The power supply and current signal are separated, and a two-core shielded cable is used respectively. For details about the power supply voltage range, see technical data.

The MODBUS-RS485 (four-wire system)

power supply and Modbus signal cables are separated by a two-core shielded cable. For details about the power supply voltage range, see the technical data.

- **Installation of connection cables**

General Introduction

Power supply cable can use normal two-core cable, cable outer diameter should be (6 ~ 12) mm to ensure that the cable inlet is sealed. If there is electromagnetic interference, shielding cables are recommended.

(4 ~ 20) mA/HART (two-wire)

Power supply cable can use normal two-core cable.

(4 ~ 20) mA/HART (four-wire)

Power supply cables should use cable cables with dedicated ground lines.

Modbus-RS485 (four-wire)

Power supply cables should use shielded cable cables.

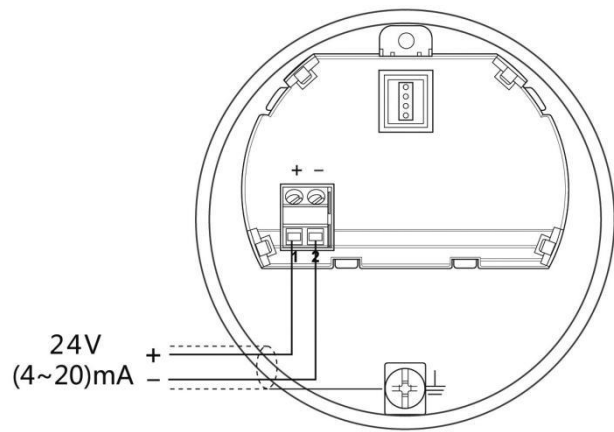
Shielding and wiring of cables

The shielded cable should be grounded at both ends. Inside the sensor, the shield must be connected to an internal grounding terminal. The external grounding terminal on the shell must be connected to the earth.

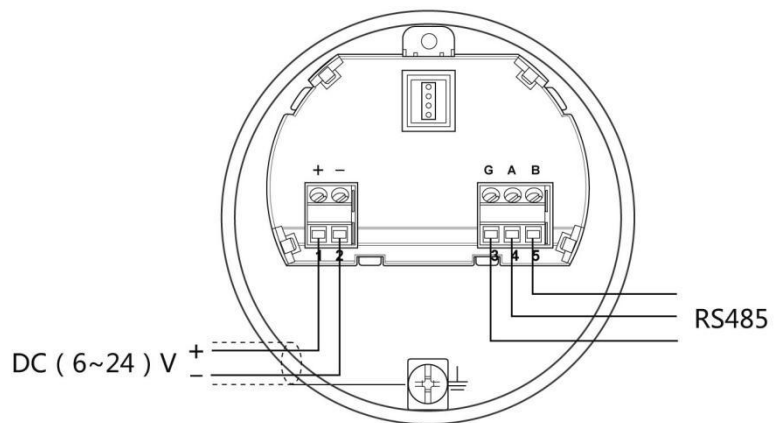
If there is a ground current, the shielded end of the shielded cable away from the meter side must be grounded by a ceramic capacitor (such as 1nF/1500V) to isolate the direct and bypass high-frequency interference signals.

● connection-mode

- 24V two-wire diagram is as follows:



- 6 ~ 24V Modbus-RS485 wiring diagram is as follows:



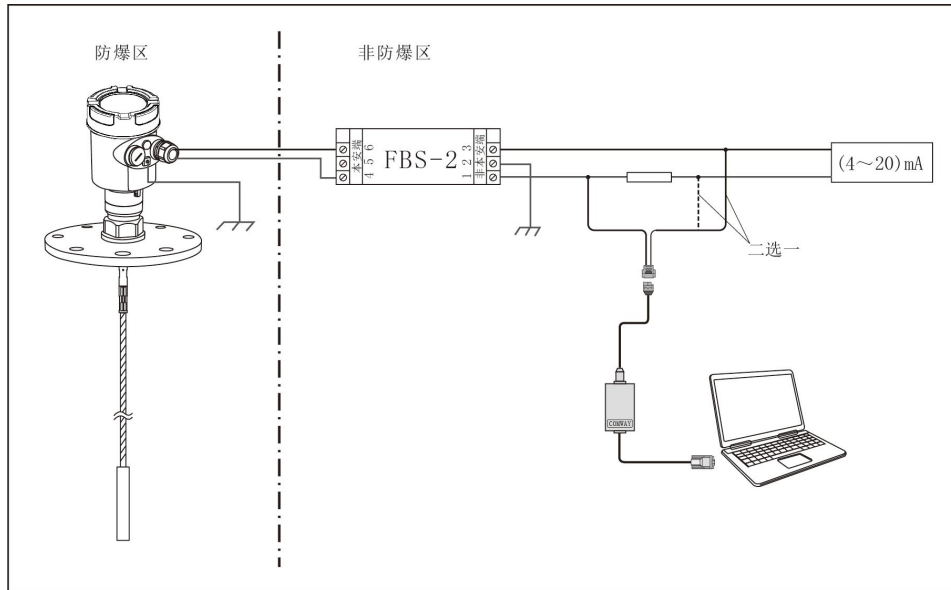
- **Explosion-proof connections**

The explosion-proof form of this product is intrinsically safe. Explosion-proof mark: Exia II C T6. The safety type guided wave radar level meter is made of die-cast aluminum housing material, and the electronic parts are made of plastic sealing structure, so as to ensure that the sparks generated when the circuit is partially faulty will not be released. This product is suitable for continuous level measurement of combustible media below Exia II C T6 explosion-proof class.

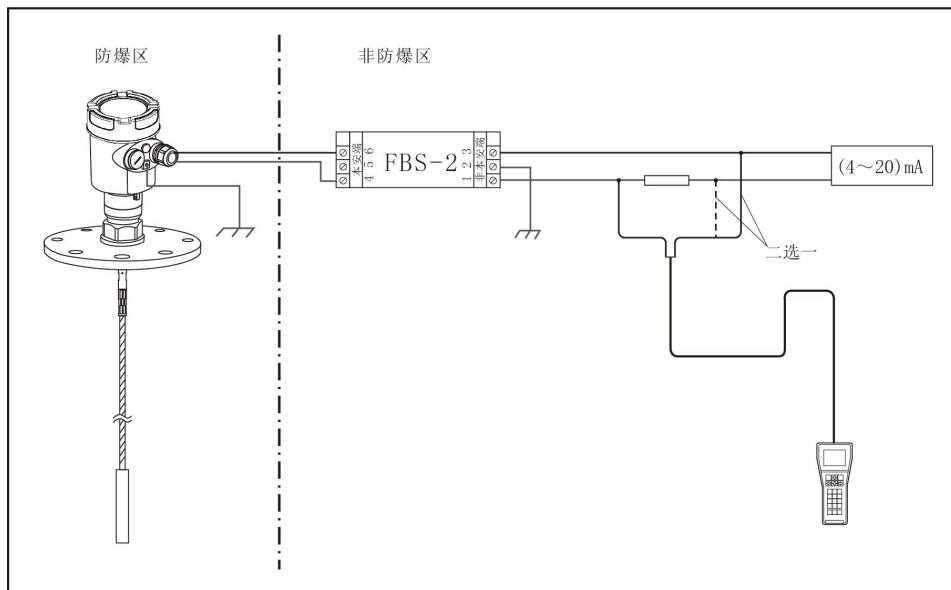
This product must be powered by a safety grid when used. FBS-2 safety grid is the associated equipment of this product, and the explosion-proof form is intrinsically safe. Explosion-proof mark: [Exia] II C, power supply voltage (21.6 ~ 26.4) V DC, short circuit current is

135mA, working current (4 ~ 20) mA.

All cables shall be shielded flexible cables with a maximum length of 500m from the instrument to the safety gate. Distributed capacitance $\leq 0.1 \mu\text{F}/\text{km}$, distributed inductance $\leq 1\text{mH}/\text{km}$. The instrument must be grounded when installed. Do not use other associated equipment that has not been inspected for explosion protection.



采用Software调试物位计



采用HART手持编程器调试物位计

- **security guidance**

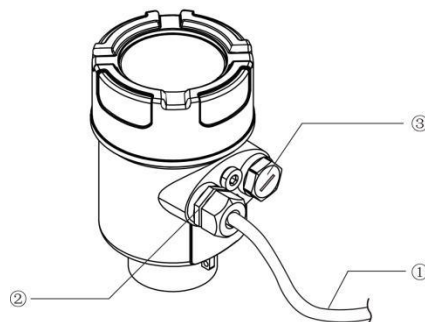
Please comply with the requirements of local electrical installation regulations.

Please follow local health and safety protocols. All operations on the electrical components of the instrument must be performed by formally 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 meter nameplate.

- **protection class**

This meter fully meets the requirements of protection class IP66/67, please ensure that the cable seal head is waterproof. As shown below:



How to ensure that your installation meets IP67 requirements:

- ◆ Ensure that the sealing head is not damaged.
- ◆ Ensure that the cable is not damaged.
- ◆ Ensure that the cables used meet the requirements of electrical connection specifications.
- ◆ Before entering the electrical interface, bend the cable downward to ensure that water does not flow into the housing, see 1
- ◆ Tighten the cable sealing head, see (2)
- ◆ Please plug the unused electrical interface with a blind plug, see ③

6. Instrument Debugging

- Three debugging methods:

① Display/Button (If with split display, debug on the split, see attached connection chart)

② Machine debugging

③ HART Handheld Programmer

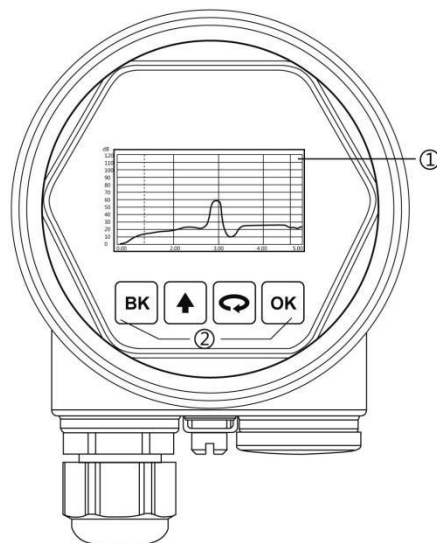
- Display/Button

The instrument is debugged with four buttons on the display screen. The language of the debug menu is optional. After debugging, it is generally only used for display, and the measured value can be read out very clearly through the glass window.

Display/Button

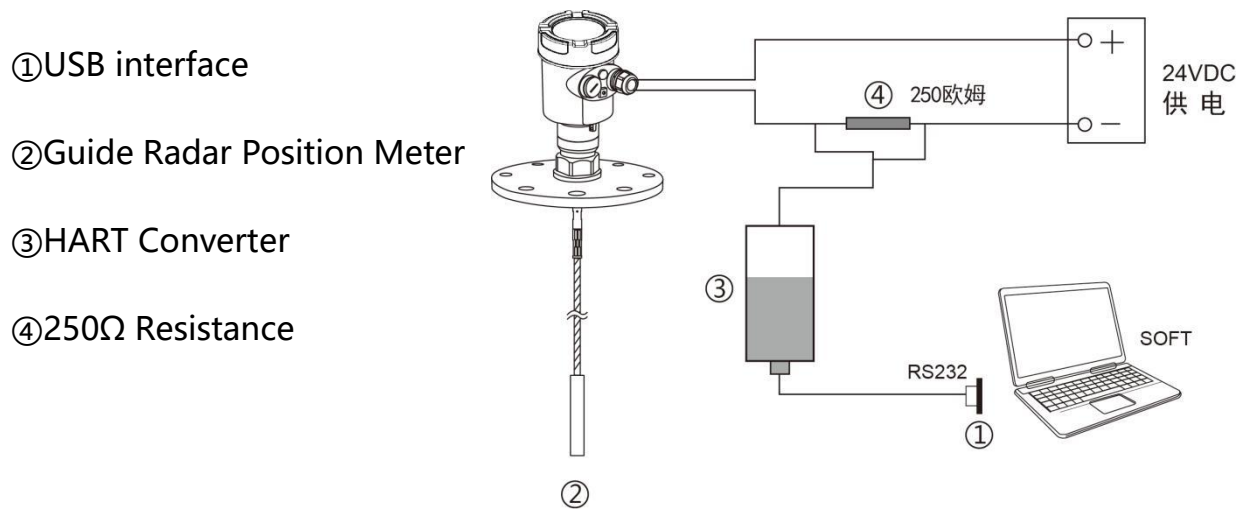
① LCD display

② Buttons



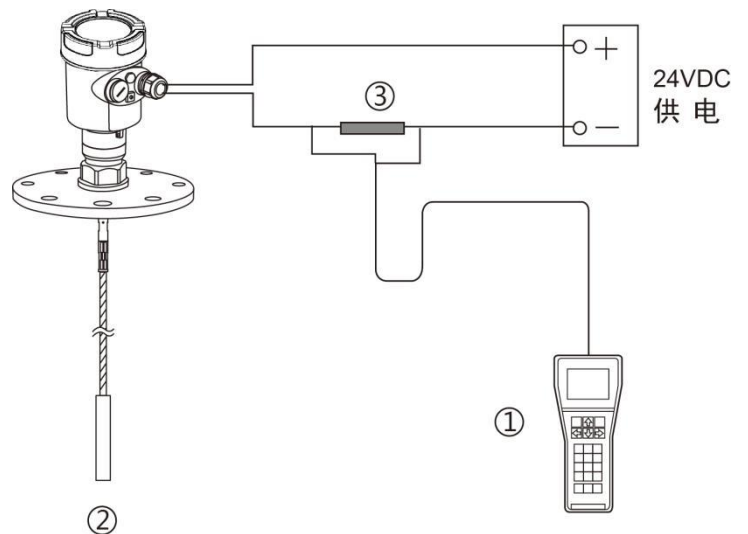
Machine debugging

Connected to the computer via HART



HART Handheld Programmer

- ①HART Handheld Programmer
 ②Guide Radar Position Meter
 ③250Ω Resistance



7. Technical Parameter

General data

Detection of component materials

Rod	Stainless steel/PTFE/PFA/Ceramic (705)
Cable	Stainless steel/PTFE/PFA/Ceramic (705)
Coaxial	Stainless steel

Process connection

701	G1½ "A thread or 1½" NPT thread or flange
702	Stainless steel + PTFE flanged flange or thread (G1½ "A, 1½" NPT) or clamp
703	stainless steel flange

704	G1½ "A thread or 1½" NPT thread or flange
705	stainless steel flange
Seal	Viton fluorine rubber, Kalrez fluoride rubber
Case	cast aluminum, plastic, stainless steel
Seal between housing and housing cover	silicone rubber
Shell Windows	polycarbonate
Ground terminal	316L

Power Supply

Two-wire system	24VDC
Four-wire system	6 ~ 24VDC (Modbus-RS485) 198 ~ 242VAC (Double chamber flameproof) 110VAC (Double chamber flameproof)
Power Consumption	Max. 22.5mA
Permissible ripple	- < 100Hz U _{ss} < IV - (100 ~ 100K) Hz U _{ss} < 10mV

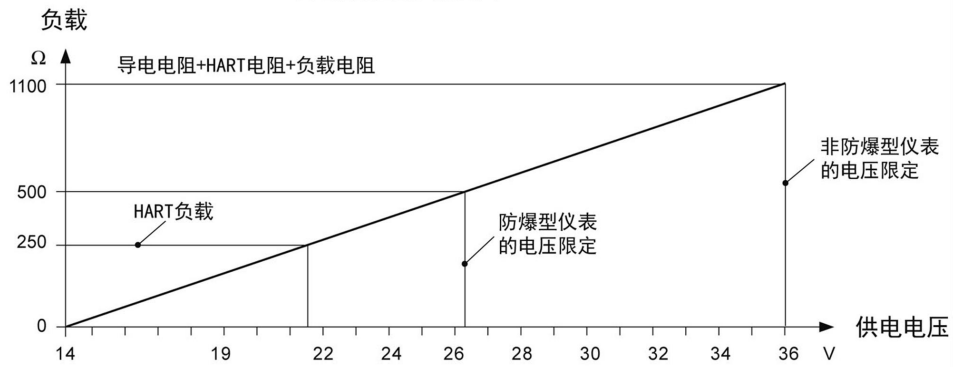
Cable Parameters

Cable inlet/plug	1 M20× 1.5 cable inlet (cable diameter 6 ~ 12mm) 1 blinded M20 × 1.5
Spring-cage connection	For wire cross section 2.5mm ²

Output Parameter

output signal	(4 ~ 20)mA HART / Modbus-RS485
Resolution	1.6μA
fault signal	Constant current output; 20.5mA; 22mA; 3.9mA
Two-wire load resistance	as shown below
Four-wire load resistance	Max. 500Ω
Integration time	(0 to 36)s, adjustable

两线制负载电阻图



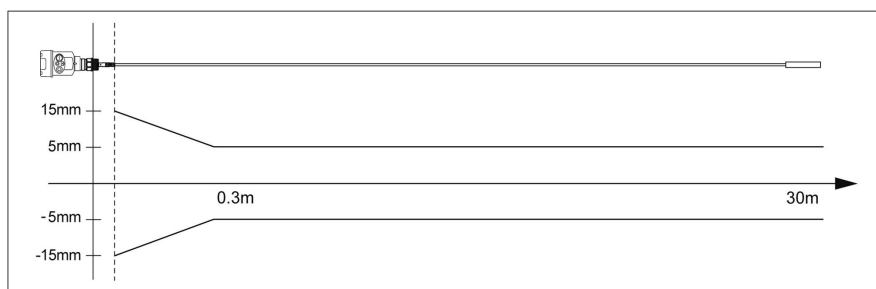
Characteristic Parameters

Maximum measuring distance

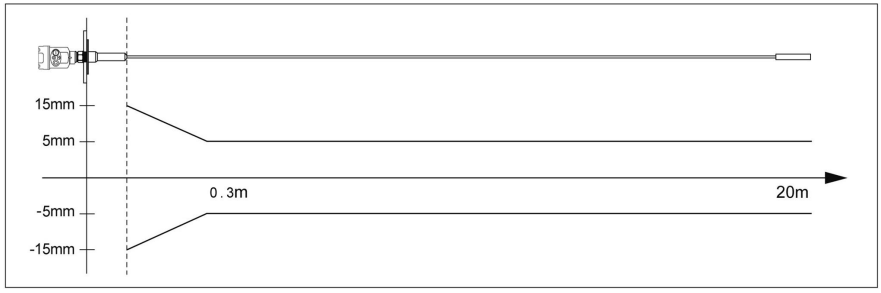
701	30m / 6m (cable/pole)
702	20m / 6m (cable/pole)
703	30m / 6m (cable/pole)
704	6m
705	15m / 6m (cable/pole)
measurement interval	Approximately 1s (depending on parameter setting)
adjustment time	Approximately 1s (depending on parameter setting)
resolution	1mm
accuracy	±5mm

Precision diagrams

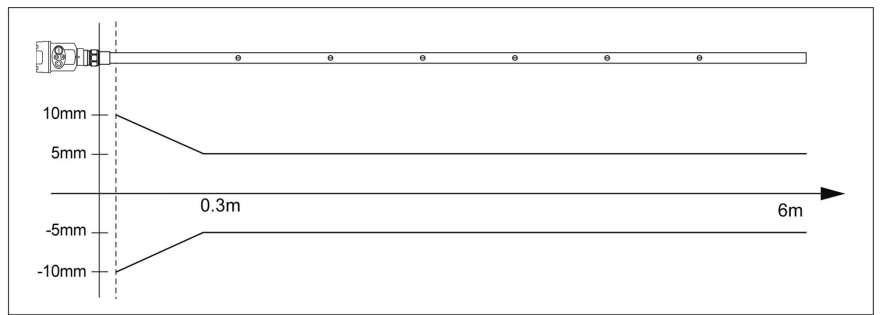
701、703:



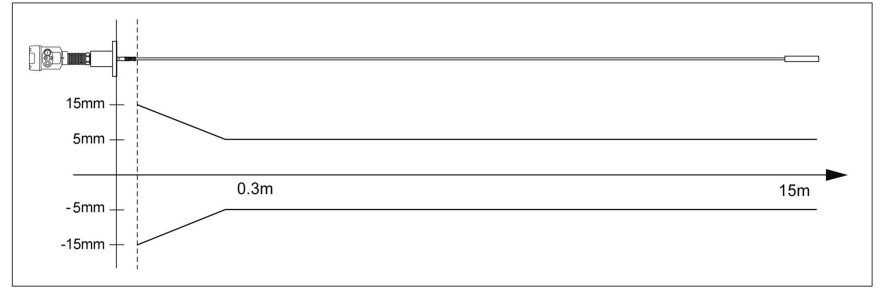
702:



704:



705:



Working Storage and Transport Temperature (-40 ~ 80) °C

Process temperature (temperature in the antenna section)

- 701 -40 ~ 120 ° C (standard)/-40 ~ 230 ° C (high temperature type)
- 703 -40 ~ 120 ° C (standard)/-40 ~ 200 ° C (high temperature type)
- 703 -40 ~ 120 ° C (standard)/-40 ~ 200 ° C (high temperature type)
- 704 -40 ~ 120 ° C (standard)/-40 ~ 230 ° C (high temperature type)
- 705 (-200 ~ 400)°C

relative humidity < 95%

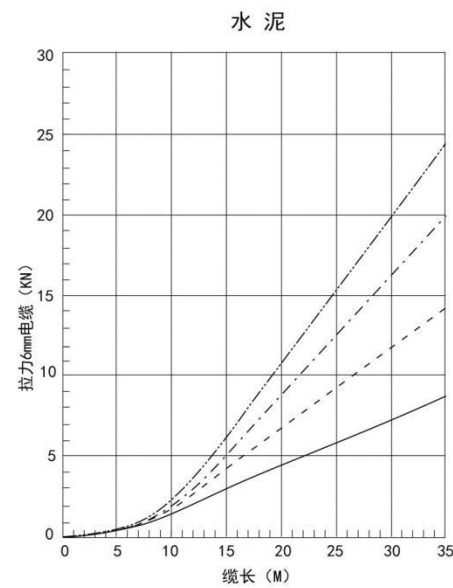
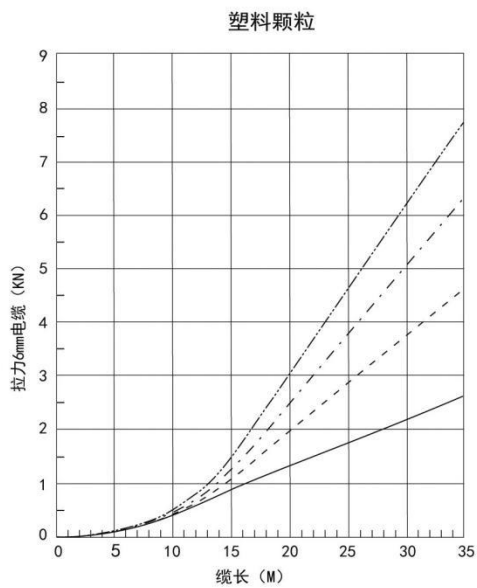
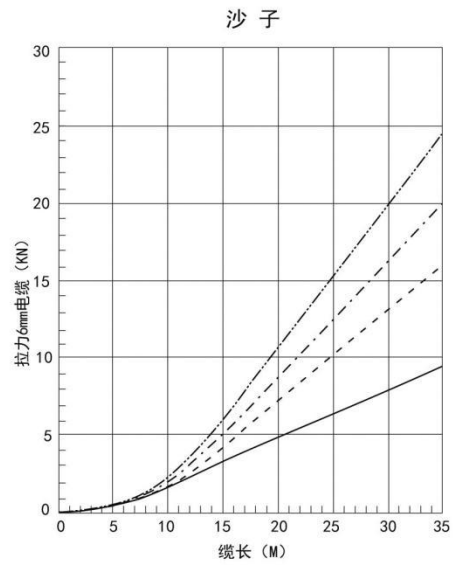
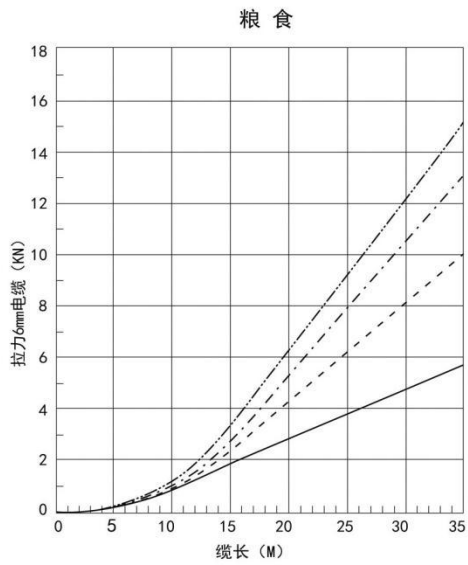
Tank pressure Max.40MPa

shock-proof Vibration frequency (10 ~ 150)Hz, maximum vibration acceleration 10m/s²

maximum tension See tensile diagram

When measuring solid media, the tension depends on the container diameter and level. The following shows the tension generated by some typical media.

金属容器, 罐壁光滑
——— 直径12m
- - - - 直径9m
- - - - 直径6m
——— 直径3m



8. Product Selection

● 701

Serial Number:				
Maximum Range/Probe Type				
30000mm/single cable or 6000mm/single lever				
License				
P	standard (non-explosion proof)			
I	intrinsic safety type (Exia IIC T6 Ga)			
G	flame-proof type (Exd IIC T6 Gb)			
Probe Type/Material				
A	Cable Probe	Φ8mm	/ SS304	
B	Cable Probe	Φ4mm	/ 316L	
C	Rod Probe	Φ12mm	/ SS304	
D	Rod Probe	Φ12mm	/ 316L	
Process Connection				
G	thread	G1½"	A	
N	thread	1½"	NPT	
C	Flange DN50	PN16	/ stainless steel	
D	Flange DN80	PN16	/ stainless steel	
E	Flange DN100	PN16	/ stainless steel	
F	Flange DN150	PN16	/ stainless steel	
H	Flange DN200	PN16	/ stainless steel	
I	Flange 2 "	150LBS	ANSI	convex/stainless steel 316L
J	Flange 3 "	150LBS	ANSI	convex/stainless steel 316L
K	Flange 4 "	150LBS	ANSI	convex/stainless steel 316L
L	Flange 6 "	150LBS	ANSI	convex/stainless steel 316L
M	Flange 8 "	150LBS	ANSI	convex/stainless steel 316L
Sealing/Process Temperature				
1. ordinary type (-40 ~ 120) °C				
2. high-temperature type (-40 ~ 230) °C				

Electronic Unit	
3	(4~20) mA / 24V DC / HART two-wire system
4	(4~20) mA / 220V AC / HART four-wire system
5	Modbus-RS485 / 6~24V / four-wire system
Housing/Protection Rating	
L	aluminum single cavity / IP67
H	aluminum double cavity / IP67
G	plastic single cavity / IP65
K	stainless steel single cavity / IP67
Cable Inlet Cable	
M	M 20 × 1.5
N	½" NPT
Field Display/Programming	
A	with
X	without

● 702

Serial Number:
Maximum Range/Probe Type
20000mm/PTFE sealed cable or 6000mm/PTFC antenna
License
P standard (non-explosion proof)
I intrinsic safety type (Exia IIC T6 Ga)
G flame-proof type (Exd IIC T6 Gb)
Probe Type/Material
A Cable Probe Φ4mm / PTFE
B Cable Probe Φ4mm / PFA
C Rod Probe Φ10mm / PTFE
D Rod Probe Φ11mm / PFA
Process Connection

G	thread	G1½" A		
N	thread	1½" NPT		
C	Flange DN50	PN16 / stainless steel/PTFE		
D	Flange DN80	PN16 / stainless steel/PTFE		
E	Flange DN100	PN16 / stainless steel/PTFE		
F	Flange DN150	PN16 / stainless steel/PTFE		
H	Flange DN200	PN16 / stainless steel/PTFE		
I	Flange 2 "	150LBS ANSI convex/stainless steel 316L /PTFE		
J	Flange 3 "	150LBS ANSI convex/stainless steel 316L /PTFE		
K	Flange 4 "	150LBS ANSI convex/stainless steel 316L /PTFE		
L	Flange 6 "	150LBS ANSI convex/stainless steel 316L /PTFE		
M	Flange 8 "	150LBS ANSI convex/stainless steel 316L /PTFE		
Sealing/Process Temperature				
1. ordinary type (-40 ~ 120) °C				
2. high-temperature type (-40 ~ 200) °C				
Electronic Unit				
3 (4~20) mA / 24V DC / HART two-wire system				
4 (4~20) mA / 220V AC / HART four-wire system				
5 Modbus-RS485 / 6~24V / four-wire system				
Housing/Protection Rating				
L	aluminum	single cavity / IP67		
H	aluminum	double cavity / IP67		
G	plastic	single cavity / IP65		
K	stainless steel	single cavity / IP67		
Cable Inlet Cable				
M		M 20 × 1.5		
N		½" NPT		
Field Display/Programming				
A with				
X without				

Serial Number:				
Maximum Range/Probe Type				
30000mm/double cable or 6000mm/double bar				
License				
P	standard (non-explosion proof)			
I	intrinsic safety type (Exia IIC T6 Ga)			
G	flame-proof type (Exd IIC T6 Gb)			
Probe Type/Material				
A	Cable Probe	Φ6mm	/ SS304	
B	Cable Probe	Φ6mm	/ 316L	
C	Rod Probe	Φ12mm	/ SS304	
D	Rod Probe	Φ12mm	/ 316L	
Process Connection				
G	thread	G1½"	A	
N	thread	1½"	NPT	
C	Flange DN50	PN16	/ stainless steel	
D	Flange DN80	PN16	/ stainless steel	
E	Flange DN100	PN16	/ stainless steel	
F	Flange DN150	PN16	/ stainless steel	
H	Flange DN200	PN16	/ stainless steel	
I	Flange 2 "	150LBS	ANSI	convex/stainless steel 316L
J	Flange 3 "	150LBS	ANSI	convex/stainless steel 316L
K	Flange 4 "	150LBS	ANSI	convex/stainless steel 316L
L	Flange 6 "	150LBS	ANSI	convex/stainless steel 316L
M	Flange 8 "	150LBS	ANSI	convex/stainless steel 316L
Sealing/Process Temperature				
1. ordinary type (-40 ~ 120) °C				

2. high-temperature type (-40 ~ 200) °C		
Electronic Unit		
3	(4~20) mA / 24V DC / HART	two-wire system
4	(4~20) mA / 220V AC / HART	four-wire system
5	Modbus-RS485 / 6~24V / four-wire system	
Housing/Protection Rating		
L	aluminum	single cavity / IP67
H	aluminum	double cavity / IP67
G	plastic	single cavity / IP65
K	stainless steel	single cavity / IP67
Cable Inlet Cable		
M	M 20 × 1.5	
N	½" NPT	
Field Display/Programming		
	A	with
	X	without

● 704

Serial Number:		
Maximum Range/Probe Type		
6000mm/coaxial antenna		
License		
P	standard (non-explosion proof)	
I	intrinsic safety type (Exia IIC T6 Ga)	
G	flame-proof type (Exd IIC T6 Gb)	
Probe Type/Material		
A	Coaxial tube probe	Φ25mm/SS 304
B	Coaxial tube probe	Φ25mm/316L
Process Connection		

G	thread	G½ "A
N	thread	1½ "NPT
C	Flange DN50	PN16 / stainless steel
D	Flange DN80	PN16 / stainless steel
E	Flange DN100	PN16 / stainless steel
F	Flange DN150	PN16 / stainless steel
H	Flange 2 "150LBS	ANSI convex/stainless steel 316L
I	Flange 3 "150LBS	ANSI convex/stainless steel 316L
J	Flange 4 "150LBS	ANSI convex/stainless steel 316L
K	Flange 6 "150LBS	ANSI convex/stainless steel 316L
L	Special custom	
Sealing/Process Temperature		
1. ordinary type (-40 ~ 120) °C 2. high-temperature type (-40 ~ 230) °C		
Electronic Unit		
3 (4~20) mA / 24V DC / HART two-wire system 4 (4~20) mA / 220V AC / HART four-wire system 5 Modbus-RS485 / 6~24V / four-wire system		
Housing/Protection Rating		
L	aluminum	single cavity / IP67
H	aluminum	double cavity / IP67
G	plastic	single cavity / IP65
K	stainless steel	single cavity / IP67
Cable Inlet Cable		
M	M 20 × 1.5	
N	½" NPT	
Field Display/Programming		
A	with	
X	without	

Serial Number:			
Maximum Range/Probe Type			
15000mm/single cable antenna or 6000mm/single pole antenna			
License			
P	standard (non-explosion proof)		
I	intrinsic safety type (Exia IIC T6 Ga)		
G	flame-proof type (Exd IIC T6 Gb)		
Probe Type/Material			
A	Cable probe	Φ8mm/SS 304	
B	Cable probe	Φ4mm/316L	
C	Rod Probe	Φ12mm/SS 304	
D	Rod Probe	Φ12mm/316L	
Process Connection			
G	thread	G½ "A	
N	thread	1½ "NPT	
C	Flange DN50	PN16 / stainless steel	
D	Flange DN80	PN16 / stainless steel	
E	Flange DN100	PN16 / stainless steel	
F	Flange DN150	PN16 / stainless steel	
H	Flange DN200	PN16 / stainless steel	
I	Flange 2 "150LBS	ANSI convex/stainless steel 316L	
J	Flange 3 "150LBS	ANSI convex/stainless steel 316L	
K	Flange 4 "150LBS	ANSI convex/stainless steel 316L	
L	Flange 6 "150LBS	ANSI convex/stainless steel 316L	
M	Flange 8 "150LBS	ANSI convex/stainless steel 316L	
Sealing/Process Temperature			
1. standard model (-200 ~ 400) °C			
Electronic Unit			
3 (4~20) mA / 24V DC / HART two-wire system			

4	(4~20) mA / 220V AC / HART	four-wire system
5	Modbus-RS485 / 6~24V	four-wire system
Housing/Protection Rating		
L	aluminum	single cavity / IP67
H	aluminum	double cavity / IP67
G	plastic	single cavity / IP65
K	stainless steel	single cavity / IP67
Cable Inlet Cable		
M	M 20 × 1.5	
N	½" NPT	
Field Display/Programming		
A	with	
X	without	