Radar level meter

Committed to process automation solutions

Datasheet

D905

Add: No.600,No.21 Street, Hangzhou
Economic&Technological Development Area,
Zhejiang,China

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

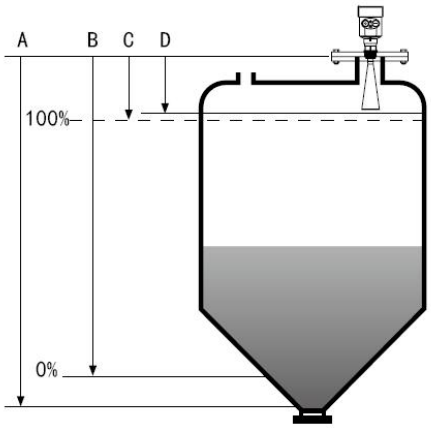
Radar level transmitter antenna microwave pulse is narrow, the downward transmission antenna. Microwave exposure to the medium surface is reflected back again by the antenna system receives, sends the signal to the electronic circuit automatically converted into level signals (because the microwave propagation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

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Product Introduction

SUP-RD905

Application：Solid particles, Powder

Measuring Range：30 meters

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

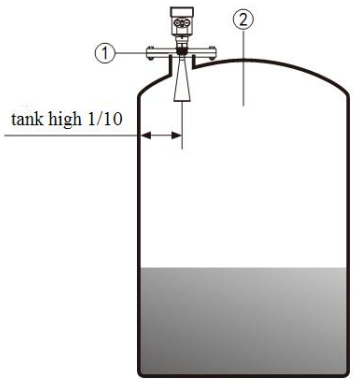
Signal Output：4... 20mA/HART (Two-wire / Four)

RS485/ Modbus

Installation Requirements

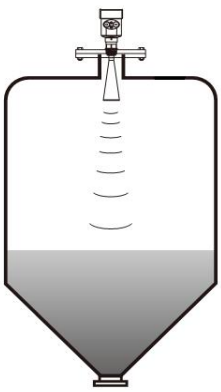
Installation guide:

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



Note: ① datum
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.



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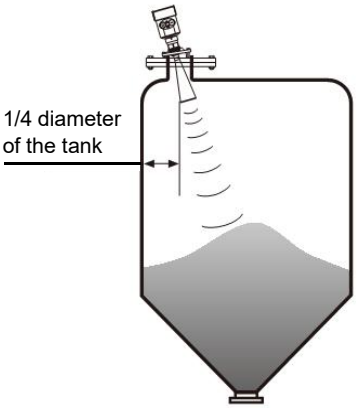
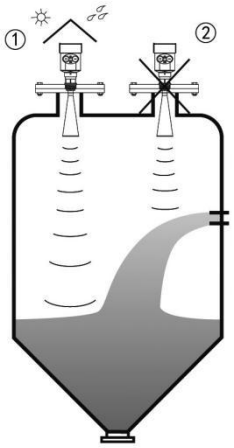
- A feed antenna to the vertical alignment surface.
  If the surface is rough, stack angle must be used to adjust the angle of cardan flange of the antenna to the alignment surface.

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



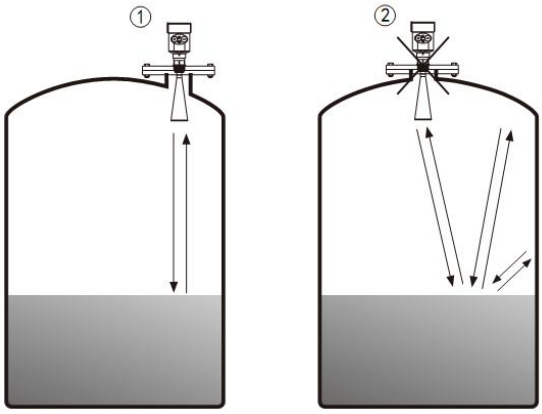
Typical installation errors：

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



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

①Correct
②Error



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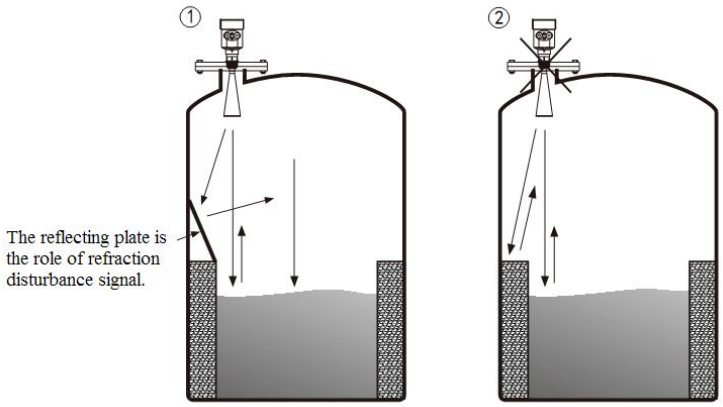
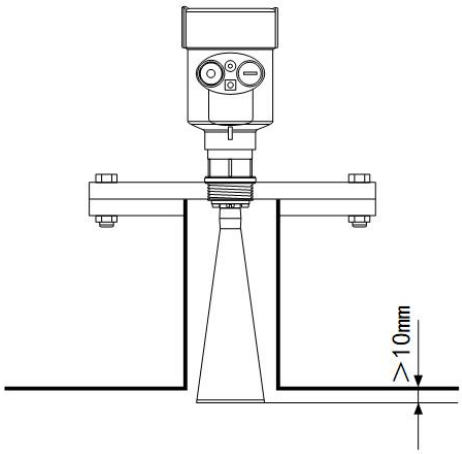
➢ There are obstacles affecting measurement needed reflection plate.

① Correct
② Error



■ Height of nozzle:

Antenna extends into the tank at least 10mm distance.



Electrical Connection

The power supply voltage:

(4~20)mA/HART (Two wire system)	The power supply and the output current signal sharing a two core shield cable. The supply voltage range see technical data. For intrinsically safe type must be a safety barrier between the power supply and the instrument.
(4~20)mA/HART(Four wire system)	Separate power supply and the current signal, respectively using a two-core shielded cable. The supply voltage range see technical data.
RS485 / Modbus	Power supply and Modbus signal line separated respectively using a two-core shielded cable, the power supply voltage range see technical data.

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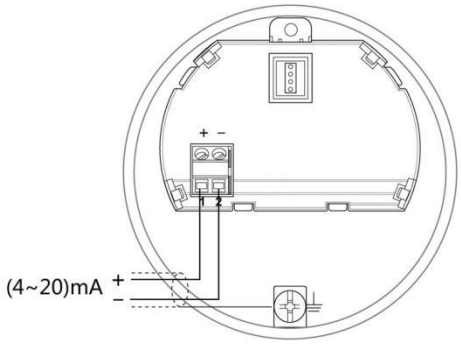
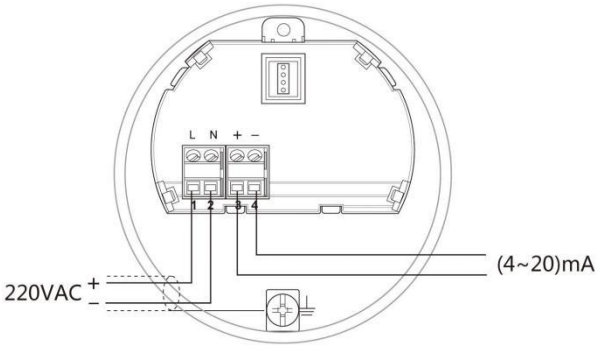
Connection mode:

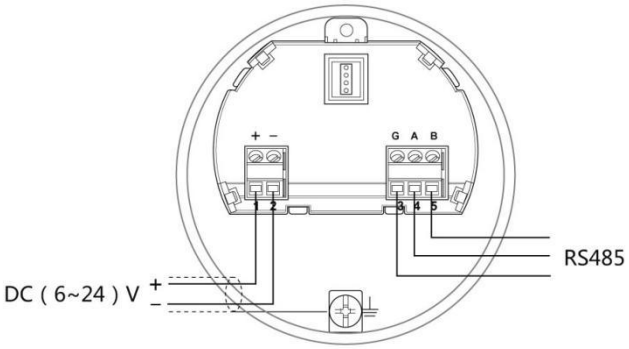
➢24V two wire wiring diagram as follows:



➢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.

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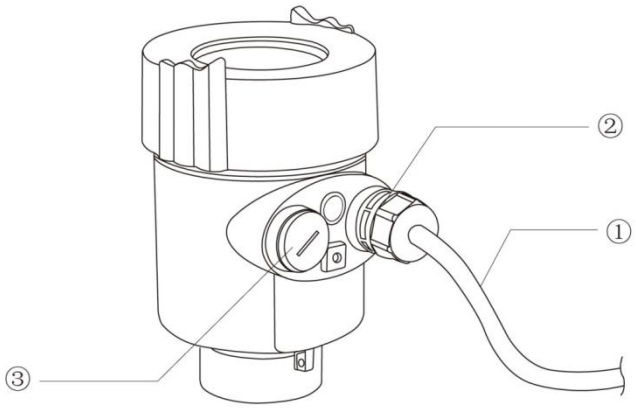
■ Protection grade:

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

Instrument Commissionin

■ 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.

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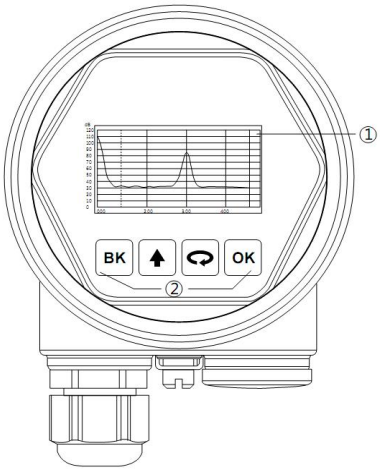
Display / Keyboard



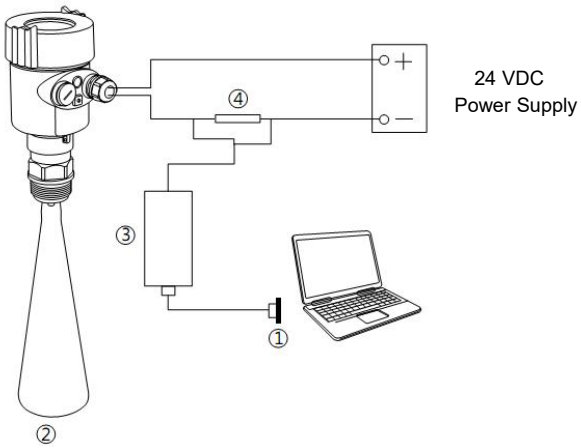
① Liquid crystal display(LCD)

② The key

■ PC debugging:

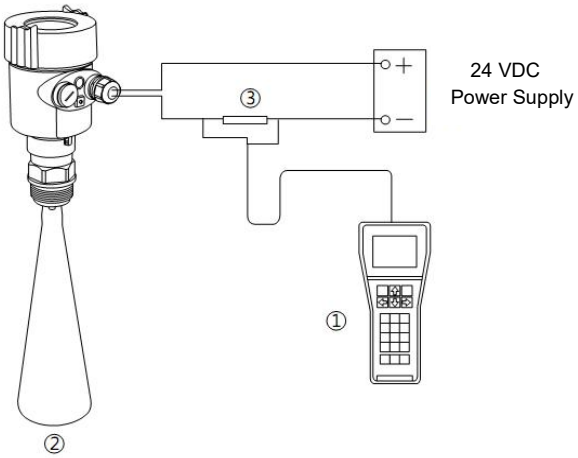
Connected to PC by HART

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



■ HART handheld programmer:

① HART handheld programmer
② Radar level meter
③ 250 Ωresistor



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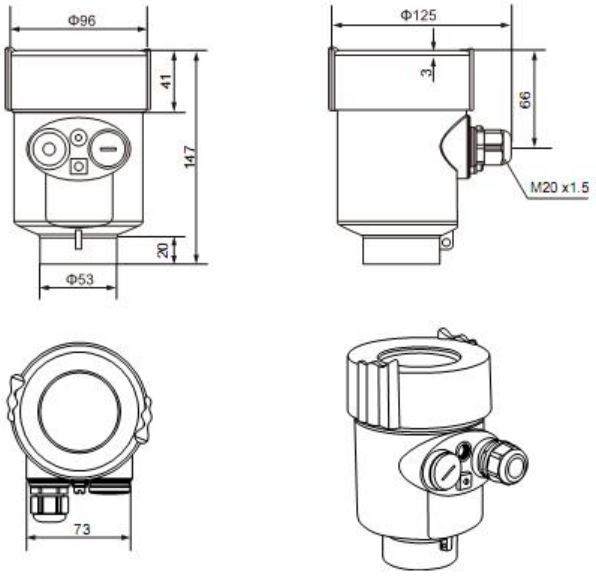
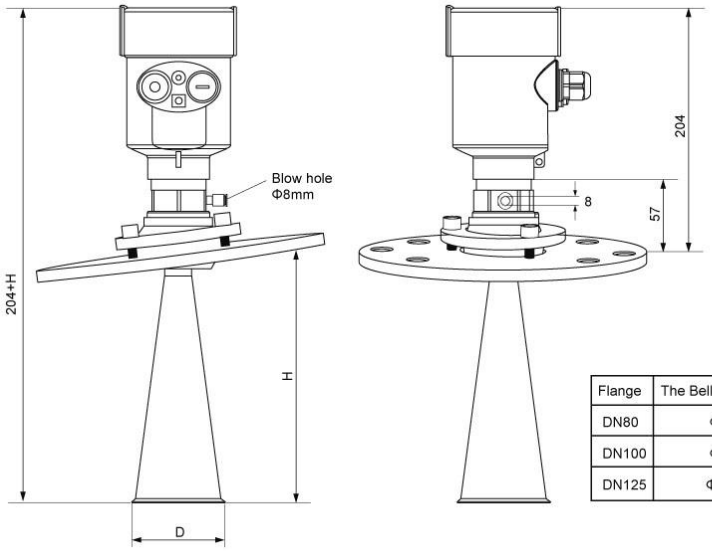
Structure Size

■ **The outer shell**:

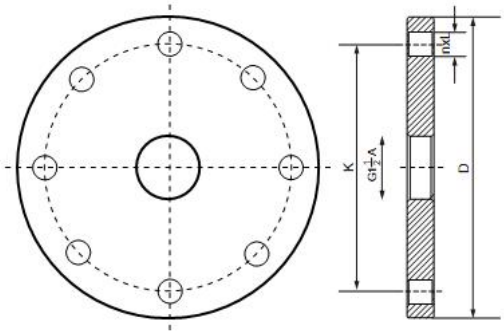


SUP-RD905



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

■ **Flange type:**



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

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Technical Parameters

The outer shell		
The seal between the shell and the shell cover		Silicone rubber
Casing window		Polycarbonate
The ground terminal		Stainless steel
The power supply voltage		
Two wire system		
The standard type	(16 ~ 26) V DC	
Intrinsically safe	(21.6 ~ 26.4) V DC	
Power dissipation	max 22.5mA / 1W	
Allowable ripple		
	- <100Hz	Uss<lV
	- (100～100K) Hz	Uss<l0mV
The cable parameters		
Cable entrance / plug		1 M20xl.5 cable entrance
		1 blind plug
Terminal		Conductor cross section 2.5mm²
Output parameters		
The output signal		(4 ~ 20) mA/RS485
Communication protocol		HART
Resolution		1.6 μ A
Fault signal		Constant current output; 20. 5mA
		22mA
		3.9mA
The integral time		(0 ~ 36) s, adjustable
Blind area		the ends of the antenna
The maximum distance measurement		30 meters (for solids)
Microwave frequency		26GHz
Communication interface		HART communication protocol
The measurement interval		about 1 second (depending on the parameter settings)
Adjust the time		about 1 second (depending on the parameter settings)

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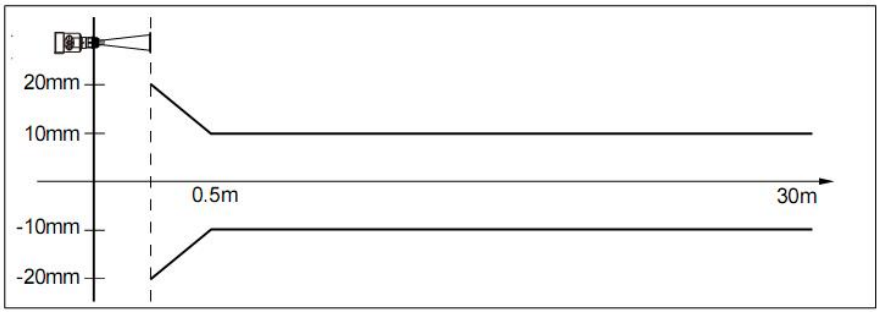
Display resolution	1 mm
Working storage and transportation temperature	(-40～80) ℃
Process temperature (the temperature of the antenna part)	(-40 to 130)° C for standard model / (-40 to 230)° C for high-temperature model
Pressure	Max.4MPa
Seismic	Mechanical vibration l0m/s², (10 ~ 150) Hz

Meter Linearity

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



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Model selection

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 / Blow hole							
	F	Horn Antenna Φ96mm / Stainless Steel 316L / Blow hole							
	G	Horn Antenna Φ121mm / Stainless Steel 316L / Blow hole							
	H	Horn Antenna Φ76mm / Stainless Steel 316L / Dust-proof Cover							
	I	Horn Antenna Φ96mm / Stainless Steel 316L / Dust-proof Cover							
	J	Horn Antenna Φ121mm / Stainless Steel 316L / Dust-proof Cover							
	Y	Special Custom							
		Seal Up / Process Temperature							
		V	Viton / (-40~150) ℃						
		K	Kalrez / (-40~250) ℃						
			The Electronic Unit						
			2	(4~20) mA / 24V DC / Two wire system					
			3	(4~20) mA / 24V DC / HART two wire system					
			4	(4~20) mA / 220V AC / Four wire system					
			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	Belt		
						X	Without		

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

Tank / Container Information

The Types of Tank:

□ Tank □ Reaction Tank □ Separation Tank □ Marine Tank

The Tank Structure:

Material of Tank: _____ Pressure: _____

Tank size:

Tank Height: _____ m Diameter: _____

The top of the tank:

□ Vault □ Flat □ Open □ Cone type

The bottom of the tank:

□ Cone bottom □ Flat □ Slope bottom □ Arc bottom

Installation:

□ Top installation □ Side installation

□ The bypass pipe mount □ Guided wave pipe installation

Installation takes over the top of the tank (information):

Height of take over : _____ mm Diameter of take over : _____ mm

Measurement of Medium

Media name: □ Liquid □ Solid □ Mixed Media

Medium temperature: _____ ℃

Dielectric Constant:

Linked material: □ Yes □ No

Mixing: □ Yes □ No

Process Connection

Thread: □ 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

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Ordering code

Radar Level Transmitter RD905										Description
RD905	-	-	-	-	-	-	-	-	-	
Measuring Medium		B								Solid Powder
Measurement Range			05							5m
			10							10m
			15							15m
			20							20m
			XX							Other
Antenna Type				KE						Horn Mouth H227mm×Φ76mm 304SS
				KG						Horn Mouth H288mm×Φ96mm 304SS
				KL						Horn Mouth H620mm×Φ121mm 304SS
				KF						Horn Mouth H227mm×Φ76mm SS316L
				KH						Horn Mouth H288mm×Φ96mm SS316L
				KL						Horn Mouth H620mm×Φ121mm SS316L
Output and Power Supply					A2					Two-wire 4-20mA+HART
					SC					4-20mA+HART，24VDC
					R2					RS485，24VDC
					XX					Other
Thread Type						LG				G1 1/2 304SS
						LN				NPT1 1/2 304SS
						LH				G1 1/2 SS316L
						LP				NPT1 1/2 SS316L
						FE				HG/T20592 PN10/25 DN80 304SS
						HA				HG/T20592 PN10/25 DN80 Swivel 304SS

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	FK			HG/T20592 PN10/25 DN80 SS316L
	HE			HG/T20592 PN10/25 DN80 Swivel SS316L
	FF			HG/T20592 PN10/16 DN100 304SS
	HB			HG/T20592 PN10/16 DN100 Swivel 304SS
	FL			HG/T20592 PN10/16 DN100 SS316L
	HF			HG/T20592 PN10/16 DN100 Swivel SS316L
	FG			HG/T20592 PN10/16 DN125 304SS
	HC			HG/T20592 PN10/16 DN125 Swivel 304SS
	FM			HG/T20592 PN10/16 DN125 SS316L
	HG			HG/T20592 PN10/16 DN125 Swivel SS316L
	XX			Other
High Temperature Resistance		TE		'-40-130℃
		TH		'-40-230℃
Electrical Interface, Housing Material, and Ingress Protection			WH	M20×1.5 Cable Gland, Aluminum Alloy, IP67
Explosion-Proof Option				00 None
				E4 CNEX Ex db ⅡC T6 Gb

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