KLD800 Series 80G FM Radar Level Sensor

Principle

KLD800 series 80G radar level gauge adopts frequency modulated continuous wave (FMCW) technology. The antenna emits a high-frequency FM radar signal, 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 is subjected to fast Fourier transform (FFT) to obtain the spectrum of the reflected echo, and the distance to the target to be measured is calculated based on this.

Feature

- Millimeter wave radar, the measurement accuracy can reach up to ±2mm, and the minimum measurement blind zone is 0.05m.
- The smaller antenna size satisfies the measurement of more working conditions.
- A variety of lens antennas, smaller launch angles, more concentrated energy, stronger echo signals, and higher reliability than other radar products under the same industrial and mining conditions.
- It has stronger penetration and can be used normally in the case of adhesion and condensation.
- The dynamic signal range is larger, and the measurement of low dielectric constant media is more stable.
- Multiple measurement modes, radar response in fast measurement mode

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Model Introduction

KLD801 	Medium: liquid, non-corrosive Measuring range: 0.05m～10/20/30/60/100m Process connection: G1½A / 1½NPT thread / flange ≥ DN40 Process temperature: -40～80℃ Process pressure: -0.1～0.3 MPa Antenna size: 32mm lens antenna Antenna material: PTFE Accuracy: ±1mm Protection class: IP67 Center frequency: 80GHz Launch angle: 8° Power supply: two-wire /DC24V four-wire /DC12~24V four-wire /AC220V Casing: aluminum/stainless steel Signal output: two-wire /4...20mA/HART protocol four-wire / 4...20mA/ RS485 Modbus
KLD802 	Medium: non-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 size: 32mm lens antenna Antenna material: PTFE Accuracy: ±1mm Protection class: IP67 Center frequency: 80GHz Launch angle: 8° Power supply: two-wire /DC24V four-wire /DC12~24V four-wire /AC220V Casing: aluminum/stainless steel Signal output: two-wire /4...20mA/HART protocol four-wire / 4...20mA/ RS485 Modbus

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KLD803 	Medium: strong corrosive liquid, steam, foam Measuring range: 0.1m～10/20/30/60/100m Process connection: flange ⩾ DN50 Process temperature: -40～130℃ Process pressure: -0.1～2.5MPa Antenna size: 34mm lens antenna (according to flange size) Antenna material: PTFE Accuracy: ±1mm Protection class: IP67 Center frequency: 80GHz Launch angle: 8° Power supply: two-wire /DC24V four-wire /DC12~24V four-wire /AC220V Casing: aluminum/stainless steel Signal output: two-wire /4...20mA/HART protocol four-wire 4...20mA/ RS485 Modbus
KLD804 	Medium: non-corrosive liquid, slightly corrosive liquid Measuring range: 0.1m~10/20/30/60/100m Process connection: flange ⩾ DN50 Process temperature: -40～130℃ Process pressure: -0.1～1.0MPa Antenna size: 76mm lens antenna Antenna material: PTFE Accuracy: ±1mm Protection class: IP67 Center frequency: 80GHz Launch angle: 3° Power supply: two-wire /DC24V four-wire /DC12~24V four-wire /AC220V Casing: aluminum/plastic/stainless steel Signal output: two-wire /4...20mA/HART protocol four-wire 4...20mA/ RS485 Modbus

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KLD805 	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 (according to flange size) Antenna material: PTFE/overall filling Accuracy: ±1mm Protection class: IP67 Center frequency: 80GHz Launch angle: 3° Power supply: two-wire /DC24V four-wire /DC12~24V four-wire /AC220V Casing: aluminum / plastic / stainless steel Signal output: two-wire /4...20mA/HART protocol four-wire 4...20mA/ RS485 Modbus
KLD806 	Medium: solid, storage container, process container, strong dust application Measuring range: 0.3m~10/20/30/60/100m Process connection: flange ⩾ DN100 Process temperature: -40～110℃ Process pressure: -0.1～0.3MPa Antenna size: 76mm lens antenna (purge optional) Antenna material: PTFE Accuracy: ±1mm Protection class: IP67 Center frequency: 80GHz Launch angle: 3° Power supply: two-wire /DC24V four-wire /DC12~24V four-wire /AC220V Casing: aluminum/plastic/stainless steel Signal output: two-wire /4...20mA/HART protocol four-wire 4...20mA/ RS485 Modbus

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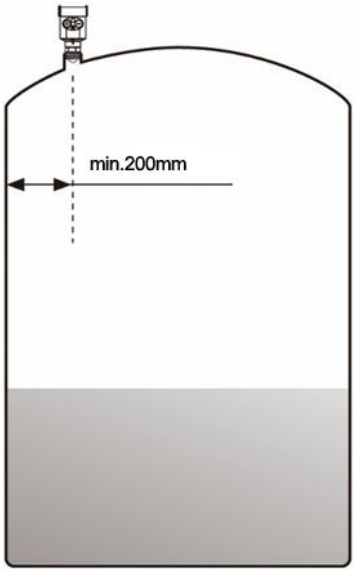
Installation

Installation Method

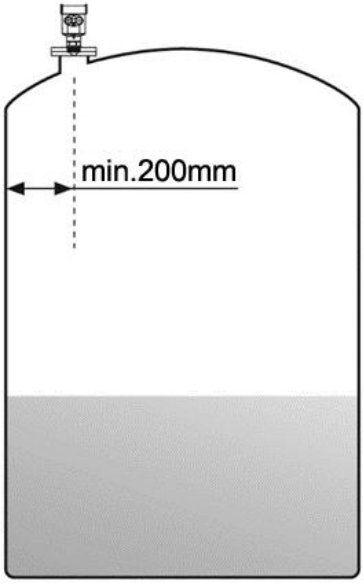
1: thread installation （KLD801）

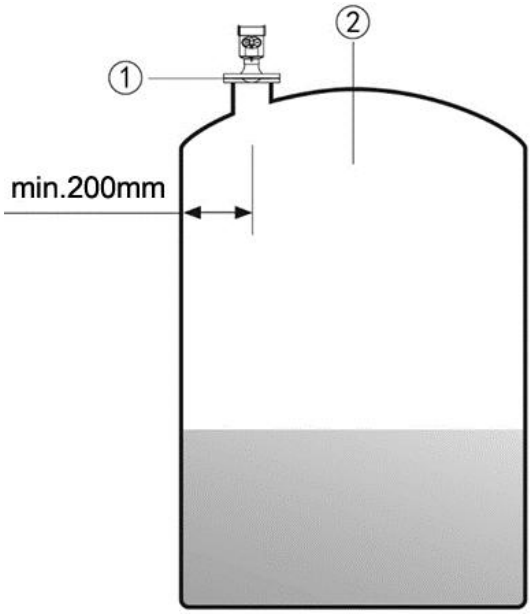


2: Flange Installation

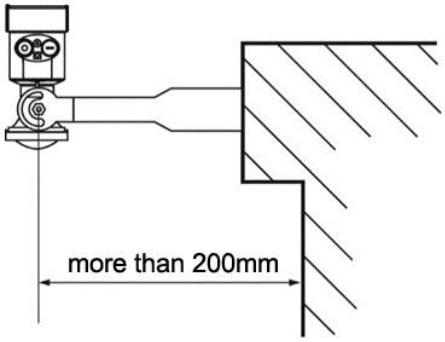
When using flange installation, the minimum distance between the instrument and the tank wall should be 200mm.

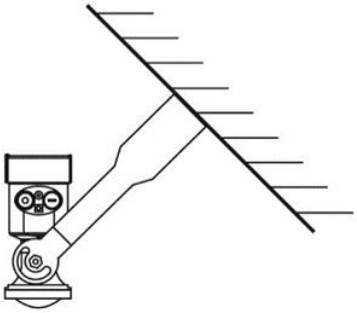
① datum plane
② vessel center or axis of symmetry

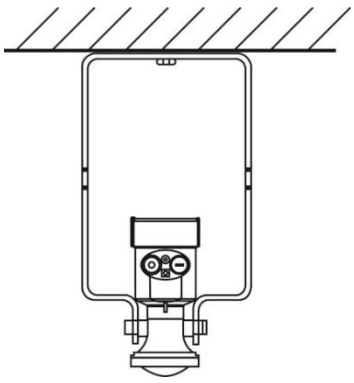




3: Hoisting Installation







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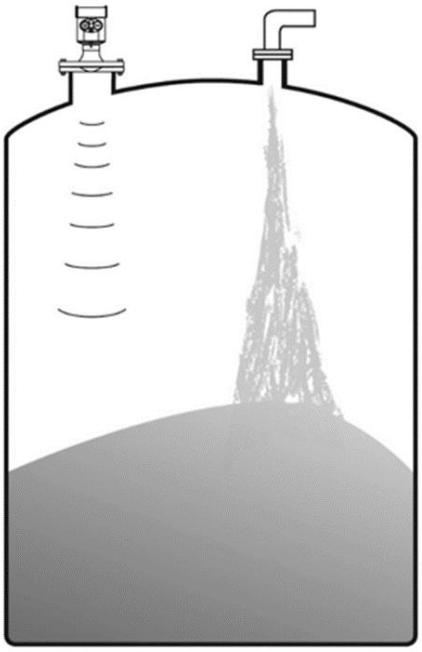
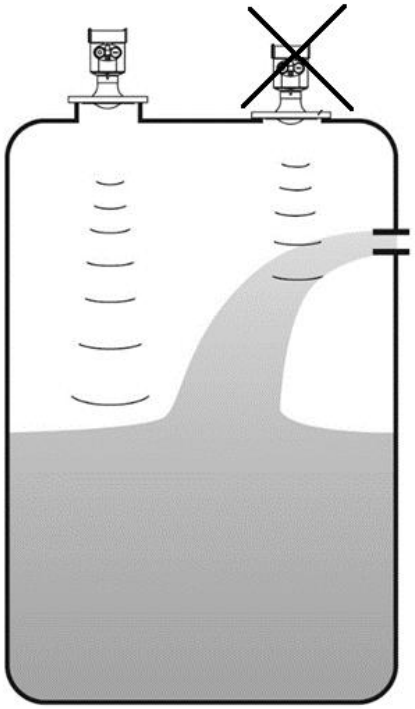
Installation Requirements

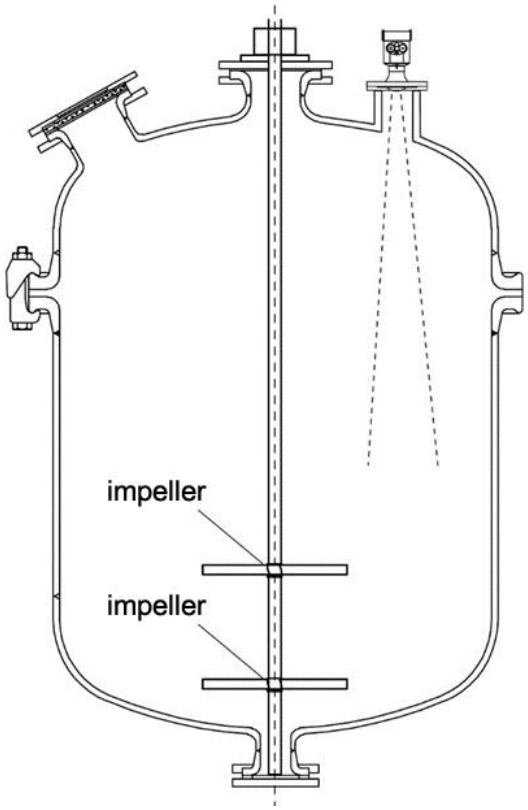
When installing the instrument, avoid installing it above the material inlet, and try to avoid various objects that affect the signal, such as stirring paddles, etc.



solid



liquid



Note: It cannot be installed above the feeding inlet, and there must be no obstacles under the sensor

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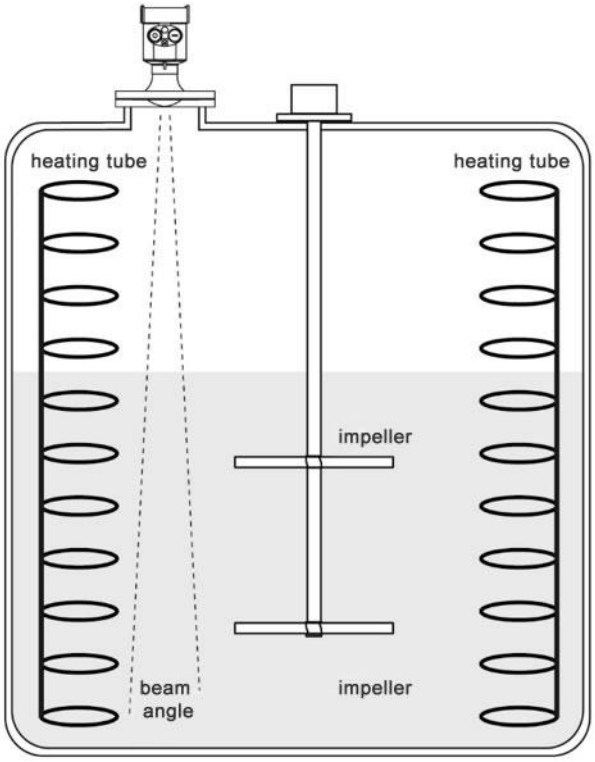
Under extremely complex working conditions, the instrument can work normally if there is no obstacle in the area with a radius of 20cm centered on the installation point.

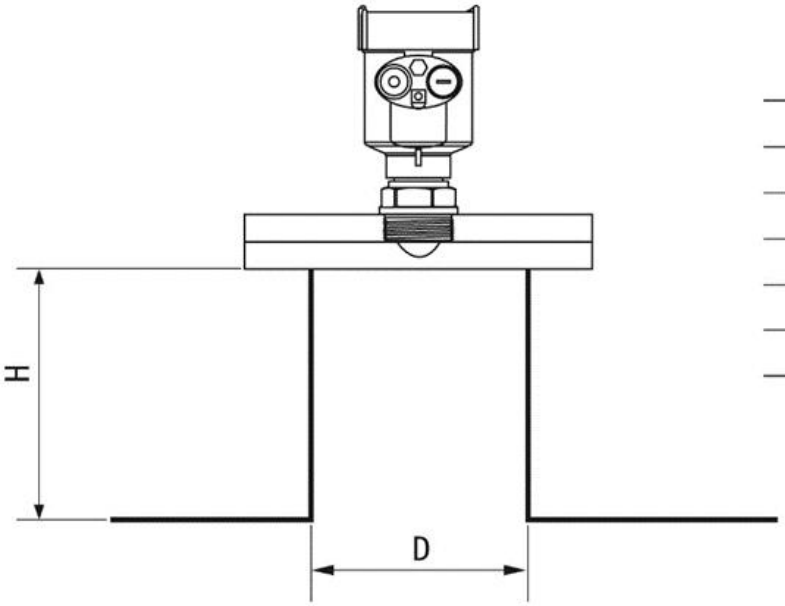


The extremely low launch angle ensures accurate measurements even under extremely harsh conditions.

Installation Connection Diagram

The maximum installation spool height H max depends on the installation spool diameter D and the size of the product launch angle.
Too long installation connection will affect the radar performance.

KLD801/02



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

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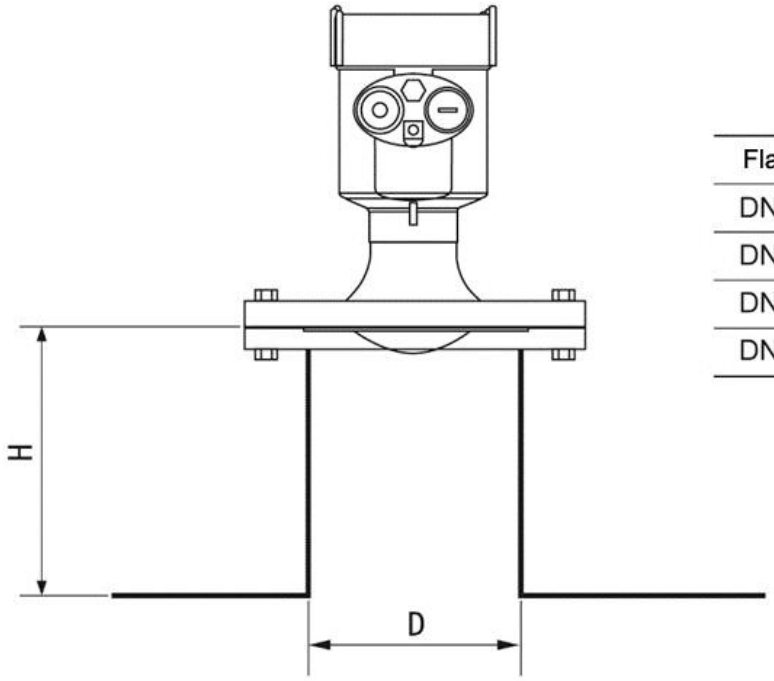
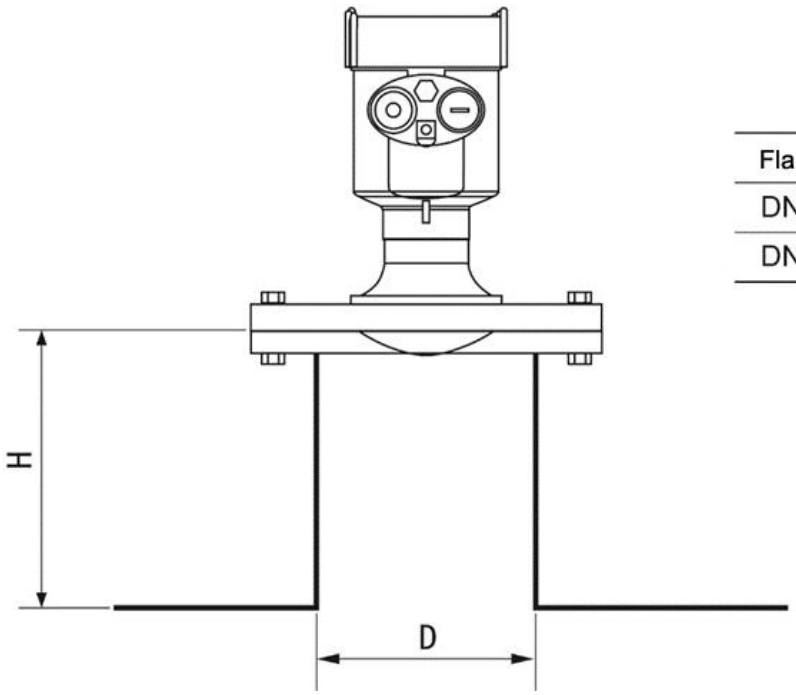
KLD803/KLD804/KLD805



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

KLD806



Flange	D	H max
DN125	125mm (5″)	4000mm
DN150	150mm (6″)	5000mm

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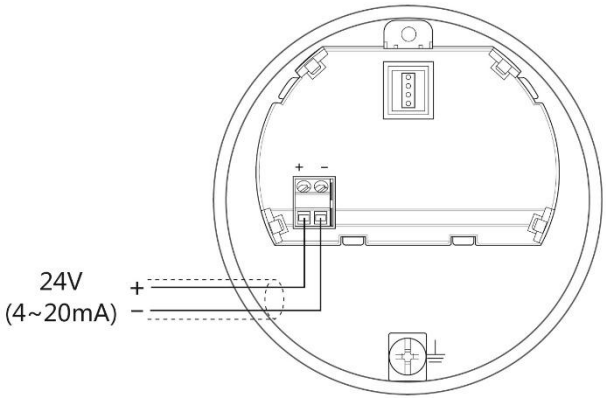
Electrical Connection

Power Supply

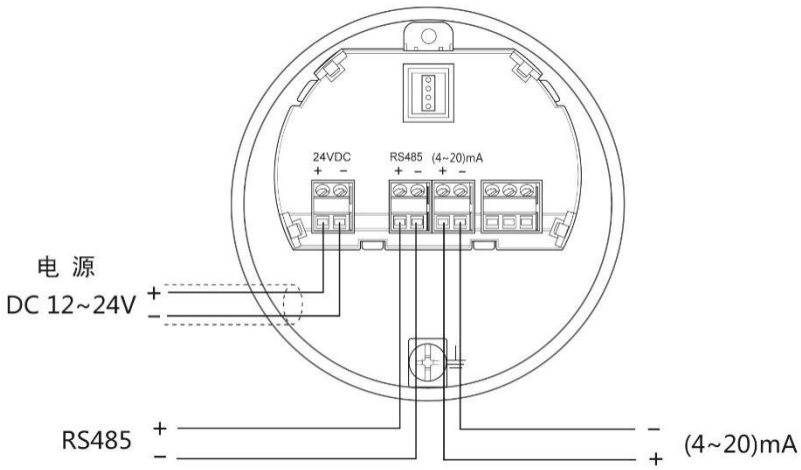
(4～20) mA/HART(2 wire)	The power supply and the output current signal share a two-core shielded cable. Please refer to the technical data for the specific supply voltage range.
(4～20) mA（4 wire/6 wire）	The power supply needs to be powered separately, and a four-core shielded cable is used for the power supply and current signal (the current signal and the RS485 interface can be output at the same time, and a six-core shielded cable is required for simultaneous output).
RS485/Modbus	The power supply needs to be powered separately, and a four-core shielded cable is used for power supply and digital signal. (The current signal and the RS485 interface can be output at the same time, and a six-core shielded cable is required for simultaneous output).

Connection

24V two wire：



12~24V four wire：



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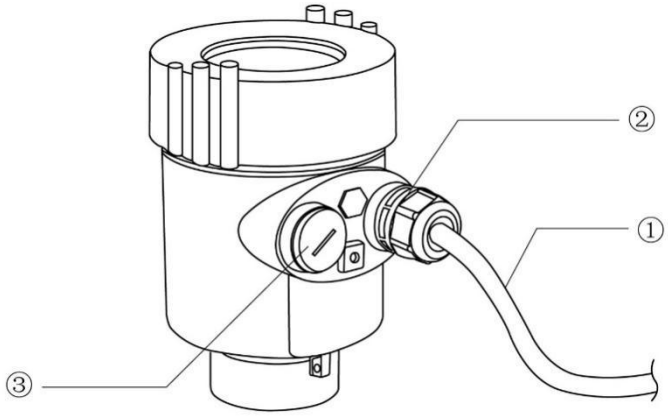
Safety Guide

Please observe the requirements of the local electrical installation regulations!
Follow local regulations for personnel health and safety. All operations on the electrical components of the instrument must be completed by professionals who have received formal training.
Please check the nameplate of the instrument to ensure that the product specification meets your requirements. Please ensure that the power supply voltage is consistent with the requirements on the nameplate of the instrument.

Grade of Protection

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



How to ensure that the installation meets the requirements of IP67:

Make sure the sealing head is not damaged.

Make sure the cable is not damaged.

Please make sure that the cables used meet the requirements of the electrical connection regulations.

Before entering the electrical interface, bend the cable down to ensure that water will not flow into the housing, see ①

Please tighten the cable gland, see ②

Please plug the unused electrical interface with a blind plug, see ③

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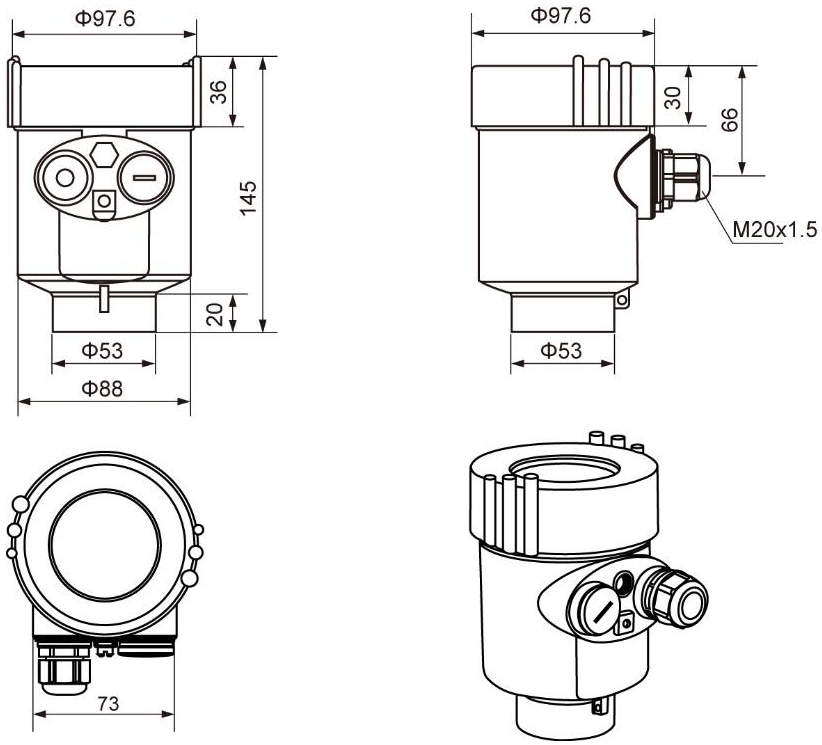
Dimensions

Casing Dimension

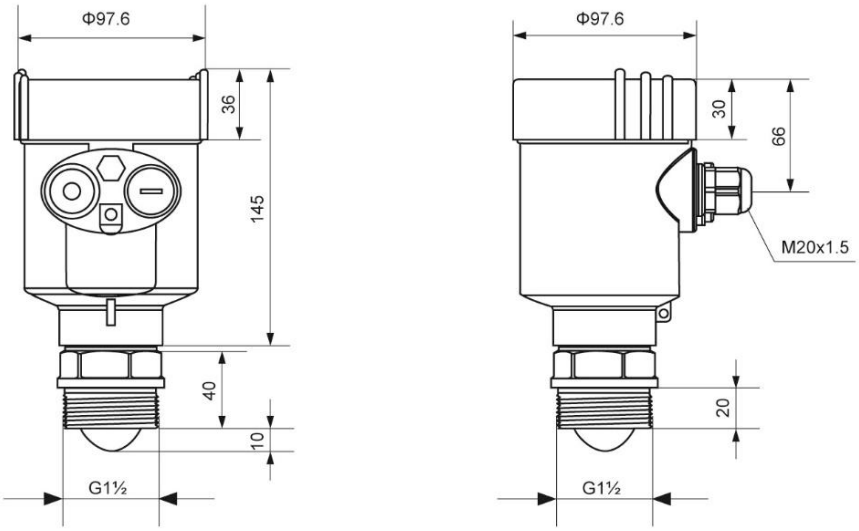
Unit in mm:



Product Dimension

Unit in mm:

KLD801



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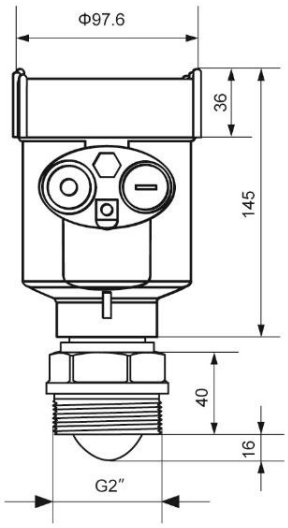
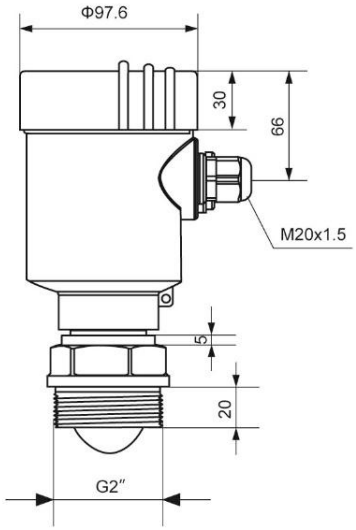
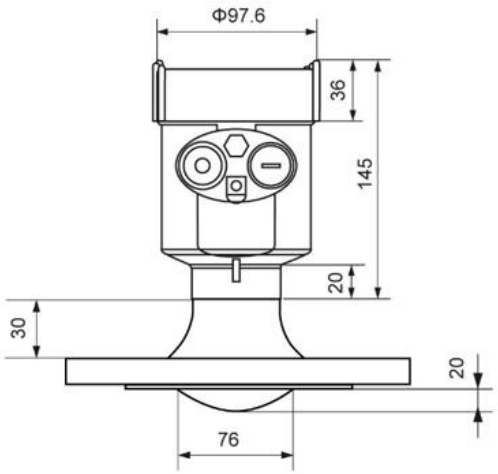
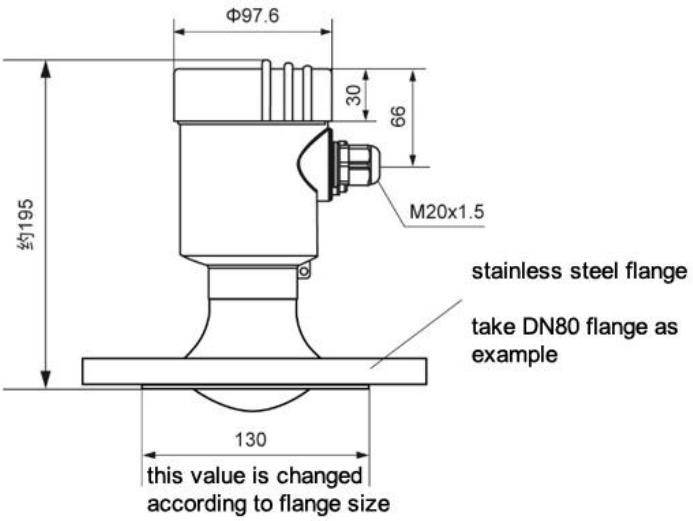
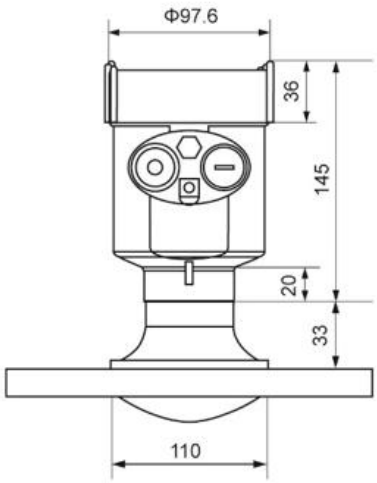


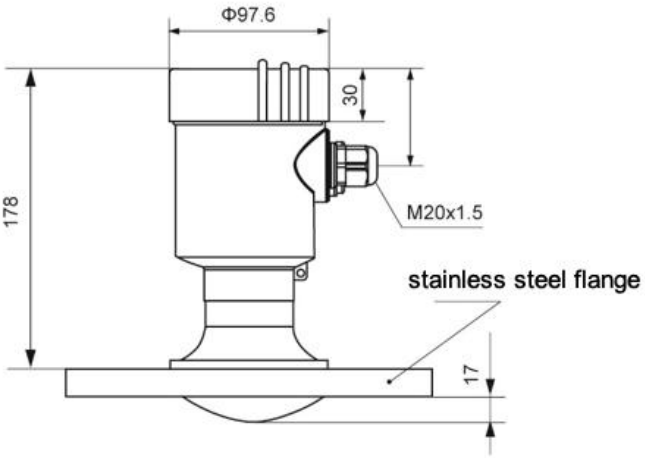


KLD802









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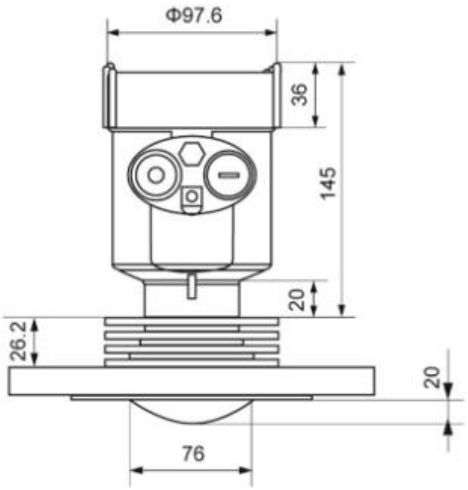
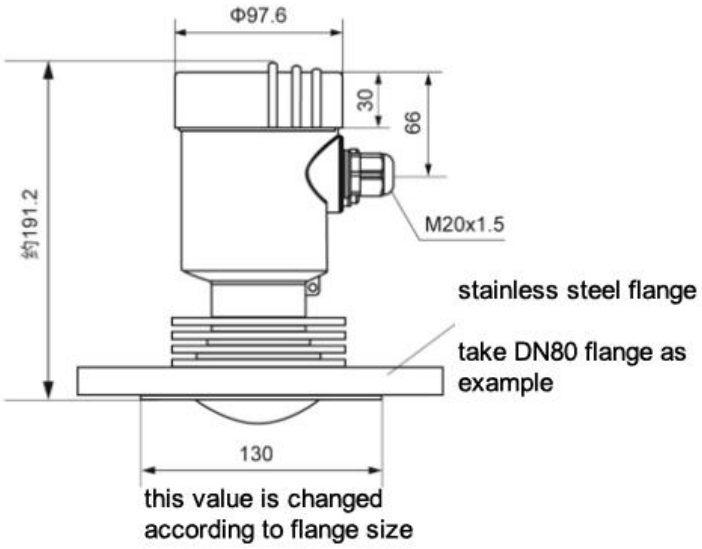
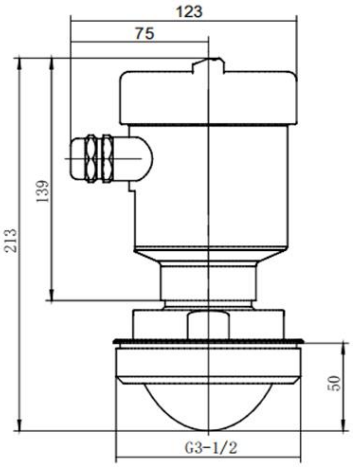
KLD803

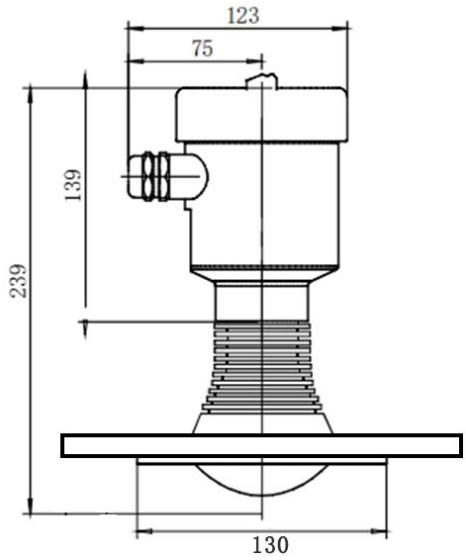




KLD804

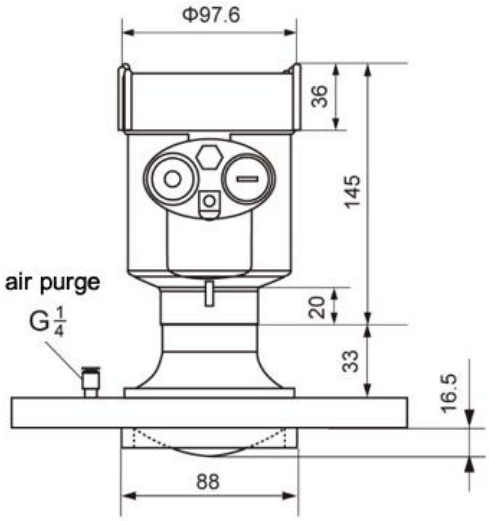


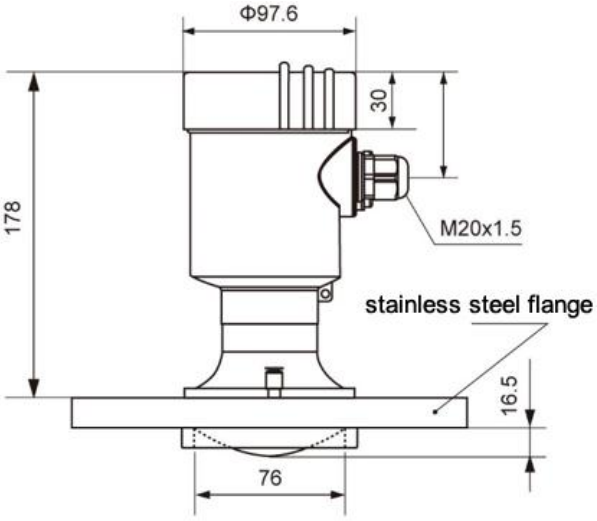
KLD805



KLD806

with air purge





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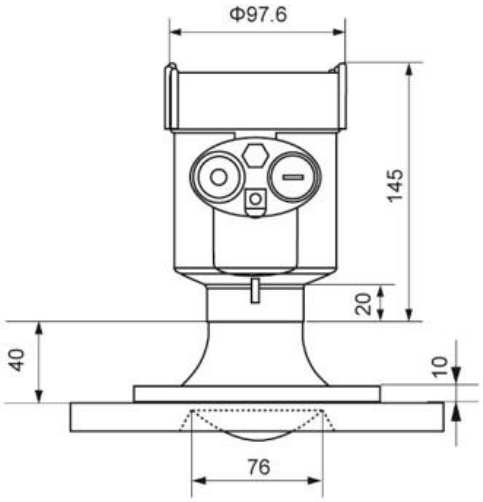
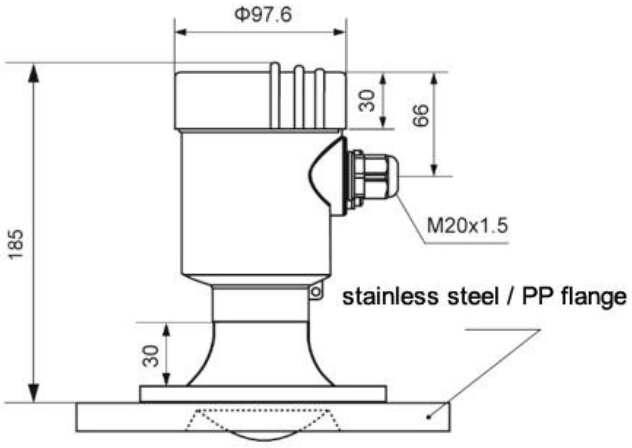
without air purge





Technical Specifications

General Data		
Process Connection	flange / material 304 stainless steel, PP	
Antenna Material	PTFE	
Casing	cast aluminum/stainless steel	
Seal Between Case and Cover	FKM	
Casing Window	transparent PC	
Ground Terminal	stainless steel	
Power Supply		
2-wire, single chamber (4-20mA)	Standard	(12-24)VDC
	Intrinsically safe	(12-24)VDC
	Power consumption	max.22.5mA
	Allowable ripple	
	- < 1 V (<100Hz)	
	-< 10 V (100～100K) Hz	
2-wire, two chamber (4-20mA)	Intrinsically safe + isolation	(18-25) VDC
	Power consumption	max.22.5mA
4-wire, single chamber (RS485)	Standard	(9-27)VDC
	Intrinsically safe	24(1±10%)V DC
	Power consumption	max .12mA
4-wire, two chamber (4-20mA)	Intrinsically safe + isolation	220VAC
	Power consumption	max .18mA

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Cable Parameter	
Cable Entry/Plug	one M20xl.5 cable entry, cable dia. 5...9MM one blind plug M20×l.5
Terminal Block	wire cross-section 2.5mm²
Output Parameter	
Output Signal	(4～20) mA / HART RS485/Modbus
Resolution	1mm
Fault Signal	output unchanged; 20. 5mA; 22mA; 3.9mA
Integration Time	(0～40)s, adjustable
Blind Zone	0.1m/0.2m/0.3m
Max. Measurement Distance	120 meters
Measurement Interval	approx. 1s (depending on settings)
Adjustment Time	approx. 1s (depending on settings)
Work storage and Transportation Temp.	(-40～80) ℃
Relative Humidity	< 95%
Pressure	Max. 2.5MPa
Shock Resistance	Mechanical vibration l0m/s², (10～150)Hz

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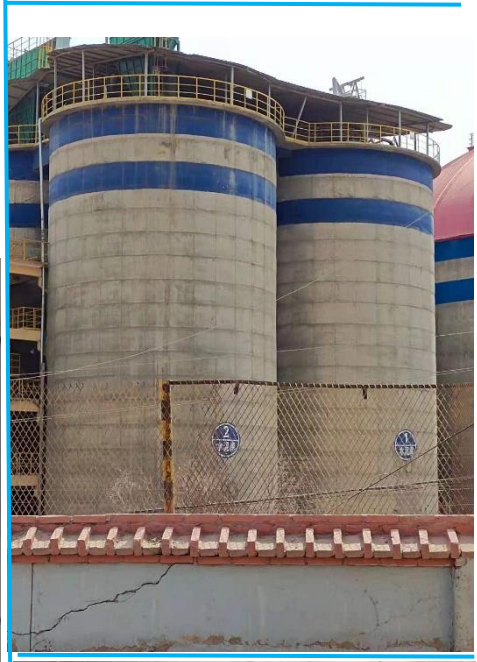

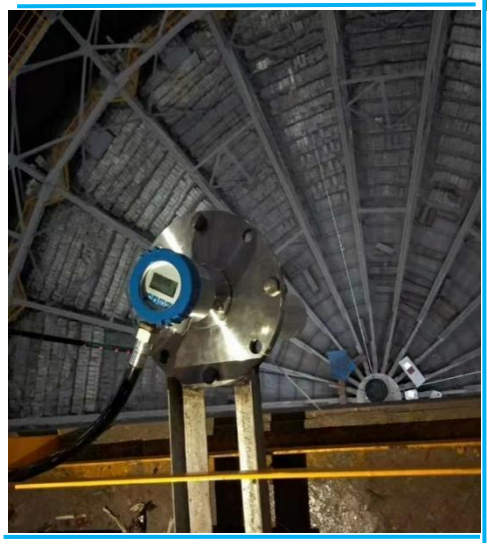

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