

LWDB

Radar Level Meter



Features

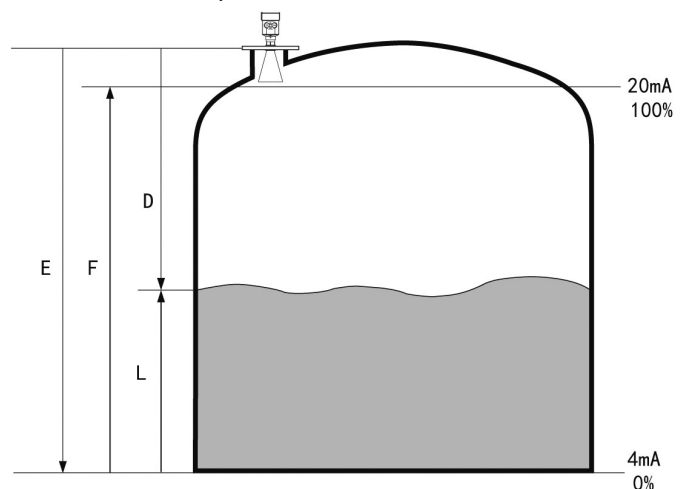
- Non-contact radar, no wear, no pollution
- Small antenna, easy to install
- Shorter wave length, better reflection on inclined solid surface
- Smaller measurement blind zone, and good for small tank measurement
- Small beam angle and concentrated ability, which enhances the echo ability and helps to avoid interference
- Negligible effect on corrosion and foam
- Negligible effect on atmospheric water vapor, temperature and pressure changes
- Severe dust environment will not affect electromagnetic wave working
- High signal-to-noise ratio, better performance can be obtained even in fluctuating conditions
- High frequency, best to measure solid and low dielectric constant medium

Introduction

LWDB Digital Radar Material Level/Liquid Level Meter can accurately measure the polluting and corrosive media due to its special non-contact measurement characteristics. Its stable and accurate performance is also reflected in the complex measurement environment. The output 4mA ~ 20mA DC signal can provide remote control, using unique microwave technology and Echo-tech echo processing technology to adapt to various working conditions. The working mode of pulse can measure medium with small dielectric constant, and is safe to be used in various metal and non-metal containers, without harm to human body and the environment. It is widely used in reservoirs, dams, coal plants, power plants, petrochemicals, general industry and other occasions.

Measuring Principle

LWDB Radar Level Meter transmits and receives very short microwave pulses with very low energy through the antenna system and the radar waves travel at the speed of light. The running time can be converted into a level signal by electronic components. A special time extension method can ensure stable and accurate measurement in a very short time.



Even if there are false echoes under complicated working conditions, the latest micro-processing technology and debugging software can also accurately analyze the level echoes.

The antenna receives the reflected microwave pulse and transmits it to the electronic circuit. The microprocessor processes this signal to identify the echo generated by the micro pulse on the surface of the material. The correct echo signal identification is completed by the pulse software, and the accuracy can reach the millimeter level. The distance D from the surface of the material is proportional to the time travelling T of the pulse:

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

Where:

C—speed of light;

Since the distance E of the empty tank is known, the level/level L is:

$$L=E-D$$

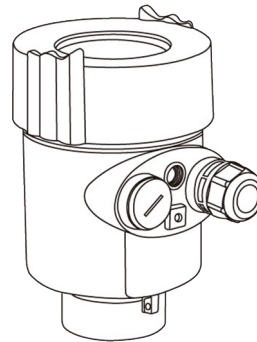
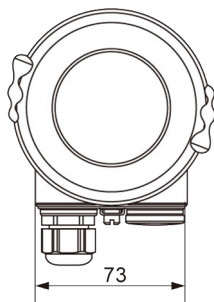
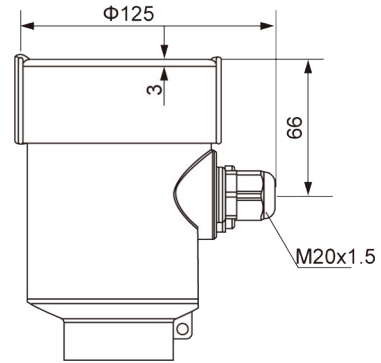
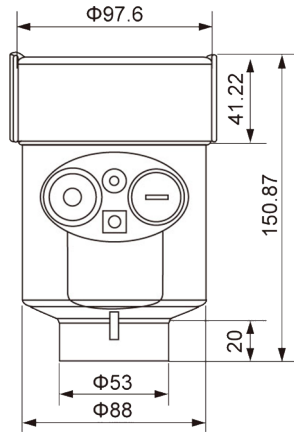
By inputting the empty tank height E (= zero point), the full tank height F (= full scale) and some application parameters, the application parameters will automatically adapt the meter to the measurement environment, corresponding to 4mA ~ 20mA DC standard output.

Specification

Item			
Type	Low frequency radar	High frequency radar	Guided wave radar
Model	LWDB-A	LWDB-B	LWDB-C
Measured media	solid, liquid	solid, liquid	solid, liquid
Measuring range	0m ~ 35m	0m ~ 70m	0m ~ 30m
Process connection	flange, thread	flange, thread	flange, thread
Media temp.	-40°C ~ 250°C	-40°C ~ 250°C	-40°C ~ 250°C
Process pressure	-0.1MPa ~ 4.0MPa	-0.1MPa ~ 4.0MPa	-0.1MPa ~ 4.0MPa
Output signal	4mA ~ 20mA DC/HART (2-wire)	4mA ~ 20mA DC/HART(2-wire) RS485/Modbus(4-wire)	4mA ~ 20mA DC/HART (2-wire)
Field display	4 digits LCD, programmable	4 digits LCD, programmable	4 digits LCD, programmable
Accuracy	±10mm	±3mm	±10mm
Repeatability	±1mm	±1mm	±1mm
Frequency	6GHz	26GHz	500MHz ~ 1.8GHz
Antenna	horn	horn	Single cable or single probe type
Power supply	24V DC (2-wire) 24V DC/220V AC (4-wire)	24V DC (2-wire) 24V DC/220V AC (4-wire)	24V DC (2-wire) 24V DC/220V AC (4-wire)
Housing	Aluminum/ABS	Aluminum/ABS	Aluminum/ABS
Protection	IP67	IP67	IP67
Application	Crude oil and light oil measurement; Coke and carbon level measurement in raw coal and limestone warehouses.	Water conservancy, reservoir area, river course and other natural water; Liquid with temperature-resistant, pressure-resistant and slightly corrosive.	Liquid and solid powder measurement, under complex process conditions

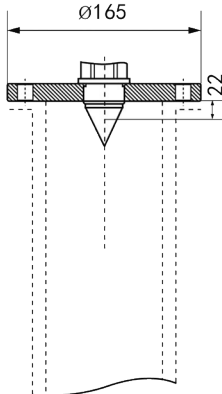
Outline Construction (unit: mm)

- Case dimension

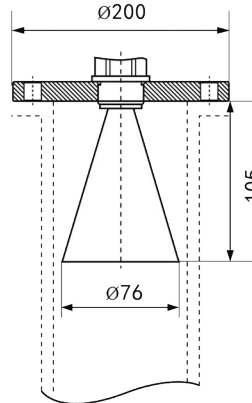


- Outline dimension
LWDB-A:

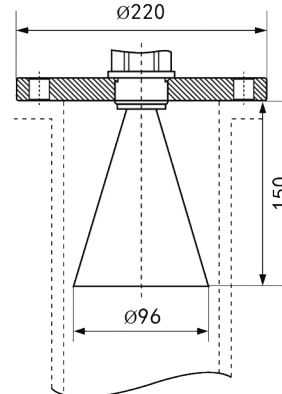
DN50



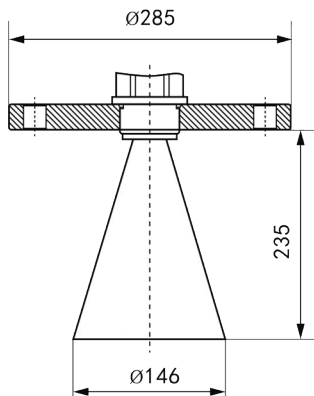
DN80



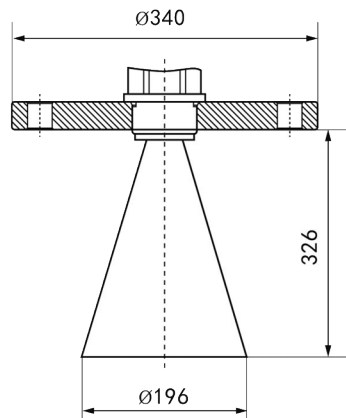
DN100



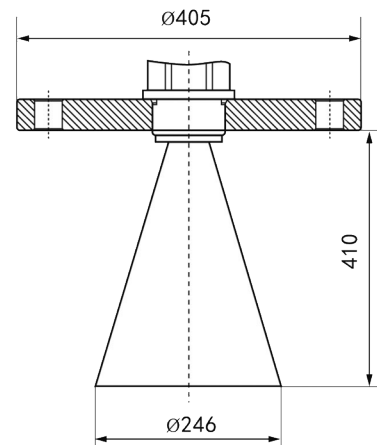
DN150



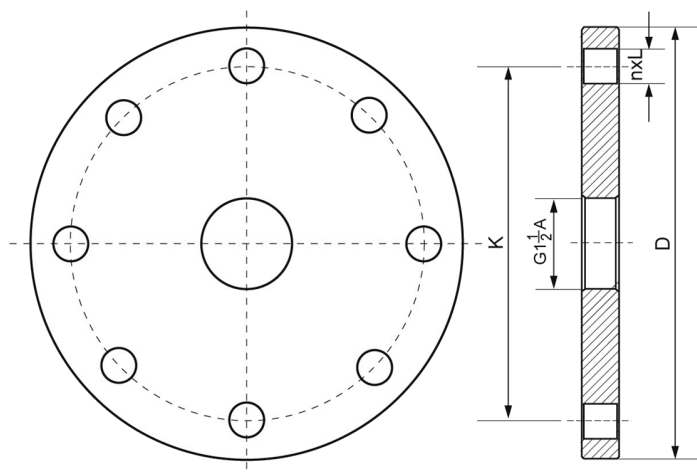
DN200



DN250

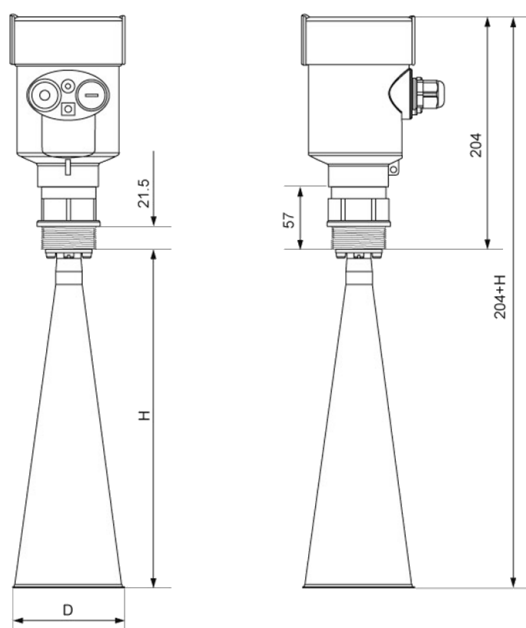


Flange dimension



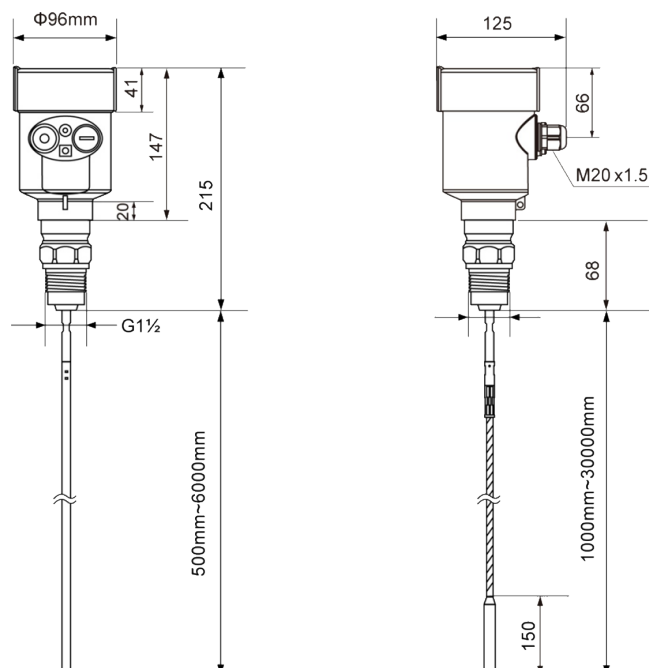
Flange selection table				
Specification	Outer diameter D	Center distance between holes K	Holes quantity n	Holes diameter L
DN50	Φ165	Φ125	4	18
DN80	Φ200	Φ160	8	18
DN100	Φ220	Φ180	8	18
DN150	Φ285	Φ240	8	22
DN200	Φ340	Φ295	12	22
DN250	Φ405	Φ355	12	26

LWDB-B:



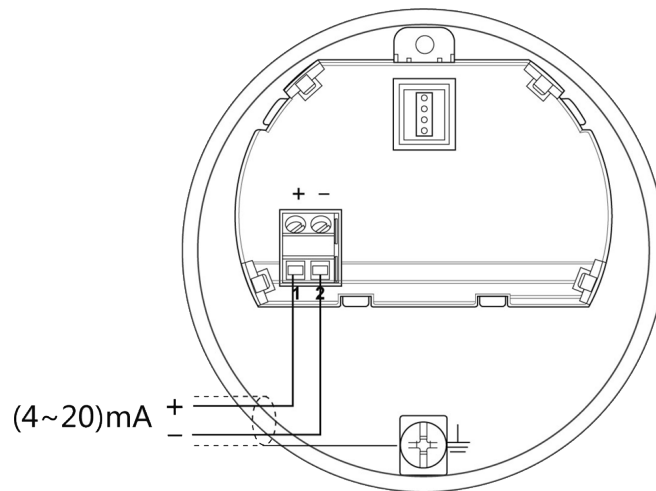
Flange	Diameter of horn mouth D	Horn height H
DN50	Φ46	140
DN80	Φ76	227
DN100	Φ96	288

LWDB-C:

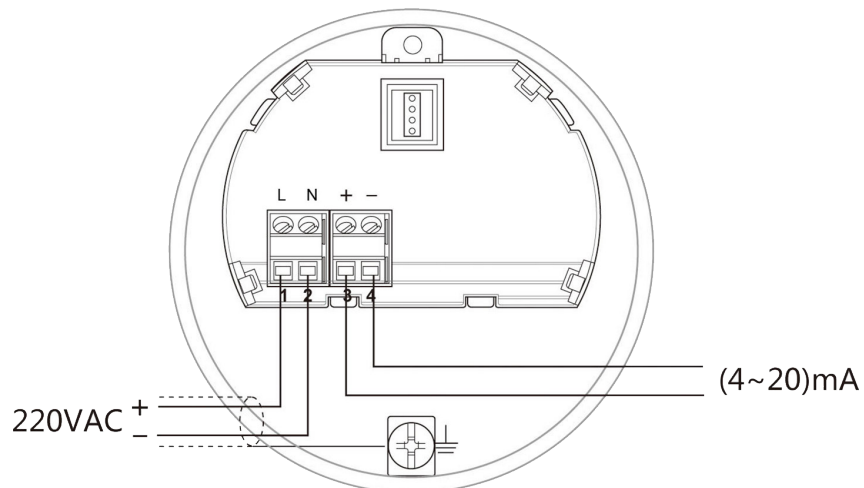


Electrical Connection

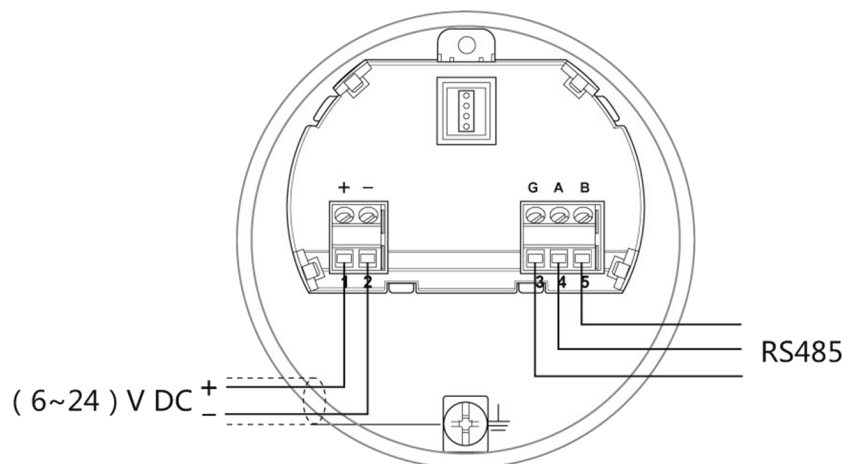
- 24V DC (2-wire) Wiring diagram



- 220V AC (4-wire) Wiring diagram



- 24V DC RS485/Modbus Wiring diagram



Order Guide

LWDB	Radar Level Meter										
	Code	Type and range									
	A	Low frequency radar 6GHz [0 ~ 35m]									
	B	High frequency radar 26GHz [0 ~ 70m]									
	C	Guided wave radar 500MHz ~ 1.8GHz [0 ~ 30m]									
		Code	Process connection/material								
		G	G1-1/2"A / SS 304								
		N	1½" NPT / SS 304								
		A	DN50 PN16 C / SS 304								
		B	DN80 PN16 C / SS 304								
		C	DN100 PN16 C / SS 304								
		E	DN125 PN16 C/ SS 304								
		F	DN150 PN16 C/ SS 304								
		H	DN200 PN16 C/ SS 304								
		Y	DN250 PN16 C/ SS 304								
			Code	Antenna or probe type/ material							
			1	1 Without horn antenna, for waveguide tube installation/ SS 304							For low frequency radars only
			2	2 Horn antenna 76mm/ SS 304							
			3	3 Horn antenna 96mm/ SS 304							
			4	4 Horn antenna 146mm/ SS 304							
			5	5 Horn antenna 196mm/ SS 304							
			6	6 Horn antenna 242mm/ SS 304							
			A	A Horn antenna Φ46mm/ SS 304							For high frequency radars only
			B	B Horn antenna Φ76mm/ SS 304							
			C	C Horn antenna Φ96mm/ SS 304							
			D	D Horn antenna Φ121mm/ SS 304							
			Y	Y Customized							For guided wave radars only
			A	A Cable type probe Φ8mm / SS 304							
			B	B Cable type probe Φ4mm / SS 316L							
			C	C Bar type probe Φ10mm / SS 304							
			D	D Bar type probe Φ10mm / SS 316L							
			Code	Sealed/ process temp.							
			H	General type (-40~130)°C							
			G	High-temp. type (-40~250)°C							
				Code	Electronic unit						
				1	(4~20) mA/24V DC (2-wire)						
				2	(4~20) mA/24V DC/HART (2-wire)						
				3	(4~20) mA/220V AC/ (4-wire)						
				4	RS485/Modbus (For high frequency radars only)						
				Code	Housing / protection						
				L	Aluminum /IP67						
				Q	ABS /IP65						
					Code	Electrical connection					
					M	M 20 x 1.5(Female)					
					N	½"NPT(Female)					
						Code	Field display/ programmed				
						X	Without				
						Y	With				
LWDB-B	-G	D	H	2	L	M	Y	The whole spec.			