Datasheet

Ultrasonic Level Transmitter

AI-UL300

Arka Instruments LLP

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The ultrasonic level transmitter is a low-cost, non-contact and easy-to-install measurement device. It is able to meet the every-day needs of commercial production, as well serving a more specialized role in the technologically advanced aerospace industry, thus placing it firmly in the category of high-level measurement technology. Unlike other level indicators with limited uses, the easy-to-install ultrasonic level indicator is a highly accurate device with enough specialized uses to ensure that the needs of the customer are met.

Applications

- Sewage/waste water treatment equipment
- Liquids such as edible-oils,source and beverages
- Chemical materials such as flour,wheat and corn
- Chemical fibers,petrochemical materials such as plastic powders,plastic granules and plastic ships

Features

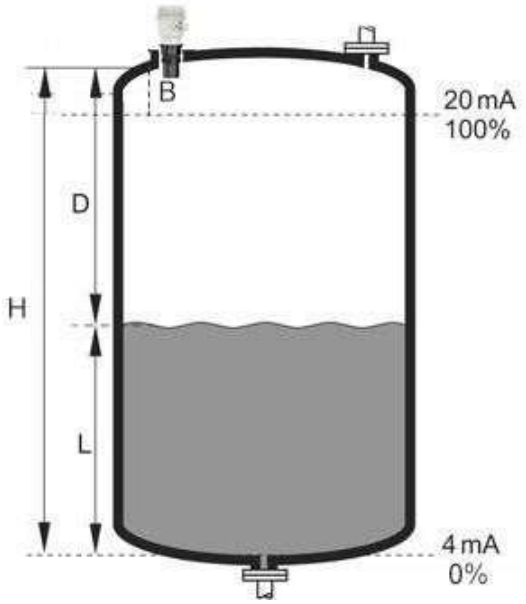
- Non-contact
- Easy installation and low operating costs
- 1Not effected by material property,such as pressure environments,viscosity and specific gravity
- Integrated keypad with security code
- Can be used in a versatile of application
- Maintenance-free

Ultrasonic Level Transmitter

Principle

The principle of operation of the ultrasonic sensor system is to use the ultrasonic pulses which are transmitted by the transducer to the surface to be monitored and are reflected back to the transducer, the time period between transmission and reception of the sound pulses is directly proportional to the distance between the transducer and surface

The latest microcomputer technology and the proven processing software select the level echo from among any number of false echoes and calculate the exact distance to the product surface.



B = Blanking distance

D =Distance from transducer to material surface

L = Height in silo

The distance D is determined from the velocity of sound and the time period t by the formula:

$$D = V*T /2$$

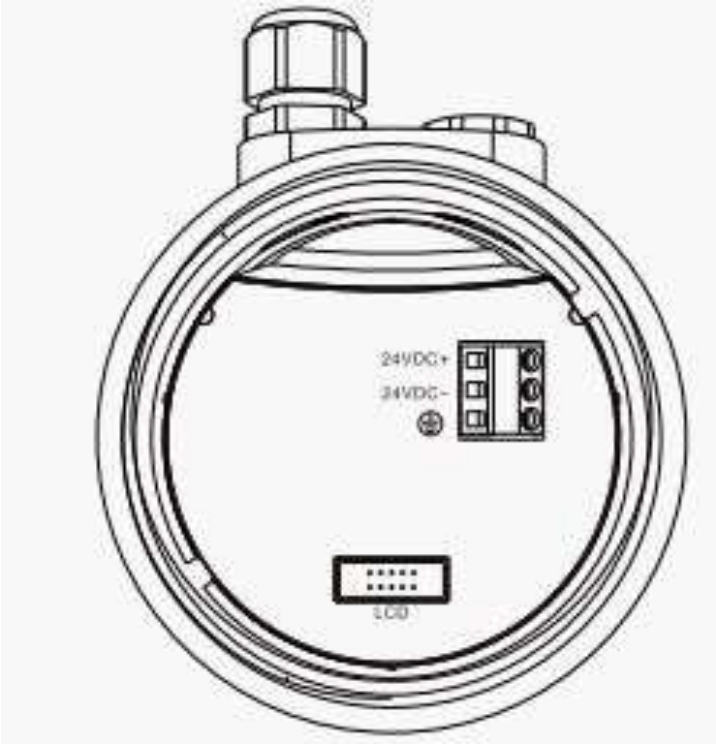
Example:

With the velocity of sound = 334.1 M/s, a time period of 60m/s corresponds to a transmission path of 20.046M and thus to a distance of 10.023M.

An integrated temperature sensor detects the temperature in the vessel and compensates the influence of temperature on the signal running time.

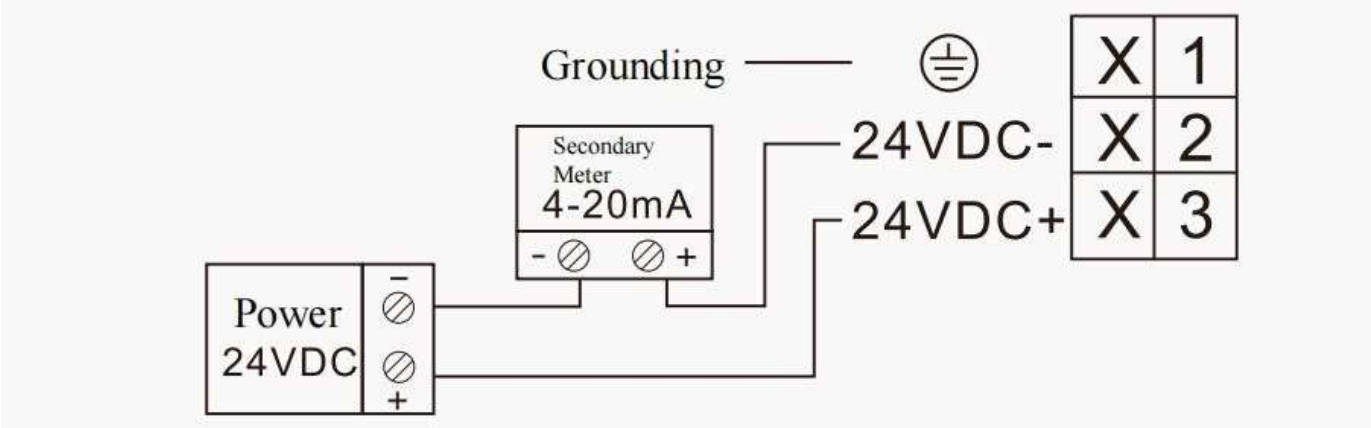
Parameters	
Measure Range：	5m,10m（Optional）
Blind zone：	≤0.35m
Beam angle	8°(range 5m),10°(range 10m)
Accuracy:	0.5%F.S
Display：	OLED
Display resolution:	1mm or 0.1%FS
Power:	14~28VDC
Power consumption：	5W
Output (optional)：	4～20mA RL>500Ω（standard） RS485 2 relays (AC: 3A 250V)
Working temperature	-20~60℃
Storage temperature	-20~70℃
Relative humidity	(10~85)% (no condensation)
Temperature compensation	Automatic
Installation：	Thread / Flange
Ingress Protection：	IP65
Measure type	Level / Distance

Wiring

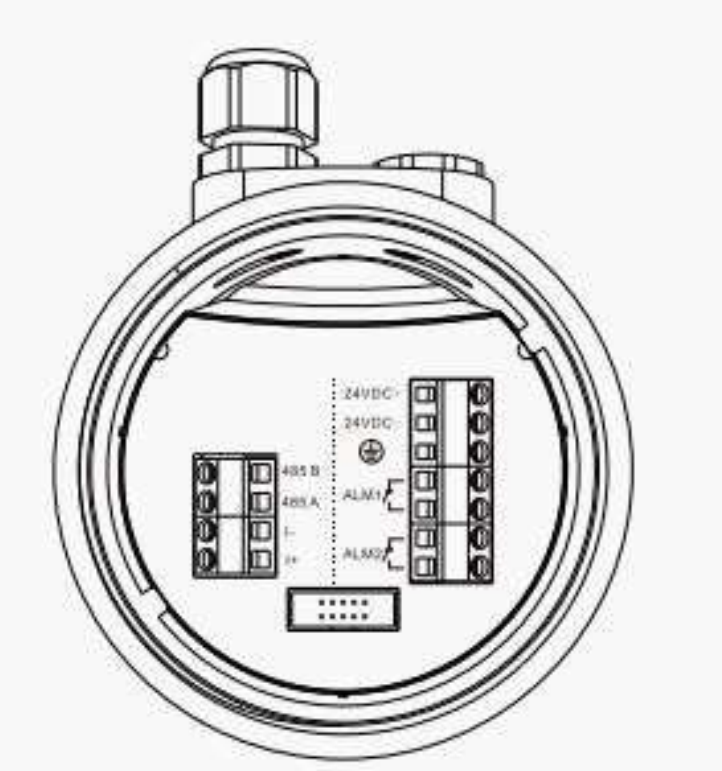


Terminal	Definition
24VDC+	24VDC Positive Power Supply Terminal
24VDC-	24VDC Negative Power Supply Terminal
⏚	Grounding

Two-Wire Terminal Description



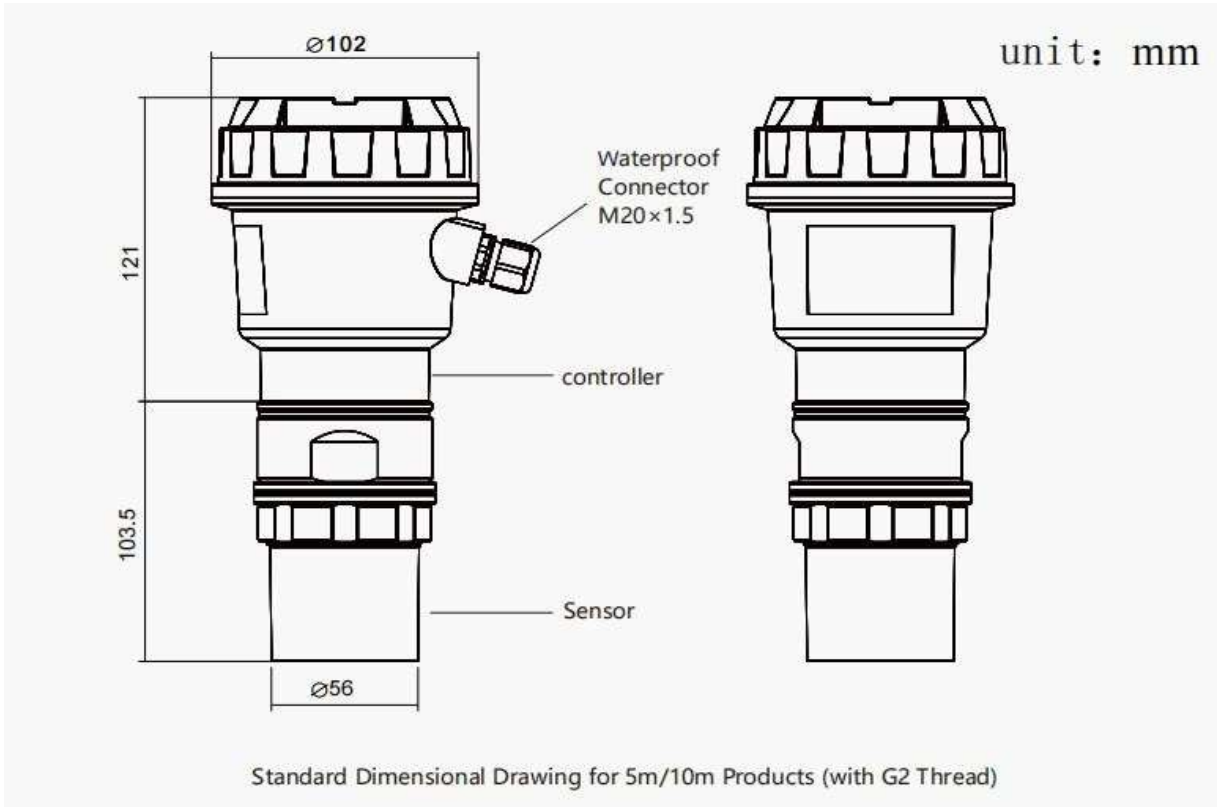
Two-Wire Connection Schematic



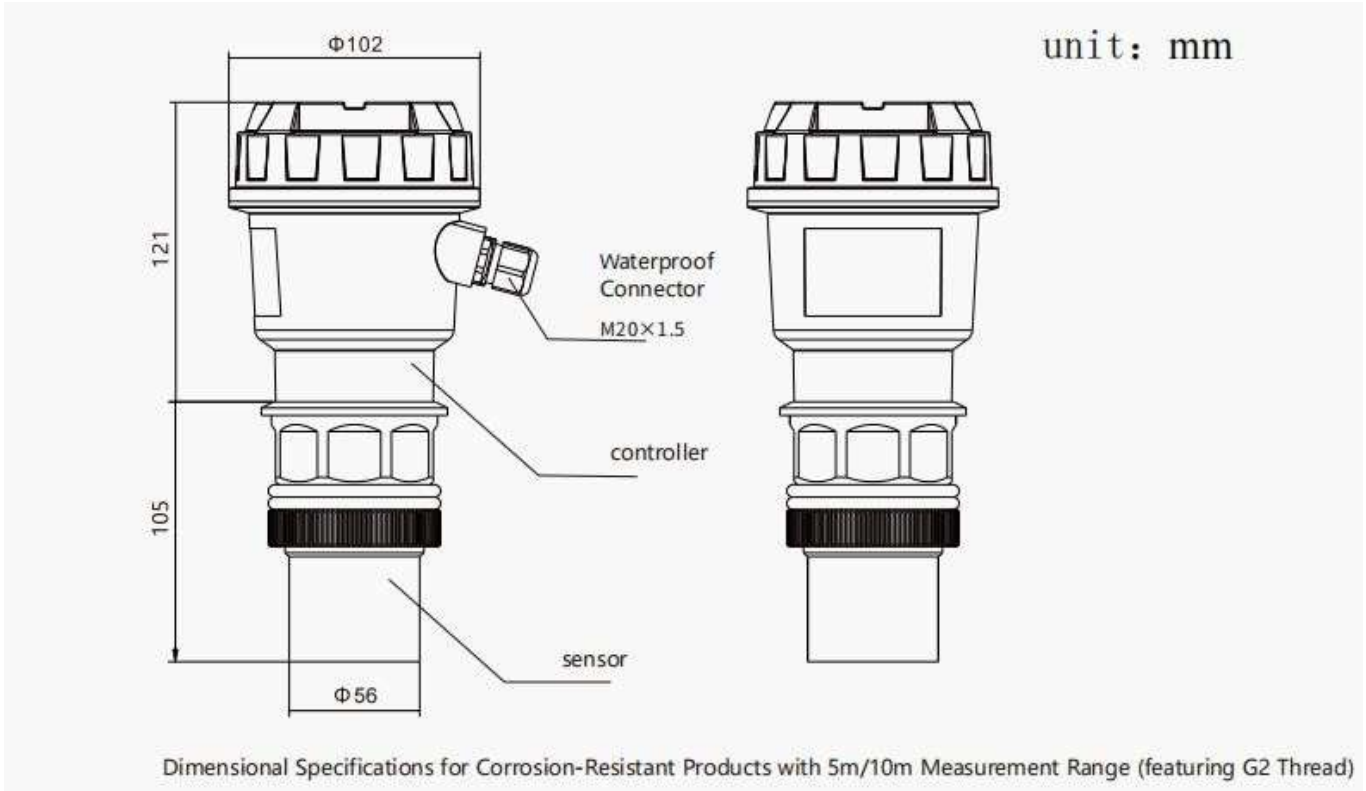
Schematic Diagram of Terminals

Terminal	Definition
24VDC+	24VDC Positive Power Supply Terminal
24VDC-	24VDC Negative Power Supply Terminal
⏚	Grounding
ALM1	Alarm 1
ALM2	Alarm 2
485B	RS485 Communication output B
485A	RS485 Communication output A
I-	(4~20)mA Output -
I+	(4~20)mA Output +

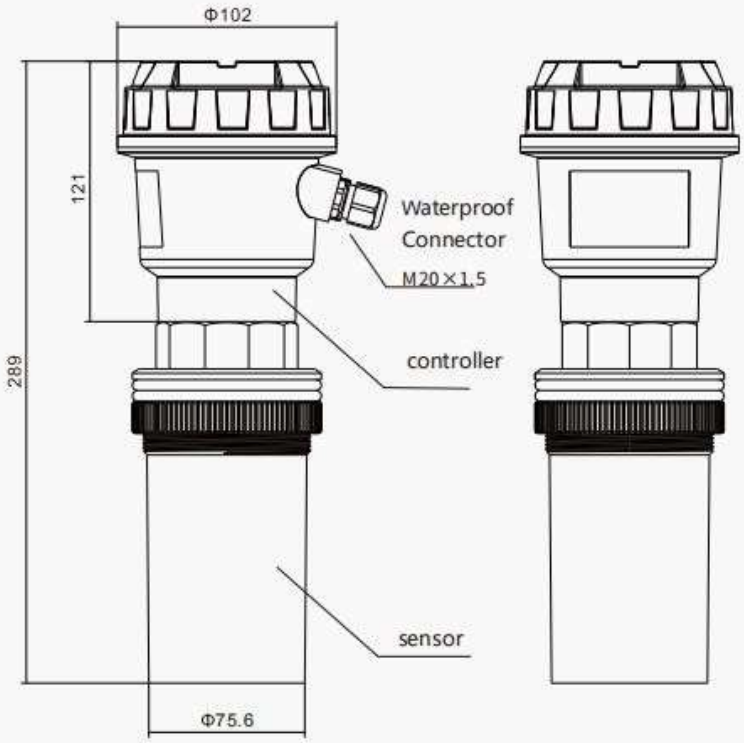
Wiring



Standard Dimensional Drawing for 5m/10m Products (with G2 Thread)



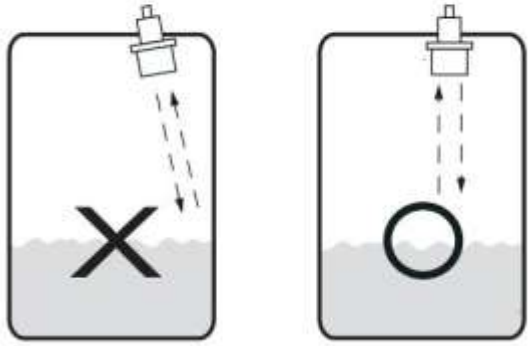
Dimensional Specifications for Corrosion-Resistant Products with 5m/10m Measurement Range (featuring G2 Thread)



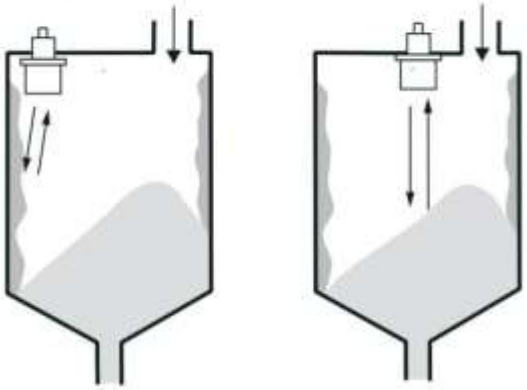
Dimensional Specifications for Integrated Corrosion-Resistant Products with 15m Measurement Range (featuring M78×2 Thread)

Wiring

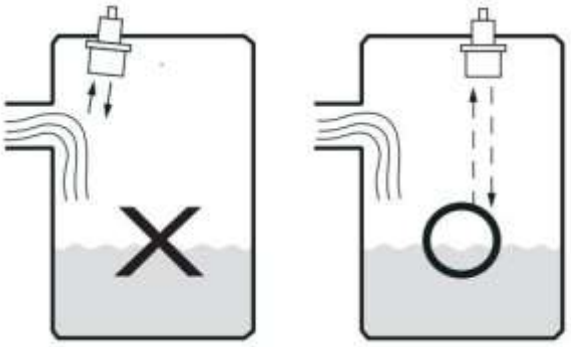
Keep transducer perpendicular to liquid.



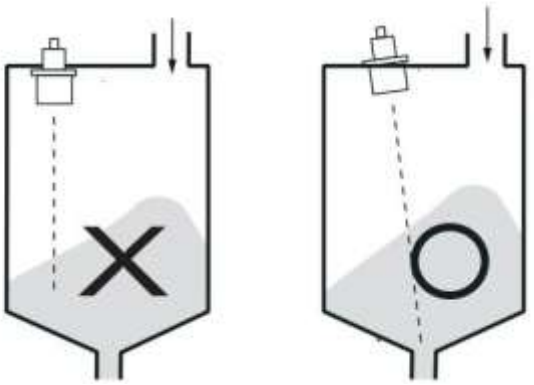
The transducer should not be mounted too close to the tank wall, the build-up on the tank wall cause false echoes.



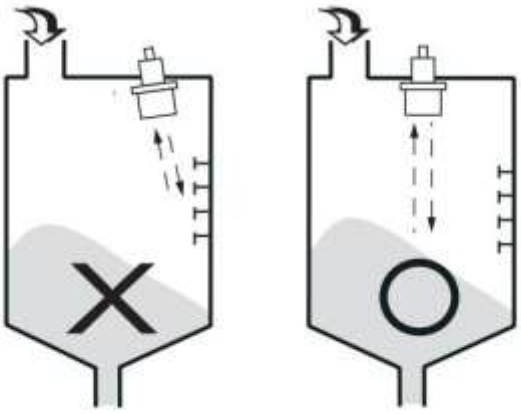
Mount the transducer away from the inlet to avoid false echoes.



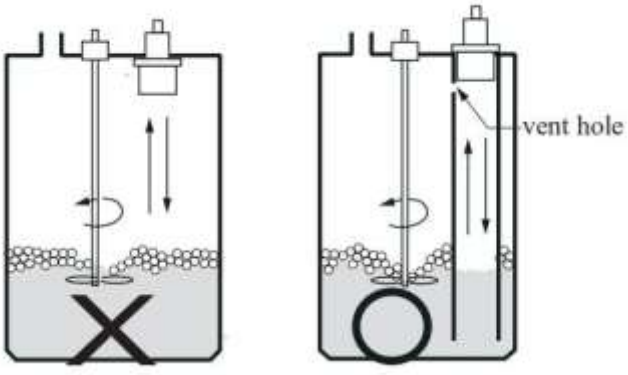
When you mount the transducer on the solid tank, the transducer must point to the tank outlet.



The transducer should not be mounted too close to the tank wall, the bracket can cause strong false echoes.



As is illustrated by the figure on the right, the transducer should be mounted on the top of guide tube to prevent the false echoes from turbulence and foam. The guide tube should come with a vent hole at top of the tube to allow the liquid vapor go out of the tube.



Ordering Code

AI-UL300 -C-NS-K-A1-WB-EA							Description
AI-UL300	-	-	-	-	-	-	
Measurement Range and Thread Type	C						5m，G2
	D						10m，G2
	L						15m，M78×2
Probe Material		NS					Plastic ABS
		N6					PTFE
Accuracy			K				0.5 Class
			H				0.3Class
Output and Power Supply				A1			Two-wire 4-20mA
				SA			4-20mA，24VDC
				SP			4-20mA + Dual SPST + RS485, 24VDC
				SG			4-20mA + Dual SPST, 24VDC
				SE			4-20mA+RS485，24VDC
				SW			4-20mA + Wireless NB-IoT, 24VDC
				SX			4-20mA + Wireless NB-IoT + Dual SPST + RS485, 24VDC
				SY			4-20mA + Wireless NB-IoT + Dual SPST, 24VDC
				SZ			4-20mA + Wireless NB-IoT + RS485, 24VDC
Electrical Interface, Housing Material, and Ingress Protection					WB		M16×1.5 Cable Gland, Plastic ABS， IP65
Accessories						EA	L-shaped stainless steel mounting bracket 0.8m
						EB	L-shaped stainless steel mounting bracket 1.5m
						EC	Polycarbonate （PC） protective cover
						RA	HG20539 PN3 DN65 PPH
						RB	HG20539 PN3 DN80 PPH
						RC	HG20539 PN3 DN100 PPH
						RD	HG20539 PN3 DN150 PPH
						RE	HG20539 PN3 DN200 PPH

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