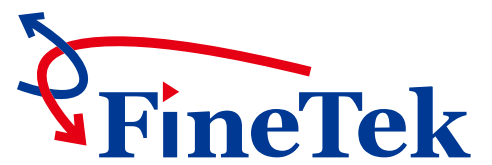




## Ultrasonic Level Transmitter



[www.fine-tek.com](http://www.fine-tek.com)



# INTRODUCTION

The ultrasonic level transmitter is a non-contact, low-cost and easy-to-install measuring device. It can be applied to most industrial applications for both solids and liquids. Most important aspect of it is that it is easy-to-install and low maintenance due to no moving parts.

## WORKING PRINCIPLE

During operation, the device emits a wave to the medium to be measured. The wave reflects off the surface and moves back to the device where a transducer calculates the distance. The distance is based on the time interval between transmission and reception of the wave.  $D = (334.1 + 0.6t) \times T/2$ , where the D = the transmission distance; t = temperature; and T = transmission time.

With 4~20mA output, it can be connected to the PLC, DSC and SCADA systems. In addition, it is also equipped with exclusive PULSE and AGC (Auto Gain Control) echo tracking technology to ensure accuracy and precision even in the harshest environments.

## FEATURES

- 4~20mA 2 wire output (Fully isolated)
- 13~30Vdc power supply
- IP67 protection casing
- Detector material: PVDF
- False echo detection
- Internal temperature compensation.
- Beam angle: 6°
- Not affected by liquid temperature, S.G, viscosity.

## MAIN FUNCTIONS

- Level measurement
- Object distance measurement
- Volume measurement
- Differential level measurement
- Pump control

## COMPACT DESIGN

Compact size: equipped with 3 push buttons, 8 parameters modes and a LCD display.

## USER FRIENDLY OPERATION

Can be configured for American or Metric system units.

## RAPID RESPONSE

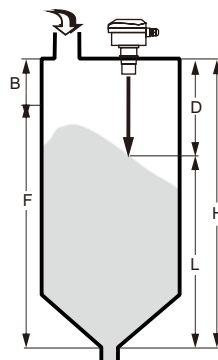
It can detect level moving up to 10m/min making it one of the industry's quickest.

## EXTENSIVE APPLICATIONS

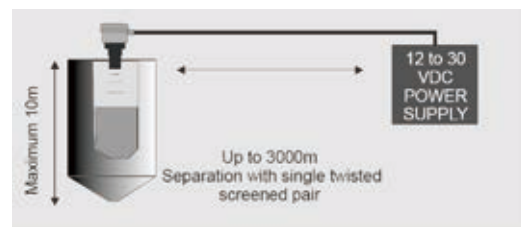
ATEX Hazardous area approved units are available for use in Zone Zero environments. The PVDF transducer is ideal for use in corrosive applications.

## FALSE ECHO

Selectable FER function which enables the instrument to identify obstructions within the path of the ultrasonic beam, memorizes their position and ignores them during the measuring process.

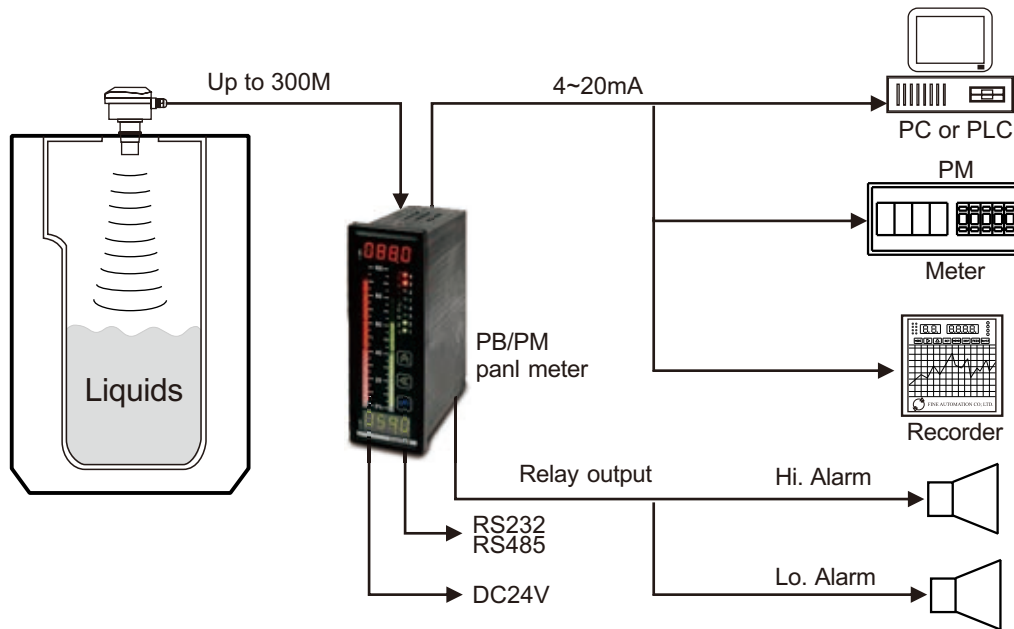


- B = Blanking distance
- D = Distance from transducer to material surface
- L = Height in silo

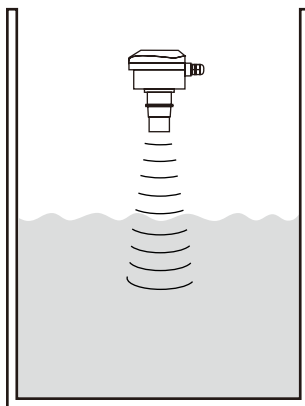


# APPLICATIONS

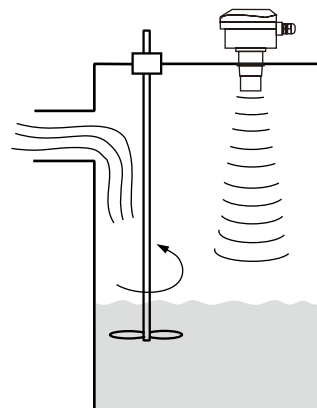
1. Water or waste water treatment equipment: pumps, open channels, dams and wells.
2. Edible-oils, sauces and beverages.
3. Chemicals: paints, carbons, water, crude oil, epoxy resin, lime slurry and wax.
4. Diesel, Petrochemicals, alcohols, solvents etc.



Liquid measurement

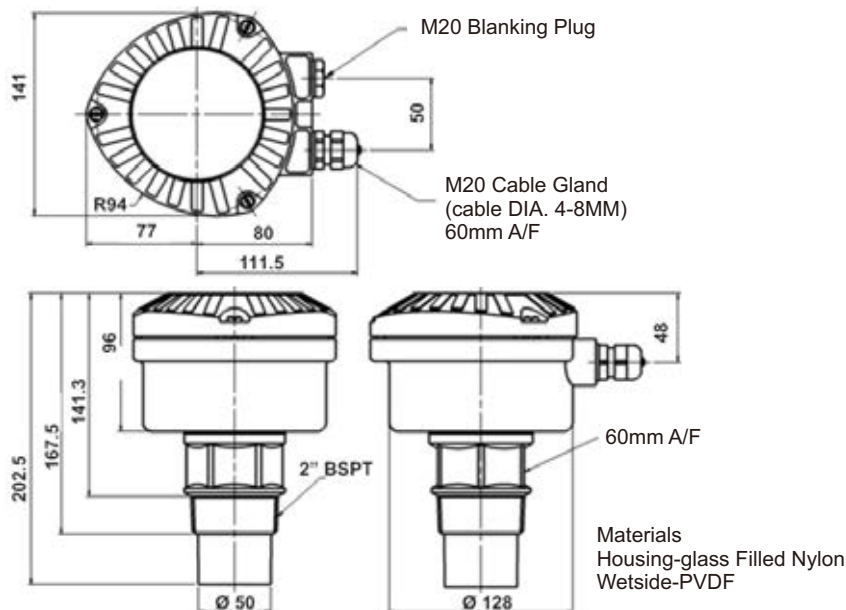


Silo with rotational aiming kit



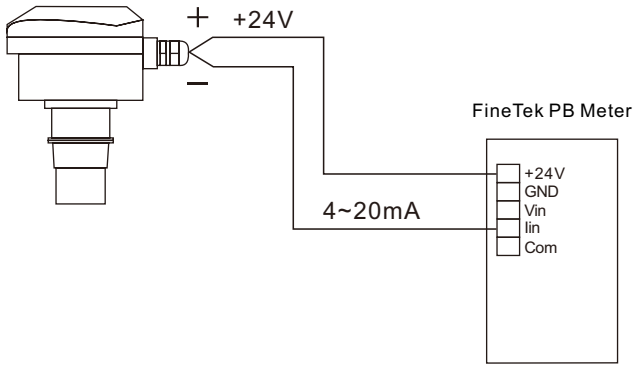
# SPECIFICATIONS

Type	ZMICROFLEX-C	ZMICROFLEX-CER	ZMICROFLEX-CIS
<b>Specifications</b>			
<b>Measuring Range</b>	8M	11M	11M
<b>Accuracy</b>	<1.0m ± 5mm. >1.0m ± 0.5%*	<1.0m ± 2.5mm. >1.0m/3.3ft ± 0.25%*	<1.0m ± 2.5mm. >1.0m/3.3ft ± 0.25%*
<b>Resolution</b>	1mm	1mm	1mm
<b>Dead band</b>	300mm	450mm	300mm
<b>Ambient temperature</b>	-20°C~70°C	-40°C~60°C	-40°C~60°C
<b>Operating temperature</b>	-20°C~70°C	-30°C~70°C	-30°C~70°C
<b>Operating pressure</b>	-0.25~3Bar	-0.25~3Bar	-0.25~3Bar
<b>Power supply</b>	2 wire 12~30Vdc	2 wire 12~30Vdc	2 wire 12~30Vdc
<b>Analog output</b>	4~20mA(750 Ohm)	4~20mA(750 Ohm)	4~20mA(750 Ohm)
<b>Relay output</b>	None	2XSPST/1A 24V DC	None
<b>Communication protocol</b>	None	HART	HART
<b>Display</b>	4 digital 12mm LCD	4 digital 12mm LCD	4 digital 12mm LCD
<b>Electrical entry</b>	2XM20X1.5	2XM20X1.5	2XM20X1.5
<b>Transducer material</b>	PVDF	PVDF	PVDF
<b>Beam angle</b>	± 6°(3dB)	± 6°(3dB)	± 6°(3dB)
<b>Casing material</b>	Nylon	Nylon	Nylon
<b>Process connection</b>	2" BSPT/NPT	2" BSPT/NPT	2" BSPT/NPT
<b>Protection rating</b>	IP67	IP67	IP67
<b>Electromagnetic compatibility</b>	CE EN 50081-1 CE EN 50082-2	CE EN 50081-1 CE EN 50082-2	CE EN 50081-1 CE EN 50082-2
<b>Explosion rating</b>	None	None	EEx ia II C T4~T6
<b>Weight</b>	850g	1200g	1200g



# INSTALLATION

## 2-wires (power supplied by panel meter)



The ultrasonic transducer is mounted to the flange of the extension neck of the tank. Please refer to the instruction below:

Length for dead band:

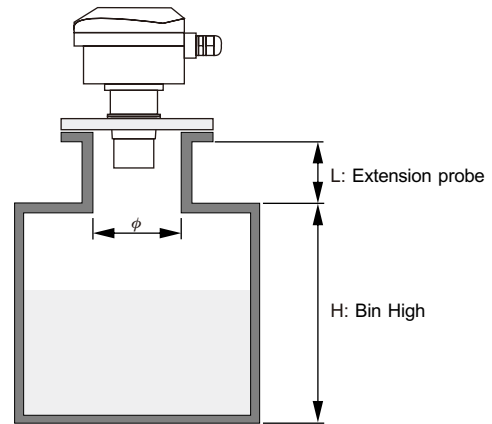
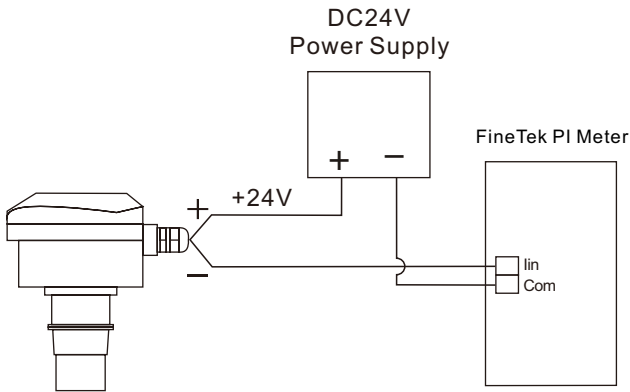
Dead band has to be 150mm over extension neck. Dead band needs to be set as 500mm if extension neck is shorter than 500mm.

Extension length:

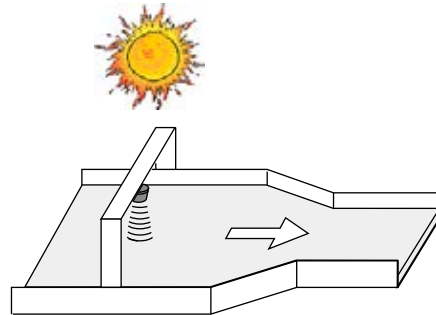
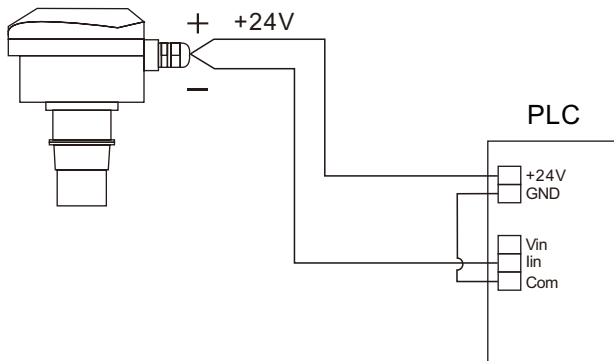
Please refer to below table and choose the suitable probe

Flange size	Diameter of extension probe( $\phi$ )Min	Diameter of extension probe L (Max)
3"	75mm	300mm
4"	100mm	300mm
6"	150mm	400mm
8"	200mm	600mm
12"	300mm	600mm

## 2-wires power supply (external)

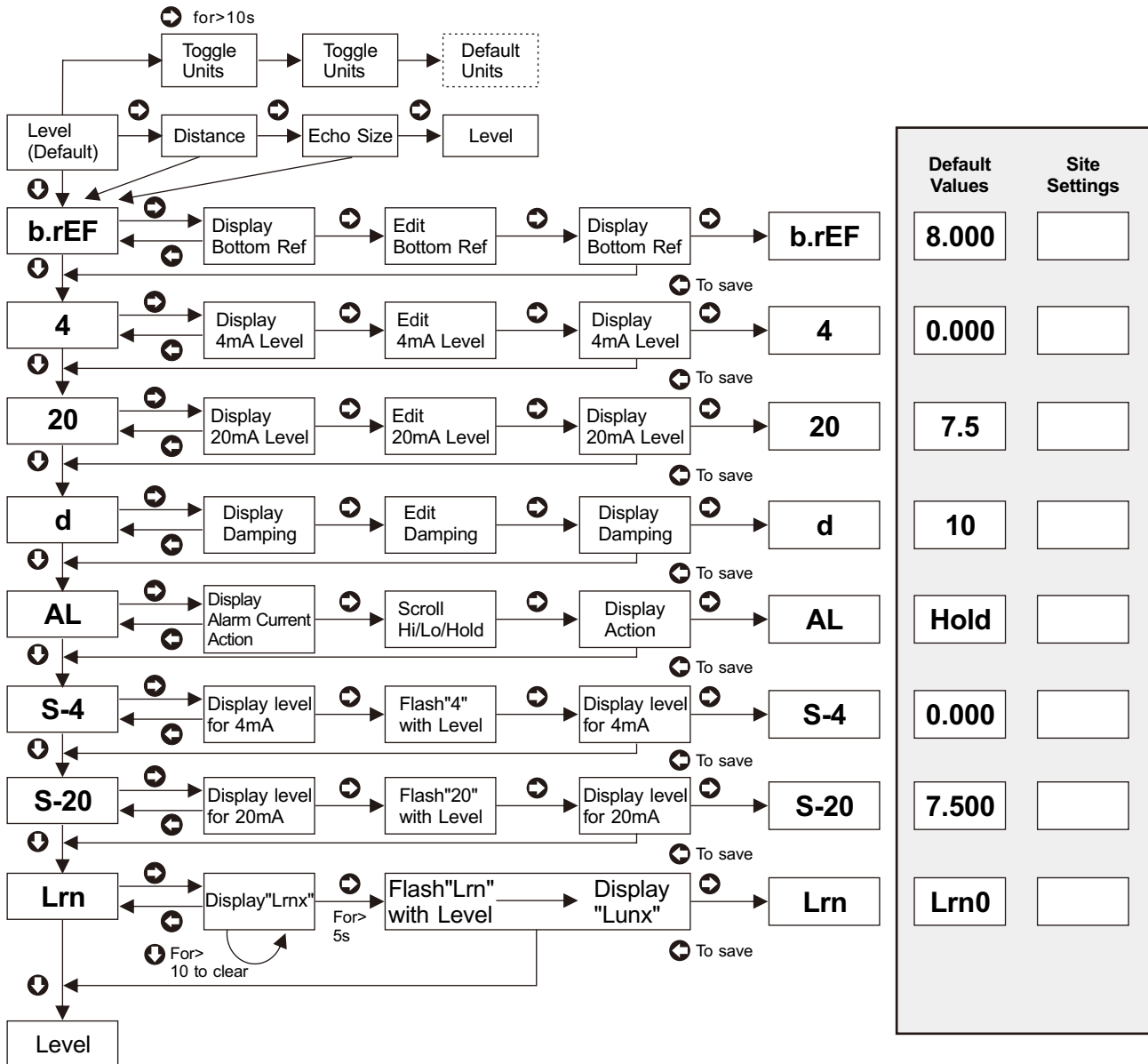


## 4-wire (PLC)



Keep the transducer away from sunshine

# SET UP PROCEDURE

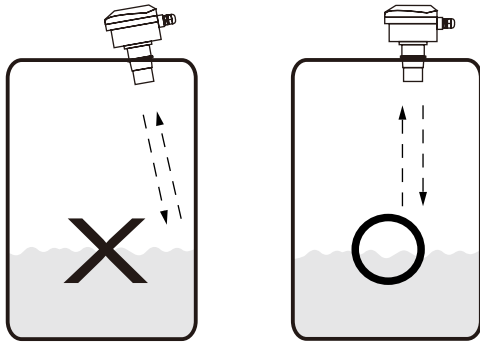


## Parameter Function Statement

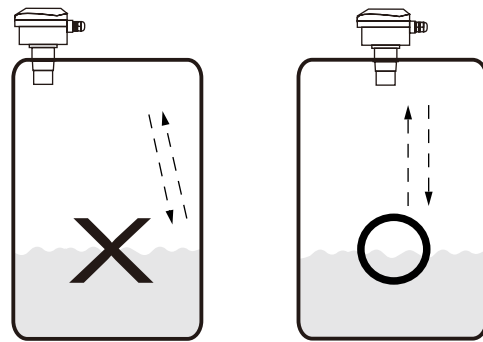
Item	Parameter	Function Statement
1	Level	Set the showing value corresponds to the level or distance
2	b.rEF	Set the bin high
3	4	Set the showing value on 4~20mA (solid, distance, volume...)
4	20	Set the showing value on 20mA (solid, distance, volume...)
5	D	Set damping time (When the value is getting big which means that the number is more stable but the responding time becomes slow)
6	AL	Set the alarming current (when it is abnormal, the output current can set as 22mA /maintenance/3.5mA)
7	S-4	Set the low point at 4mA (general is low level)
8	S-20	Set the height point at 20mA (general is high level )
9	Lrn	Exclude the obstacles(excluding the false signal reflected from obstacles)

# CAUTION BEFORE INSTALLATION

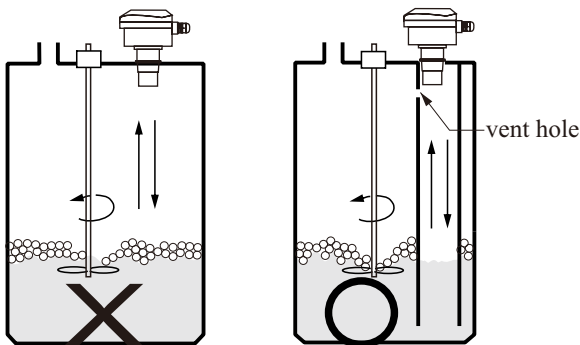
Keep the transducer perpendicular to the liquid surface.



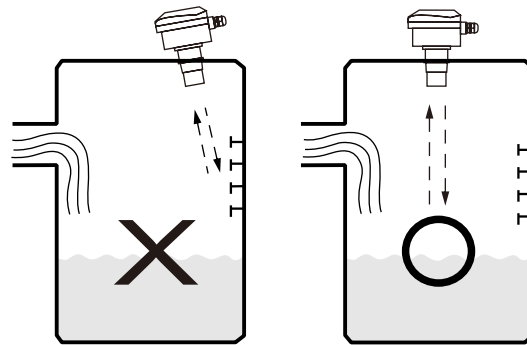
The transducer should not be mounted too close to the tank wall to avoid interference.



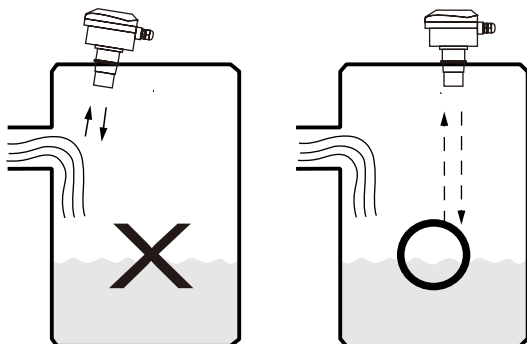
A pipe surrounding the detection path along the ultrasonic wave from emitting to receiving is Recommended. Installation can prevent false signals caused by turbulence and foam when an agitator is present. When the pipe is installed, a vent hole is required to balance the pressure difference between the inside and outside of the pipe...



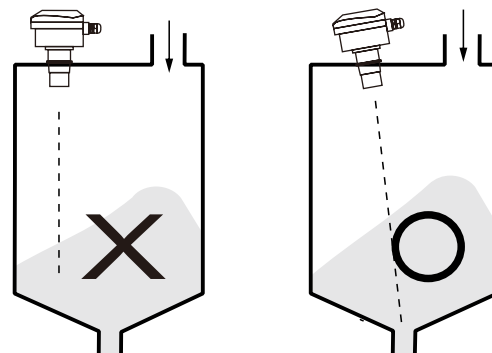
Do not mount the device close to the tank wall.



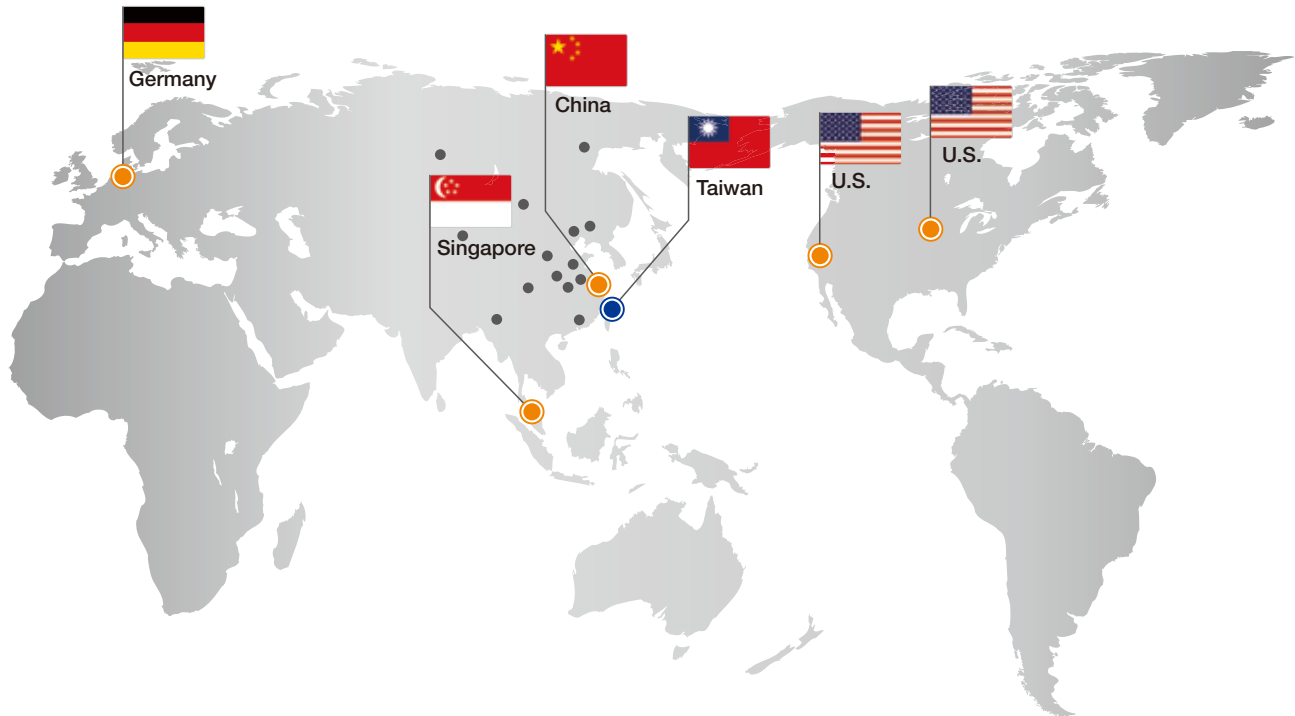
Mount the transducer away from the inlet to avoid interference with the medium.



When the user mounts the transducer on a solid tank, the transducer must not point to the outlet of tank.



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