

# Sanitary Ultrasonic Level Sensor

2-wire loop-powered | 4-20 mA | HART



## Overview

The UL-SAN non-contact ultrasonic level sensor is the ideal solution for hygienic liquid, slurry or solid level applications. The sensor is designed with a 316L stainless steel transducer face and tri-clamp mounting.

## Operation

An ultrasonic pulse is transmitted from the sensor. The pulse travels to the surface being monitored and is reflected off the surface back to the sensor. The time-of-flight is divided by two, corrected with temperature and converted to an output signal directly proportional to the material level.

The sensor has feedback with the environment and automatically adjusts the transmit power and receiver sensitivity to match the current conditions. With self-adjusting technology, false echoes are eliminated.



## Benefits

- Surface finish exposed to process exceeds a No.4/dairy finish (~18 micro inches)
- Steam cleaning / CIP for 30 min. with high temp. and pressure option (up to 130°C / 266°F and 5 bar / 72.5 PSI)
- Maintenance-free due to self-cleaning design (no build-up on transducer face) and non-contact operation
- Accurate and reliable measurements with ABM self-adjusting technology, false echoes eliminated
- Plug-and-play installation with simple push-button calibration

## Features

- Measuring range up to 30 ft (9.1 m)
- Non-contact continuous level measurements
- Stainless steel 316L transducer face
- 1.5" or 2" tri-clamp mounting
- Built-in temperature compensation
- 2-wire loop-powered operation
- 4-20 mA / 20-4 mA output standard
- HART 7 communication with calibration, diagnostics and data logging software
- Ingress protection class IP68 (NEMA 6)
- Optional [remote monitoring](#) and 24/7 support

## Applications

Sanitary / hygienic level measurement for:

- Pharmaceutical
- Food
- Beverage
- Water



*SS316L surface exposed to process*

## Technical Specifications

Range Code	Range	Blanking	Frequency	Beam Angle	Resolution
148	0.4 - 9 ft / 0.12 - 2.7 m	4.8"	148 kHz	12°	0.04" (1.0 mm)
081	0.6 - 16 ft / 0.18 - 4.9 m	7.2"	81 kHz	12°	0.07" (1.8 mm)
080	0.7 - 20 ft / 0.21 - 6.1 m	8.4"	80 kHz	12°	0.09" (2.3 mm)
070	0.8 - 30 ft / 0.24 - 9.1 m	9.6"	70 kHz	12°	0.13" (3.4 mm)

Operational	
Accuracy	+/- 0.10 % of maximum range (in lab using 4-20 mA current output) +/- 0.25 % of maximum range (typical in field)
Response Time	2 - 3 echoes / second standard (6 echoes / second standard with less damping) 10 - 30 echoes / second fast protocol (if required)
Beam Angle	12° at -3 dB
Loss of Echo	Programmable from 1 minute to 4 minutes (Default = 1 minute) 22 mA or 2 mA output
Temperature Compensation	In transducer
Calibration	Push-button or programmable via HART 7 communication port
Diagnostics	Echo Profile via communications port

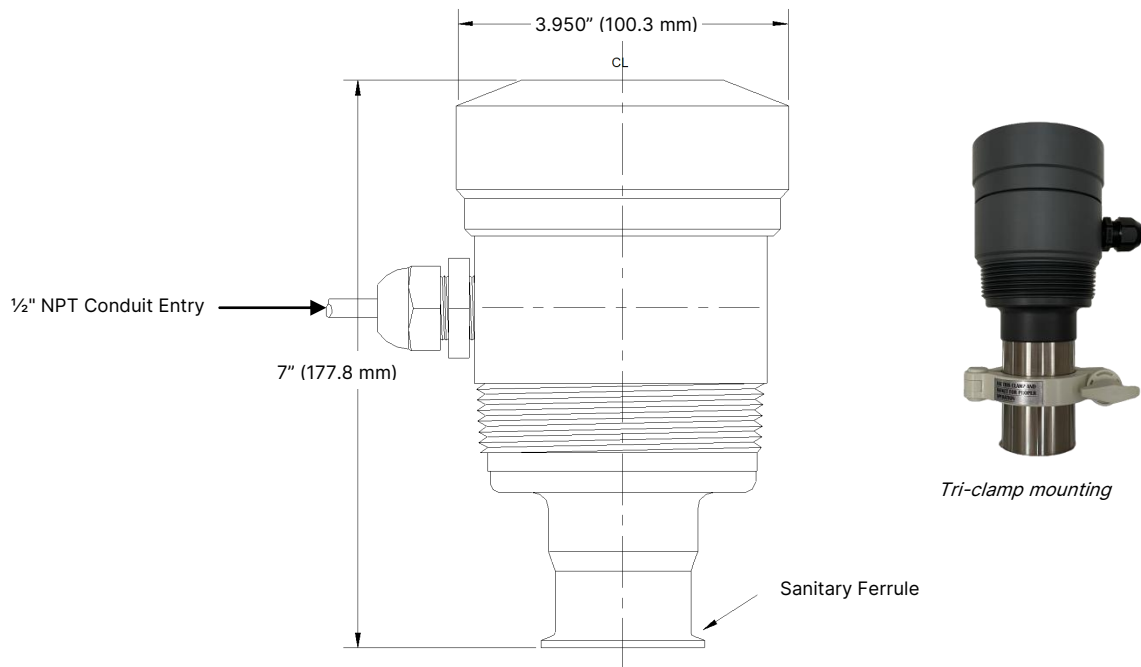
Electrical	
Power	12 to 30 VDC, 0.025 A max @ 24 VDC
Output	4-20 mA output 6.1 uA resolution HART 7 communications port

Mechanical	
Conduit Entry	½" NPT hole
Enclosure Material	PVC standard. Aluminum-94V0 or SS316L optional
Transducer Material*	SS316L face with PVC ferrule standard SS316L face and ferrule for high temperature and pressure processes [-HTP]
Ingress Protection	IP68 (NEMA 6)
* Surface finish exposed to process exceeds a No.4/dairy finish (~18 micro inches)	

Process	
Pressure	≤ 2 Bar (29 psi) standard ≤ 5 Bar (72.5 psi) with high pressure ferrule [-HTP] upgrade
Temperature	-40 to 60°C (-40 to 140°F) standard (no steam cleaning / CIP) -40 to 130°C (-40 to 266°F) with high temperature ferrule [-HTP] upgrade (for 30 minutes of steam cleaning / CIP. Remove sensor for longer cleaning cycles, recommended. Not for continuous operation)

Environmental	
Ambient Temperature	-40 to 60°C (-40 to 140°F)
Installation Category	Class II
Approvals	
CE	IEC 61010-1:90 + A1:92 +A2:95
UL	61010A-1 (2002)
FM (USA)*	FM3810 (2005): Electrical Electronic Test, Measuring and Process Control Equipment
	ANSI/NEMA 250 (1991): Enclosures for Electrical Equipment
FM (CAN)*	CSA C22.2 No. 1010.1 (2004): Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use. Part 1: General Requirements
	CSA C22.2 No. 94 (2011): Special Purpose Enclosures
* For sensor models with aluminum or stainless steel enclosures only.	

## Dimensions and Mounting



Range Code	Tri-Clamp Mounting
148	1.5" (38.1 mm) / 2.0" (50.8 mm)
081	1.5" (38.1 mm) / 2.0" (50.8 mm)
080	2.0" (50.8 mm)
070	2.0" (50.8 mm)

\*Sanitary sensors include nylon tri-clamp and sanitary silicon gasket for 1.5" or 2" ferrule.

## Model Numbering

View the UL-SAN 2-wire model number table below or configure a product online at:

[abmsensor.com/product-configurator/](http://abmsensor.com/product-configurator/).

ABM	XXX -	XXX	XX	XX	XX	XXX
<b>Supply Voltage</b>	-					
12-30 VDC Loop-Powered (2-wire)	200					
<b>Maximum Range</b>		-				
9 ft (2.7 m)		148				
16 ft (4.9 m)		081				
20 ft (6.1 m)		080				
30 ft (9.1 m)		070				
<b>Product Series</b>			-			
Ultrasonic Sensor			UL			
<b>Communication</b>				-		
HART 7				CH		
<b>Enclosure Material</b>					-	
PVC					PV	
Aluminum					AL	
SS316L					SS	
<b>Transducer Material &amp; Mounting</b>						-
1.5" Sanitary SS316L Ferrule - Standard (no steam / CIP)						S15
2" Sanitary SS316L Ferrule - Standard (no steam / CIP)						S20
1.5" Sanitary SS316L Ferrule - High temperature and pressure						S15-HTP
2" Sanitary SS316L Ferrule - High temperature and pressure						S20-HTP

## Contact

### ABM Sensor Technology

730 The Kingsway  
Peterborough, ON K9J 6W6 Canada

Phone: +1 (705) 740-2010

Fax: +1 (705) 740-2563

[info@abmsensor.com](mailto:info@abmsensor.com)



For more information please visit: [abmsensor.com](http://abmsensor.com)

Technical data subject to change without notice.