

Level Measurement

Continuous level measurement – Ultrasonic transmitters

SITRANS Probe LU

Overview



SITRANS Probe LU is a 2-wire loop powered ultrasonic transmitter for level, volume and flow monitoring of liquids in open channels, storage vessels, and simple process vessels.

Benefits

- Continuous level measurement up to 12 m (40 ft) range
- Easy installation and simple start-up
- Programming using infrared Intrinsically Safe handheld programmer, SIMATIC PDM or HART Communicator
- Communication using HART or PROFIBUS PA
- ETFE or PVDF transducers for chemical compatibility
- Patented Sonic Intelligence signal processing
- Auto False-Echo Suppression for fixed obstruction avoidance
- Level to volume or level to flow conversion

Application

The SITRANS Probe LU is ideal for level monitoring in the water and wastewater industry, chemical storage vessels, and small bulk hoppers.

The range of SITRANS Probe LU is 6 or 12 m (20 or 40 ft). Using Sonic Intelligence, Auto False Echo Suppression for fixed obstruction avoidance, and accuracy of 0.15 % of range or 6 mm (0.25 inch), the Probe LU provides unmatched reliability.

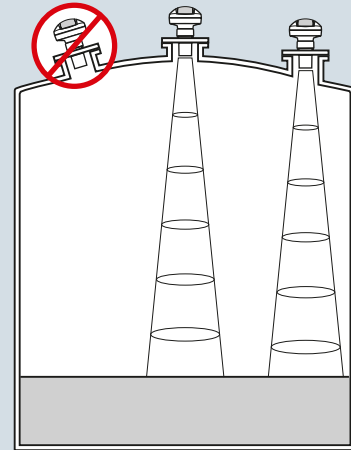
The Probe LU offers two communications options: HART or PROFIBUS PA (Profile version 3.0, Class B).

The transducer on the Probe LU is available as ETFE or PVDF to suit the chemical conditions of your application. As well, for applications with varying material and process temperatures, the Probe LU incorporates an internal temperature sensor to compensate for temperature changes.

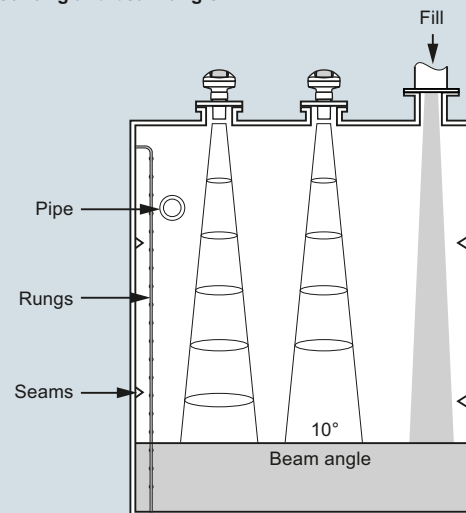
- Key Applications: chemical storage vessels, filter beds, liquid storage vessels

Configuration

Parabolic mounting



Flat mounting and beam angle



SITRANS Probe LU mounting

Technical specifications

Mode of operation		Process connection	
Measuring principle	Ultrasonic level measurement	• Threaded connection	2" NPT [(Taper), ANSI/ASME B1.20.1] R 2" [(BSPT), EN 10226] or G 2" [(BSPP), EN ISO 228-1]
Typical application	Level measurement in storage vessels and simple process vessels	• Flange connection	3 inch (80 mm) universal flange
Inputs		• Other connection	FMS 200 mounting bracket (see page 4/187) or customer supplied mount
Measuring range		Display and Controls	
• 6 m (20 ft) model	0.25 ... 6 m (10 inch ... 20 ft)	Interface	Local: LCD display with bar graph Remote: Available via HART or PROFIBUS PA
• 12 m (40 ft) model	0.25 ... 12 m (10 inch ... 40 ft)	Configuration	Using Siemens SIMATIC PDM (PC) or HART handheld communicator or Siemens infrared handheld programmer
Frequency	54 kHz	Memory	Non-volatile EEPROM
Outputs		Power supply	
mA/HART		4 ... 20 mA/HART	Nominal 24 V DC with 550 Ω maximum; maximum 30 V DC 4 ... 20 mA
• Range	4 ... 20 mA	PROFIBUS PA	12, 13, 15, or 20 mA depending on programming (General Purpose or Intrinsically Safe version) per IEC 61158-2
• Accuracy	± 0.02 mA	Certificates and Approvals	
PROFIBUS PA	Profile 3, Class B	General	
Performance		CSA _{US/C} , FM, CE, RCM	
Resolution	≤ 3 mm (0.12 inch)	Marine (only applies to HART communication option)	
Accuracy	± the greater of 0.15 % of range or 6 mm (0.24 inch)	• Lloyd's Register of Shipping • ABS Type Approval	
Repeatability	≤ 3 mm (0.12 inch)	Hazardous	
Blanking distance	0.25 m (10 inch)	• Intrinsically Safe (Europe)	
Update time	≤ 5 s	ATEX II 1G Ex ia IIC T4 Ga	
• 4 ... 20 mA/HART version	≤ 5 s at 4 mA	• Intrinsically Safe (USA/Canada)	
• PROFIBUS version	≤ 4 s at 15 mA current loop	CSA/FM, Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III T4	
Temperature compensation	Built-in to compensate over temperature range	• Intrinsically Safe (International)	
Beam angle	10°	SIR 13.0008X Ex ia IIC T4 Ga	
Rated operating conditions		• Intrinsically Safe (Brazil)	
Ambient conditions		INMETRO Ex ia IIC T4 Ga	
• Location	Indoor/outdoor	• Non-incendive (USA)	
• Ambient temperature	-40 ... +80 °C (-40 ... +176 °F)	FM Class I, Div. 2, Groups A, B, C, D T4	
• Relative humidity/ingress protection	Suitable for outdoor	Handheld Programmer	
• Installation category	I	Intrinsically Safe Siemens handheld programmer	
• Pollution degree	4	Infrared receiver	
• Medium conditions		• Approvals for handheld programmer	
- Temperature at flange or threads	-40 ... +85 °C (-40 ... +185 °F)	ATEX II 1GD / IECEx SIR 09.0073	
- Pressure (vessel)	0.5 bar g (7.25 psi g)	Ex ia IIC T4 Ga Ex iaD 20 T135 °C FM/CSA Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G T6	
Design		Ambient temperature	
Material (enclosure)	PBT (Polybutylene Terephthalate)	-20 ... 50 °C (-5 ... 122 °F)	
Degree of protection	Type 4X/NEMA 4X, Type 6/NEMA 6/IP67/IP68 enclosure	Interface	
Weight	2.1 kg (4.6 lb)	Proprietary infrared pulse signal	
Cable inlet	2 x M20x1.5 cable gland or 2 x ½" NPT thread or 1 x M20 x 1.5 and 1 x ½" NPT	Power	
Material (transducer)	ETFE (Ethylene Tetrafluoroethylene) or PVDF (Polyvinylidene Fluoride)	3 V lithium battery (non-replaceable)	