Overview

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

Benefits

- Continuous level measurement up to 12 m (40 ft) range
- Easy installation and simple startup
- Programming using infrared intrinsically safe handheld programmer, SIMATIC PDM, or HART® Communicator
- Communication using HART
- ETFE or PVDF transducers for chemical compatibility
- Patented Sonic Intelligence signal processing
- Extremely high signal-to-noise ratio
- Auto False-Echo Suppression for fixed obstruction avoidance

Application

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

The range of SITRANS Probe LU is 6 or 12 meters (20 or 40 feet). Using Auto False-Echo suppression for fixed obstruction avoidance, as well as an improved signal-to-noise ratio, and improved accuracy of 0.15% of range or 6 mm (0.25"), the Probe LU provides unmatched reliability.

SITRANS Probe LU includes Sonic Intelligence® signal processing from the field-proven Milltronics Probe, and incorporates new echo processing features and the latest micro-processor and communications technology.

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.

Technical specifications

Mode of operation	
• Measuring principle	Ultrasonic level measurement
• Typical application	level measurement in storage vessels and simple process vessels
Inputs	
Measuring range	
• 6 m (20 ft) model	0.25 to 6 m (10" to 20 ft)
• 12 m (40 ft) model	0.25 to 12 m (10" to 40 ft)
Frequency	54 KHz
Outputs	
mA	
• range	4 to 20 mA
• accuracy	± 0.02 mA
• span	proportional or inversely proportional
Beam angle	10°
Performance	
• Resolution	≤ 3 mm (0.12")
• Accuracy	± the greater of 0.15% of range or 6 mm (0.25")
• Repeatability	≤ 3 mm (0.12")
• Blanking distance	0.25 m (10")
• Update time at 4 mA	≤ 5 seconds
• Temperature compensation	built-in to compensate over temperature range
Rated operating conditions	
• Ambient conditions	
- Location	Indoor/outdoor
- Ambient temperature	-40 to 80 °C (-5 to 176 °F)
- Relative humidity/ingress protection	Suitable for outdoor
- Installation category	I
- Pollution degree	4
• Medium conditions	
- Temperature at flange or threads	-40 to 85 °C (-5 to 185 °F)
- Pressure (vessel)	ambient, vented to atmosphere
Design	
• Material (enclosure)	PBT (Polybutylene Terephthalate)
• Degree of Protection	Type 4X/NEMA 4X, Type 6/NEMA 6/IP67/IP68 enclosure
• Weight	2.1 kg (4.6 lbs)
• Cable inlet	2 x M20x1.5 conduit gland or 2 x ½" NPT thread
• Transducer (2 options)	ETFE (Ethylene Tetrafluoroethylene) or PVDF (Polyvinylidene Fluoride)
• Process connection	
- threaded connection	2" NPT, BSP, or G/PF
- flange connection	3" (80 mm) universal flange
- other connection	FMS 200 mounting bracket or customer supplied mount

SITRANS Probe LU

Display and Controls

• Interface	HART: standard, integral to analog output
• Configuration	Using Siemens SIMATIC PDM (PC) or HART handheld communicator, or Siemens Milltronics infrared handheld programmer
• Memory	non-volatile EEPROM, no battery required

Programmer (optional infrared keypad)

• approval	ATEX II 1 G, EEx ia IIC T4
• ambient temperature	-20 to 40 °C (-5 to 104 °F)
• interface	proprietary infrared pulse signal
• power	3 V lithium battery (non-replaceable)

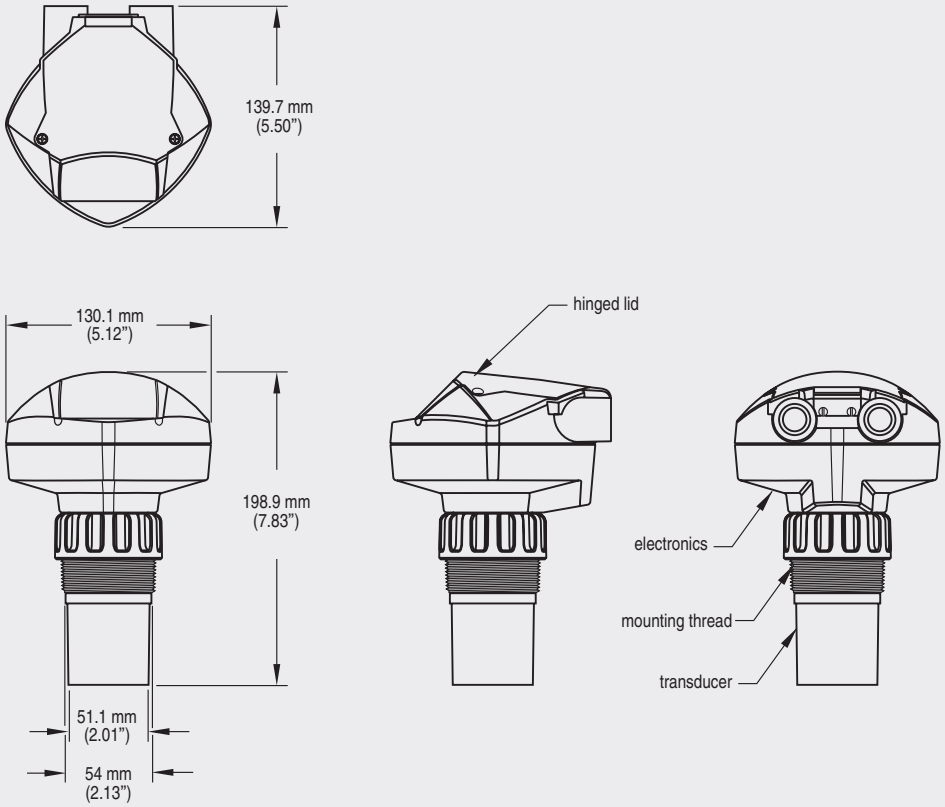
Power supply

Standard	nominal 24 V DC with 550 ohm maximum; maximum 30 V DC 4 to 20 mA

Approvals

General	$CSA_{US/C}$, FM, CE
Hazardous	
• Europe	ATEX II 1G EEx ia IIC T4
• USA	FM Class 1, Div. 1, Groups A, B, C, D (barrier required); Class II, Div. 1, Groups E, F, G; Class III
• Canada	CSA Class 1, Div. 1, Groups A, B, C, D (barrier required); Class II, Div. 1, Group G; Class III

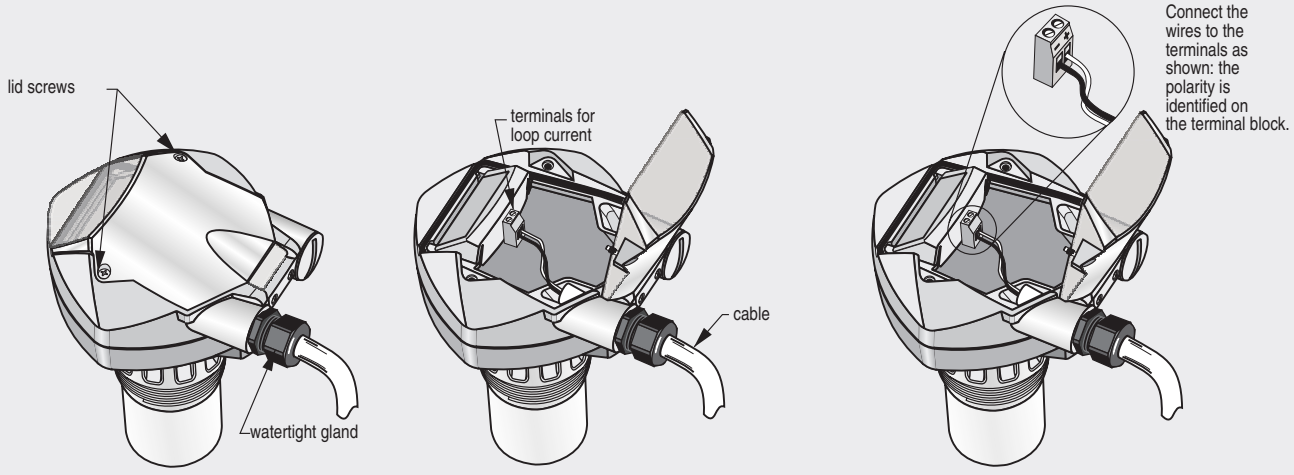
Dimensional drawings



Note: Above model is shown without M20 conduit glands or ½" NPT conduit connectors.

SITRANS Probe LU dimensions

Schematics



Notes:
- Model above is shown with M20 conduit glands. ½" NPT threaded connection is also available.
- DC terminal shall be supplied from an SELV source in accordance with IEC-1010-1 Annex H.
- All field wiring must have insulation suitable for rated input voltages.
- Use shielded twisted pair cables (wire gauge 14-22)
- Separate cables and conduit may be required to conform to standard instrumentation wiring practices or electrical codes.

SITRANS Probe LU connections

SITRANS Probe LU

Ordering data		Order No.
SITRANS Probe LU	C)	**7ML5221-**
2-wire loop powered ultrasonic transmitter for level, volume, and flow monitoring of liquids		
Enclosure		
Plastic (PBT), Qty 2 x M20x1.5		**1**
Plastic (PBT), Qty 2 x 1/2" NPT		**2**
Range / Sensor material		
6 meter (20 ft), ETFE		**A**
6 meter (20 ft), PVDF Copolymer		**B**
12 meter (40 ft), ETFE		**C**
12 meter (40 ft), PVDF Copolymer		**D**
Process Connection		
2" NPT		**A**
2" BSP		**B**
2" G / PF2		**C**
Communication / Output		
4 to 20 mA, HART		**1**
Approvals		
General purpose, FM, CSA, CE		**1**
Intrinsically Safe, FM Class 1, Div. 1, Groups A, B, C, D (barrier required); Class II, Div. 1, Groups E, F, G; Class III, ATEX II 1G EEx ia IIC T4		**2**
Intrinsically Safe, CSA Class 1, Div. 1, Groups A, B, C, D (barrier required); Class II, Div. 1, Group G; Class III		**3**
Instruction Manual		
English	C)	**7ML1998-5HT01**
German Note: The instruction manual should be ordered as a separate item on the order.	C)	**7ML1998-5HT31**
Additional Quick start manual		
Multi-language Quick start manual Note: Due to ATEX regulations, one Quick start manual is included with every product.	C)	**7ML1998-5QR81**
Optional Equipment		
Hand programmer, Intrinsically Safe, EEx ia		**7ML5830-2AH**
HART modem (for use with a PC and SIMATIC PDM)	A)	**7MF4997-1DA**
Siemens Intrinsically Safe Barrier (DC powered), ATEX II 1 G, EEx ia		**7NG4122-1AA10**
2" NPT locknut, plastic		**7ML1830-1DT**
2" BSP locknut, plastic		**7ML1830-1DQ**
Universal Mounting Adapter, 2" NPT		**7ML1830-1BT**
Universal Mounting Adapter, 2" BSP		**7ML1830-1BU**
Universal Mounting Adapter, 2" G / PF2		**7ML1830-1BV**

A) Subject to export regulations AL: N, ECCN: EAR99H

C) Subject to export regulations AL: N, ECCN: EAR99