

Level Instruments

Continuous measurement - Compact devices

SITRANS Probe LU



Fig. 4/3 SITRANS Probe LU

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Application

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. 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 LU Probe 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.

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

Technical data

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
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	
<u>Ambient conditions</u>	
Location	Indoor/outdoor
Altitude	2000 m (6562 ft.) max.
Ambient temperature	-40 to 80 °C (-5 to 176 °F)
Relative humidity/ingress protection	Suitable for outdoor (Type 4X/NEMA 4X, Type 6/NEMA 6/IP67/IP68 enclosure)
Installation category	I
Pollution degree	4
<u>Medium conditions</u>	
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)
Weight	2.1 kg (4.6 lbs)
Cable inlet	2 x M20 conduit gland or 2 x 1/2" 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
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, SIRA certificate 01ATEX2147
• 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 Hazardous	CSAus/c, FM, CE
• Europe	ATEX II 1G EEx ia IIC T4 FM Class 1, Div. 1, Groups A, B, C, D (barrier required); Class II, Div. 1, Groups E, F, G; Class III
• USA	CSA Class 1, Div. 1, Groups A, B, C, D (barrier required); Class II, Div. 1, Group G; Class III
• Canada	

Dimensional drawings

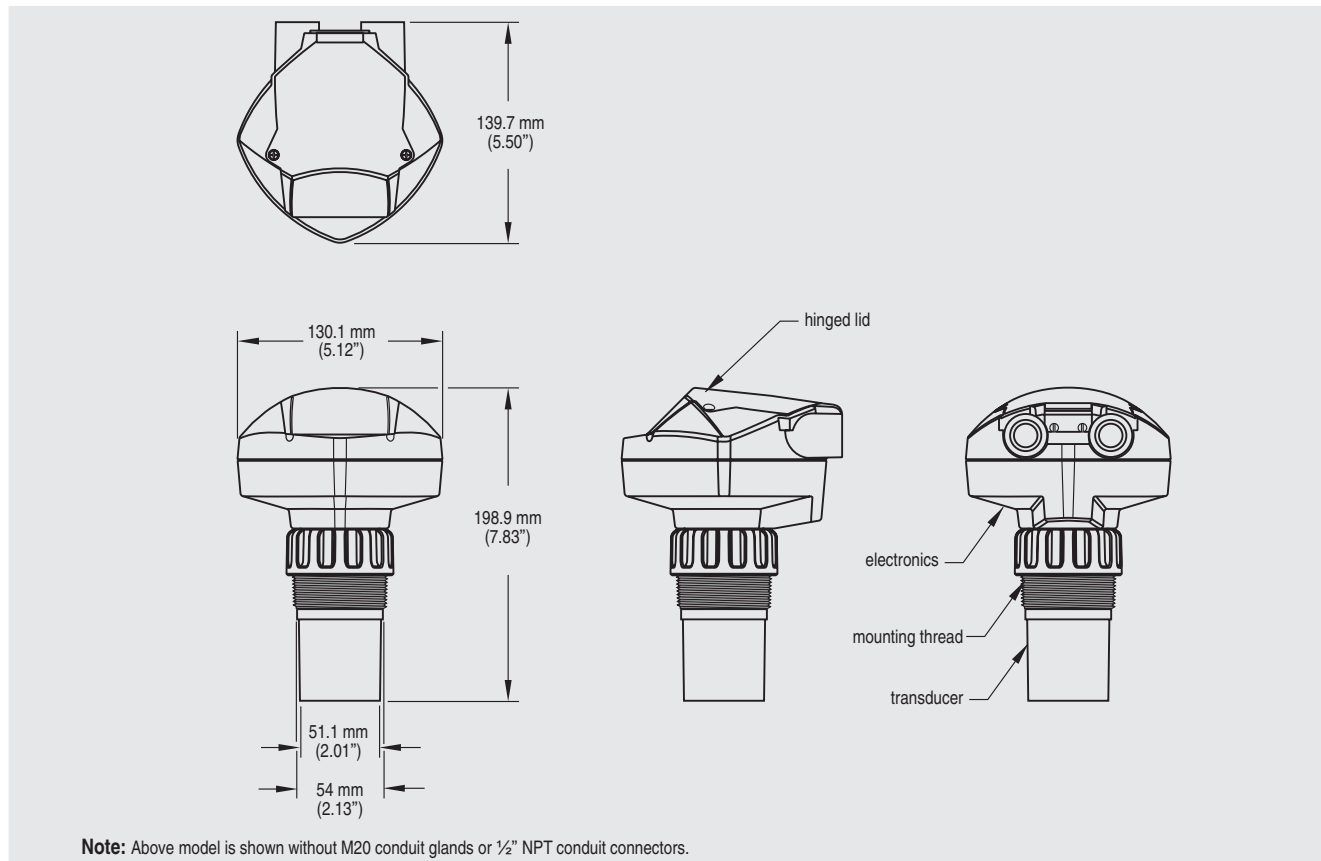


Fig. 4/4 SITRANS Probe LU dimensions

Connections

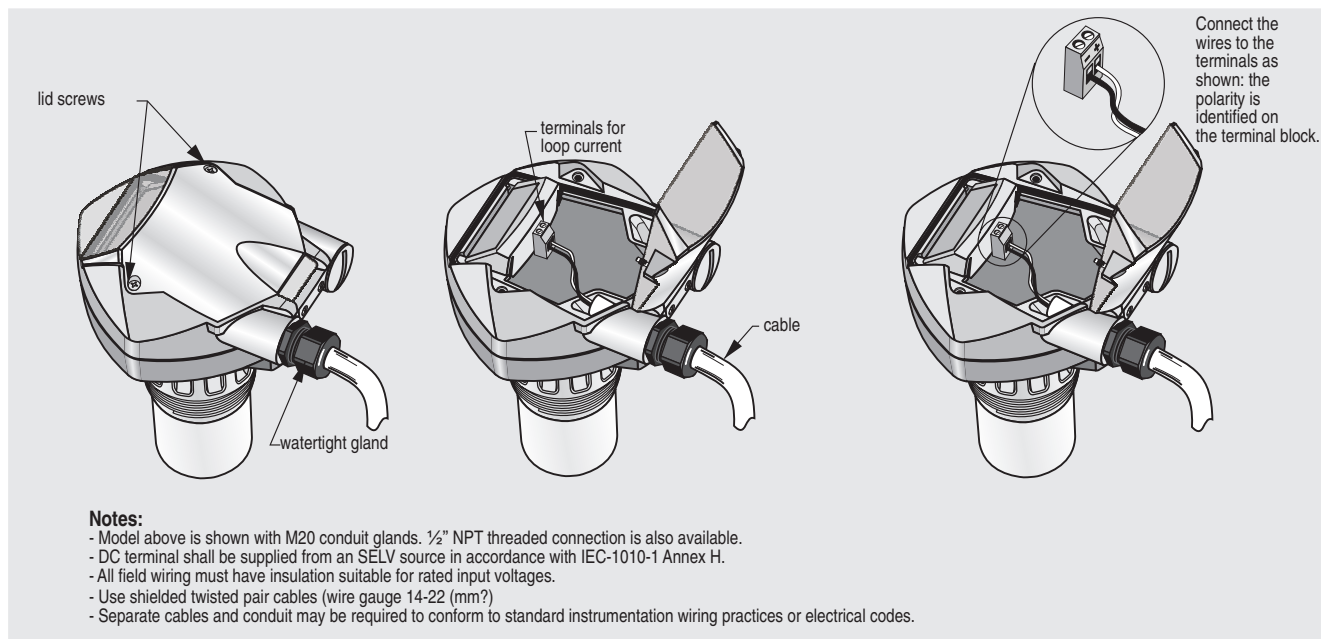


Fig. 4/5 SITRANS Probe LU connections

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Ordering data	Order No.
SITRANS Probe LU 2-wire loop powered ultrasonic transmitter for level, volume, and flow monitoring of liquids	A) 7ML5221-
Enclosure Plastic (PBT), Qty 2 x M20 Plastic (PBT), Qty 2 x 1/2" NPT	1 2
Range / Sensor material 6 meter (20 ft.), ETFE 6 meter (20 ft.), PVDF Copolymer 12 meter (40 ft.), ETFE 12 meter (40 ft.), PVDF Copolymer	A B C D
Process Connection 2" NPT 2" BSP 2" G / PF2	A B C
Communication / Output 4 to 20 mA, HART	1
Approvals General purpose, FM, CSA, CE Intrinsically Safe, FM, ATEX Intrinsically Safe, CSA	1 2 3
Instruction Manual English German Note: The instruction manual should be ordered as a separate item on the order.	A) 7ML1998-5HT01 A) 7ML1998-5HT31
Additional Quick Start Guide Multi-language Quick Start Guide (Due to ATEX regulations, one Quick Start Guide is included with every product.)	A) 7ML1998-5QR81
Optional Equipment Hand programmer, Intrinsically Safe, EEx ia HART modem (for use with a PC and SIMATIC PDM) Siemens Intrinsically Safe Barrier (DC powered), ATEX II 1 G, EEx ia Universal Mounting Adapter, 2" NPT Universal Mounting Adapter, 2" BSP Universal Mounting Adapter, 2" G / PF2	B) 7ML5830-2AH C) 7MF4997-1DA A) 7NG4122-1AA10 7ML1830-1BT 7ML1830-1BU 7ML1830-1BV

A) Subject to export regulations AL: N, ECCN: EAR99H
 B) Subject to export regulations AL: N, ECCN: N
 C) Subject to export regulations AL: N, ECCN: EAR99