



Fig. 4/79 SITRANS Probe LR

Application

SITRANS Probe LR is a 2-wire, loop powered, 5.8 GHz (6.3 GHz in North America) radar transmitter for level and volume monitoring of liquids and slurries in storage and process vessels. The Probe LR is ideal for applications with chemical vapours, temperature gradients, vacuum or high pressure, such as tank farms, chemical storage, digesters and long-range applications. SITRANS Probe LR has a range of 0.3 to 20 m (1 to 65 ft).

Probe LR is designed for safe and simple programming using the Intrinsically Safe hand programmer without having to open the instrument's lid. It has a standard Uni-Construction polypropylene rod antenna that offers excellent chemical resistance and is hermetically sealed. The Uni-Construction antenna includes an internal, integrated shield that eliminates vessel nozzle interference. SITRANS Probe LR incorporates Sonic Intelligence[®] signal processing. The Probe LR also has a high signal-to-noise ratio leading to better echo processing and increased range.

Start-up is easy with as few as two parameters for basic operation. Programming is simple using SIMATIC PDM, HART[®] handheld communicator, or the Intrinsically Safe hand programmer.

Major features

- Uni-Construction polypropylene rod antenna standard
- Easy installation and simple startup
- Programming using infrared intrinsically safe handheld programmer, SIMATIC PDM, or HART handheld communicator
- Communication using HART
- Patented Sonic Intelligence signal processing
- Extremely high signal-to-noise ratio
- Auto False-Echo Suppression of false echoes

Technical data

Mode of operation	
Measuring principle	Radar level measurement
Frequency	5.8 GHz (North America 6.3 GHz)
Measuring range	0.3 to 20 m (1.0 to 65 ft)
Output	
• Analog output	4 to 20 mA
• Accuracy	± 0.02 mA
• Span	proportional or inversely proportional
• Communications	HART
Performance	
• Accuracy	± the greater of 0.1% of range or 10 mm (0.4")
• Influence of ambient temperature	0.006%/K
• Repeatability	± 5 mm
• Fail-safe	mA signal programmable as high, low or hold (LOE)
Rated operating conditions	
<u>Installation conditions</u>	
• Location	indoor/outdoor
• Altitude	max. 5000 m (16404 ft.)
<u>Ambient conditions (enclosure)</u>	
• Ambient temperature	-40 to +80 °C (-40 to +176 °F)
• Installation category	I
• Pollution degree	4
• Pressure	vented to atmosphere
Medium conditions	
• Dielectric constant ϵ_r	$\epsilon_r > 3$ (for $\epsilon_r < 3$, use stillpipe)
• Vessel temperature	-40 to 80 °C (-40 to 176 °F)
• Vessel pressure	3 bar, gauge (43.5 psi, gauge)
Design	
• Enclosure	
- Body construction	PBT (Polybutylene Terephthalate)
- Lid construction	hard coated PEI (Polyether Imide)
- Cable inlet	2 M20 or 2 x 1/2" NPT with adapter
• Degree of protection	Type 4X/NEMA 4X, Type 6/NEMA 6, IP67
• Weight	1.97 kg (4.35 lb)
• Antenna	
- Material	polypropylene rod, hermetically sealed construction
- Dimensions	standard 100 mm (4") shield for maximum 100 mm (4") nozzle, or optional 250 mm (10") long shield
<u>Process connections</u>	
Process connections	1 1/2" NPT, BSP, or G
Power supply	
	<ul style="list-style-type: none"> • nominal DC 24 V with max. 550 Ohm. • maximum DC 30 V • 4 to 20 mA

Level instruments

Continuous measurement - Radar

SITRANS Probe LR

Certificates and approvals

<ul style="list-style-type: none"> • General • Radio 	CSA _{US/C} , CE, FM FCC, Industry Canada and European (R&TTE)
<ul style="list-style-type: none"> • Hazardous - Europe - USA 	ATEX II 1G EEx ia IIC T4 Intrinsically safe barrier required FM Class I, Div.1, Groups A,B,C,D; Class II, Div. 1, Groups E,F, G; Class III
<ul style="list-style-type: none"> - Canada 	Intrinsically safe barrier required CSA Class I, Div.1, Groups A,B,C,D; Class II, Div. 1, Group G; Class III

Programming

<ul style="list-style-type: none"> • Intrinsically safe Siemens Milltronics handheld programmer (optional) • Handheld communicator • PC • Approvals (handheld programmer) • Display (local) 	Infrared receiver HART SIMATIC PDM ATEX II 1 G, EEx ia IIC T4, SIRA certificate 01ATEX2147 CSA and FM Class 1, Div.1, Gr. A,B,C,D, T6 @ max. ambient multi-segment alphanumeric liquid crystal with bar graph (representing level) available in four languages
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Dimensional drawing

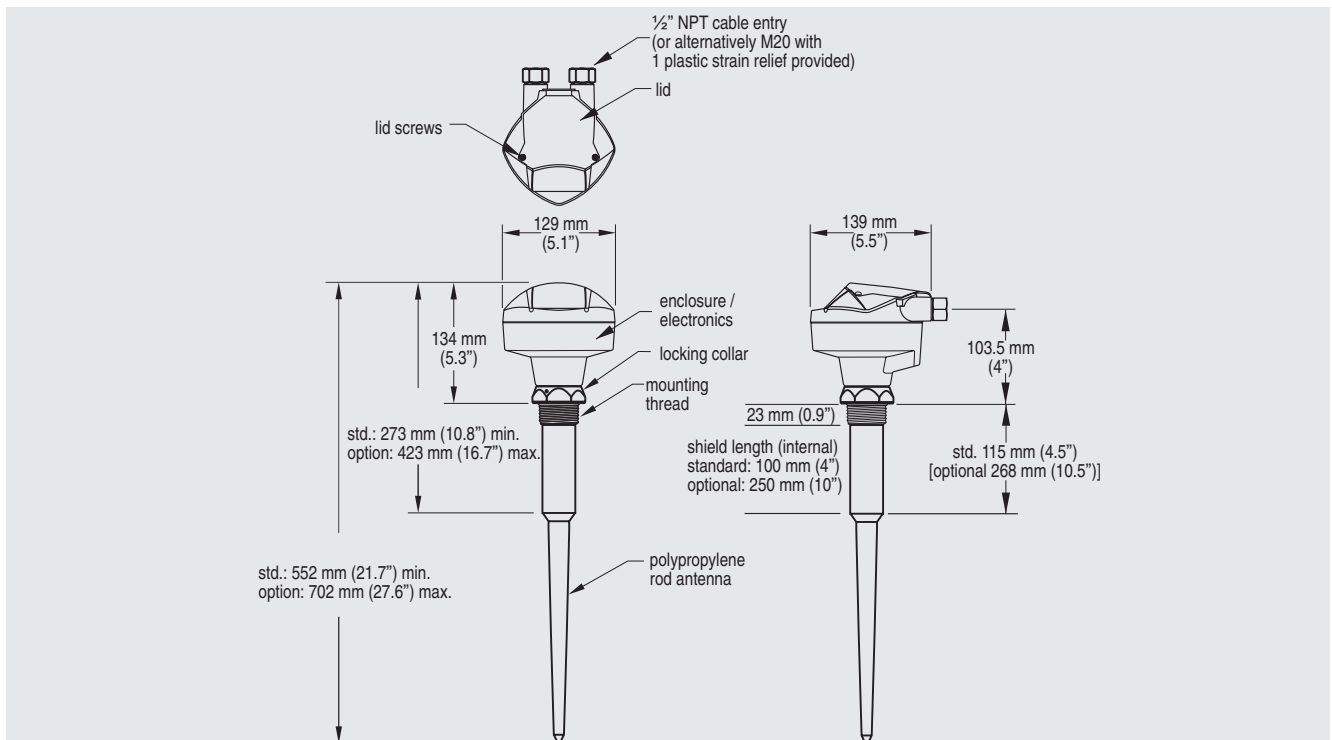
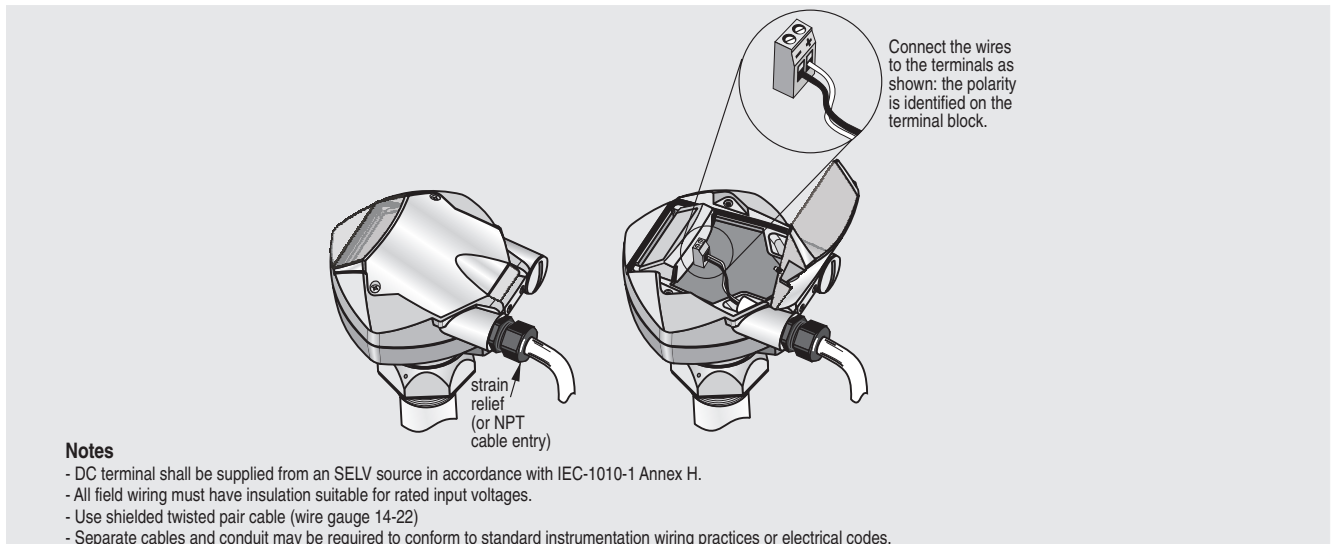


Fig. 4/80 SITRANS Probe LR dimensions



Notes

- 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 cable (wire gauge 14-22)
- Separate cables and conduit may be required to conform to standard instrumentation wiring practices or electrical codes.

Fig. 4/81 SITRANS Probe LR connections

Level instruments

Continuous measurement - Radar

SITRANS Probe LR

4

Ordering data	Order No.
SITRANS Probe LR	A) 7ML5430-
2-wire, loop powered, 5.8 GHz (6.3 GHz in N. America) radar transmitter for level and volume monitoring of liquids and slurries in storage and process vessels. Max 3 Bar pressure and 80 deg. C	0
Enclosure	
Plastic, (PBT), Qty 2 x 1/2" NPT	1
Plastic, (PBT), Qty M20 (plastic strain reliefs provided)	2
Antenna Type / Material - (Max. 3 Bar and 80 °C)	
<u>Polypropylene Antenna</u>	
1-1/2" NPT, c/w integral 100mm shield	A
1-1/2" BSP, c/w integral 100mm shield	B
1-1/2" G, c/w integral 100mm shield	C
1-1/2" NPT, c/w integral 250mm shield	D
1-1/2" BSP, c/w integral 250mm shield	E
1-1/2" G, c/w integral 250mm shield	F
Approvals	
General Purpose, CE ¹⁾	A
General Purpose, FM, CSAus/c ²⁾	B
CSA Class I, Div 1, Gr.A to D, Class II, Div. 1 Gr. G, Class III, Intrinsically Safe with suitable barrier ²⁾	C
FM, Class I, II & III, Div 1, Groups A-G, Intrinsically Safe with suitable barrier ²⁾	D
ATEX II 1 G EEx ia IIC T4, Intrinsically Safe with suitable barrier ¹⁾	E
Communication / Output	
4 to 20 mA, HART	1
Instruction Manual	
English	A) 7ML1998-5HR01
German	A) 7ML1998-5HR31
Note: The instruction manual should be ordered as a separate item on the order.	
Additional Quick Start Guide	
Multi-language Quick Start Guide (Due to ATEX regulations, one Quick Start Guide is included with every product.)	A) 7ML1998-5QP81
Optional Equipment	
Hand programmer, Intrinsically Safe, EEx ia	B) 7ML5830-2AH
HART modem (for use with a PC and SIMATIC PDM)	C) 7MF4997-1DA
Siemens Intrinsically Safe Barrier, ATEX II 1 G, EEx ia	A) 7NG4122-1AA10

1)Includes European Radio approvals (R&TTE), 5.8 GHz
2)Includes FCC Radio approvals, 6.3 GHz for North America only

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