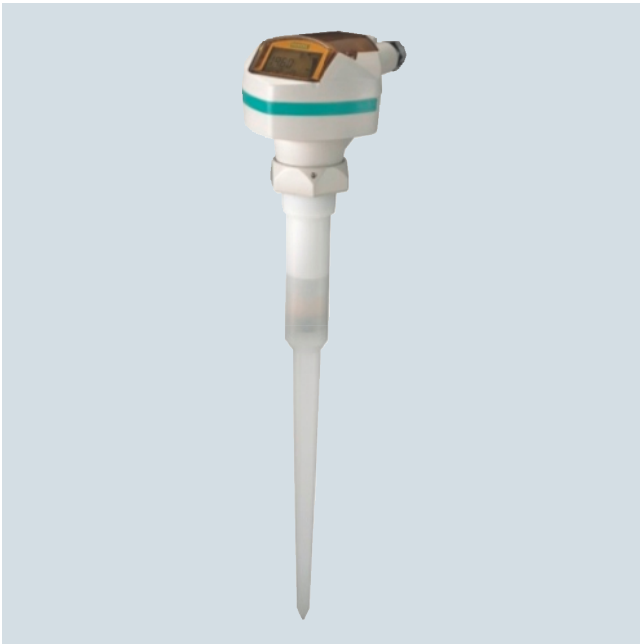


Level Measurement

Continuous level measurement – Radar transmitters

SITRANS Probe LR

Overview



SITRANS Probe LR is a 2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage vessels with nominal pressure and temperature, to a range of 20 m (66 ft).

Benefits

- 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 Process Intelligence signal processing
- Extremely high signal-to-noise ratio
- Auto False-Echo Suppression of false echoes

Application

The Probe LR is ideal for applications with chemical vapors, temperature gradients, vacuum or pressure, such as simple chemical storage or water treatment vessels. SITRANS Probe LR has a range of 0.3 to 20 m (1 to 65 ft).

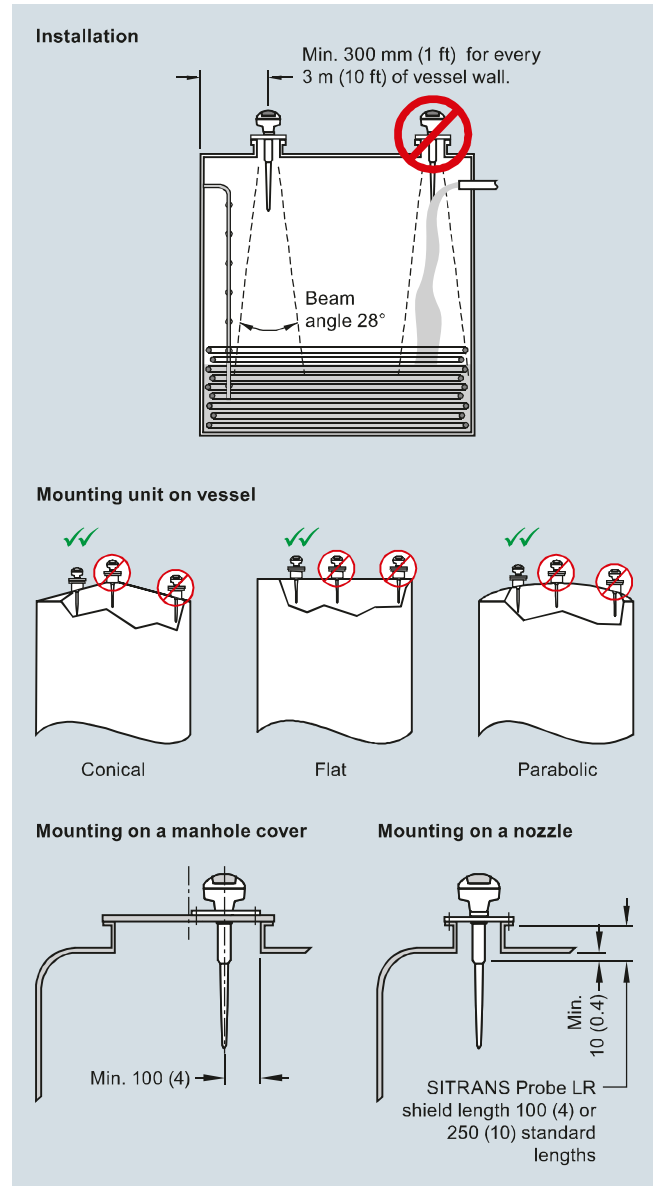
Probe LR is designed for safe and simple programming using the Intrinsically Safe handheld programmer without having to open the instrument's lid. It has a standard Uni-Construction polypropylene rod antenna that offers excellent chemical resistance and is hermetically sealed. The Uni-Construction antenna includes an internal, integrated shield that eliminates vessel nozzle interference.

SITRANS Probe LR incorporates Process Intelligence signal processing. The Probe LR also has a high signal-to-noise ratio leading to improved reliability.

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 handheld programmer.

- Key Applications: chemical storage, wastewater wet well, and drilling mud

Configuration



SITRANS Probe LR installation, dimensions in mm (inch)

Level Measurement

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SITRANS Probe LR


Technical specifications

Mode of operation		Power supply	<ul style="list-style-type: none"> Nominal 24 V DC with max. 550 Ω, maximum 30 V DC 4 ... 20 mA
Measuring principle	Pulse radar level measurement	Certificates and approvals	CSA _{US/C} , CE, FM, C-TICK <ul style="list-style-type: none"> Lloyd's Register of Shipping ABS Type Approval FCC, Industry Canada and European (R&TTE), C-TICK
Frequency	5.8 GHz (North America 6.3 GHz)		
Measuring range	0.3 ... 20 m (1.0 ... 65 ft)	General	CSA _{US/C} , CE, FM, C-TICK
Output		Marine	<ul style="list-style-type: none"> Lloyd's Register of Shipping ABS Type Approval
Analog output	4 ... 20 mA	Radio	FCC, Industry Canada and European (R&TTE), C-TICK
Accuracy	± 0.02 mA	Hazardous	
Span	Proportional or inversely proportional	<ul style="list-style-type: none"> Intrinsically Safe (Brazil) Intrinsically Safe (Canada) 	INMETRO Ex ia IIC T4 Ga CSA Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Group G; Class III
Communications	HART	<ul style="list-style-type: none"> Intrinsically Safe (Europe) Intrinsically Safe (International) Intrinsically Safe (Russia) Intrinsically Safe (USA) 	ATEX II 1G EEx ia IIC T4 IECEx Ex ia IIC T4 GOST-R Ex ia FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III
Performance (reference conditions)		Programming	
Accuracy	± the greater of 0.1 % of range or 10 mm (0.4 inch)	Handheld programmer	HART communicator 375
Influence of ambient temperature	0.003 %/K	PC	SIMATIC PDM
Repeatability	± 5 mm (2 inch)	Intrinsically safe Siemens handheld programmer (optional)	Infrared receiver
Fail-safe	mA signal programmable as high, low or hold (LOE)	<ul style="list-style-type: none"> Approvals (handheld programmer) 	ATEX II 1G EEx ia IIC T4 CSA and FM Class I, Div. 1, Groups A, B, C, D, T6 at max. ambient
Rated operating conditions		Display (local)	Multi-segment alphanumeric liquid crystal with bar graph (representing level) available in four languages
Installation conditions			
<ul style="list-style-type: none"> Location 	Indoor/outdoor		
Ambient conditions (enclosure)			
<ul style="list-style-type: none"> Ambient temperature Installation category Pollution degree 	-40 ... +80 °C (-40 ... +176 °F) I 4		
Medium conditions			
Dielectric constant ϵ_r	$\epsilon_r > 1.6$ (for $\epsilon_r < 3$, use stillpipe)		
Vessel temperature	-40 ... +80 °C (-40 ... +176 °F)		
Vessel pressure	3 bar g (43.5 psi g)		
Design			
Enclosure			
<ul style="list-style-type: none"> Body construction Lid construction Cable inlet 	PBT (Polybutylene Terephthalate) PEI (Polyether Imide) 2 x M20x1.5 or 2 x 1/2" NPT with adapter		
Degree of protection	Type 4X/NEMA 4X, Type 6/ NEMA 6, IP67, IP68		
Weight	1.97 kg (4.35 lb)		
Antenna			
<ul style="list-style-type: none"> Material Dimensions 	Polypropylene rod, hermetically sealed construction Standard 100 mm (4 inch) shield for maximum 100 mm (4 inch) nozzle or optional 250 mm (10 inch) long shield		
Process connections	1 1/2" NPT [(Taper), ANSI/ASME B1.20.1] R 1 1/2" [(BSPT), EN 10226] G 1 1/2" [(BSPP), EN ISO 228-1]		

Level Measurement

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SITRANS Probe LR

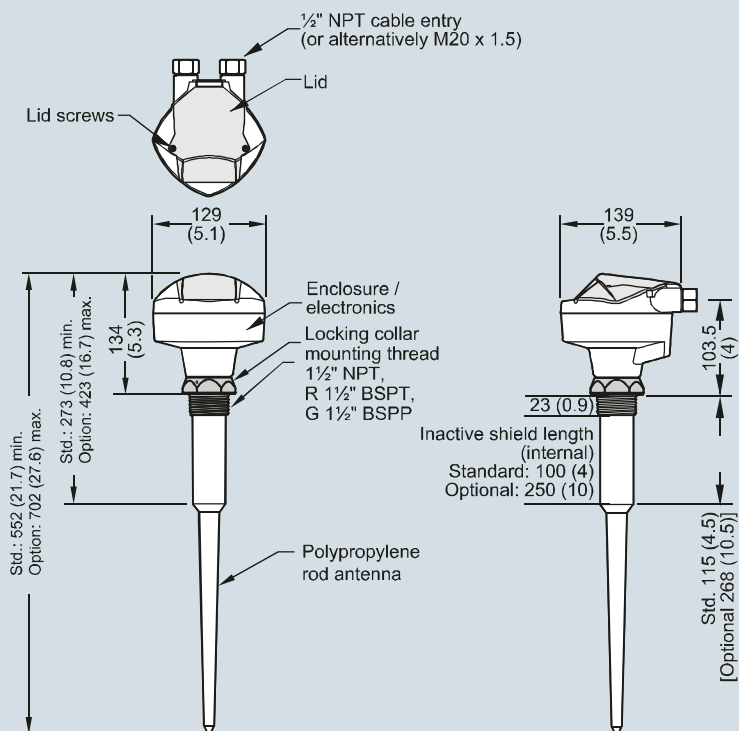
Selection and Ordering data	Article No.	Selection and Ordering data	Order code
SITRANS Probe LR	7ML5430-	Further designs	
2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage vessels with nominal pressure and temperature, to a range of 20 m (66 ft). Max. 3 bar g (43.5 psi g) pressure and 80 °C (176 °F)	 0	Please add "-Z" to Article No. and specify Order code(s).	
Enclosure/Cable inlet Plastic, (PBT), 2 x 1/2" NPT Plastic, (PBT), 2 x M20x1.5	1 2	Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y15
Antenna type/Material - (max. 3 bar and 80 °C) Polypropylene Antenna 1 1/2" NPT [(Taper), ANSI/ASME B1.20.1], comes with integral 100 mm shield R 1 1/2" [(BSPT), EN 10226], comes with integral 100 mm shield G 1 1/2" [(BSPP), EN ISO 228-1], comes with integral 100 mm shield 1 1/2" NPT [(Taper), ANSI/ASME B1.20.1], comes with integral 250 mm shield R 1 1/2" [(BSPT), EN 10226], comes with integral 250 mm shield G 1 1/2" [(BSPP), EN ISO 228-1], comes with integral 250 mm shield	A B C D E F	Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000	C11
Approvals General Purpose, CE, R&TTE, C-TICK General Purpose, CSA _{us/c} , FM, FCC CSA Class I, Div. 1, Groups A, B, C, D, Class II, Div. 1 Group G, Class III, FCC, Intrinsically Safe FM, Class I, II and III, Div. 1, Groups A, B, C, D, E, F, G, FCC, Intrinsically Safe IECEX Ex ia IIC T4; ATEX II 1G EEx ia IIC T4, R&TTE, C-TICK, Intrinsically Safe; INMETRO Ex ia IIC T4 Ga; GOST-R	A B C D E	Operating Instructions English French Spanish German Note: The Operating Instructions should be ordered as a separate item on the order. This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Quick Start and Operating Instructions library.	Article No. 7ML1998-5HR02 7ML1998-5HR11 7ML1998-5HR21 7ML1998-5HR32
Communication/Output 4 ... 20 mA, HART	1	Additional Operating Instructions Multi-language Quick Start manual	A5E32106153
◆ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ◆. For details see page 9/5 in the appendix.		Accessories Handheld programmer, Intrinsically Safe, ATEX II 1G, Ex ia HART modem/RS 232 (for use with a PC and SIMATIC PDM) HART modem/USB (for use with a PC and SIMATIC PDM) One metallic cable gland M20x1.5, rated -40 ... +80 °C (-40 ... +176 °F) SITRANS RD100 Remote display - see Chapter 7 SITRANS RD200 Remote display - see Chapter 7 SITRANS RD500 web, datalogging, alarming, ethernet, and modem support for instrumentation - see Chapter 7	7ML5830-2AH 7MF4997-1DA 7MF4997-1DB 7ML1930-1AP 7ML5750-1AA00-0
		Spare parts Plastic lid For applicable back up point level switch - see point level section on page 4/9	7ML1830-1KB
		◆ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ◆. For details see page 9/5 in the appendix.	

Level Measurement

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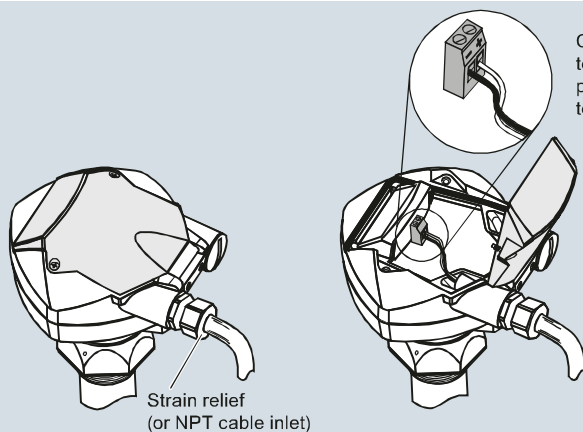
SITRANS Probe LR

Dimensional drawings

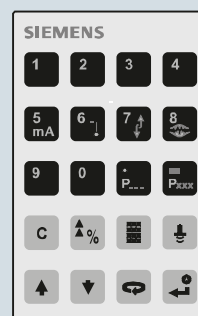


SITRANS Probe LR, dimensions in mm (inch)

Schematics



Hand Programmer



SITRANS Probe LR
Part number: 7ML5830-2AH

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

SITRANS Probe LR connections