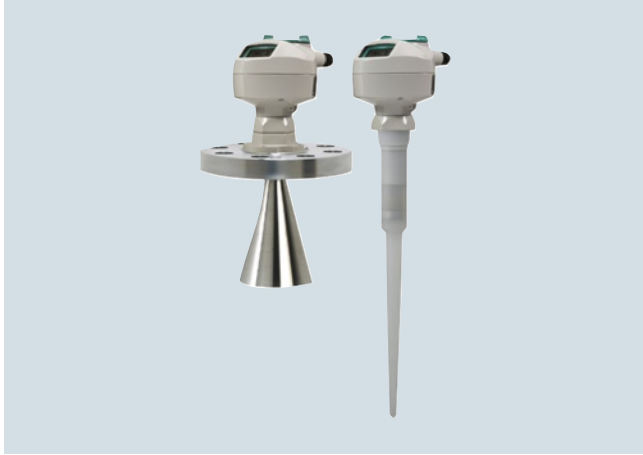


Level Measurement

Continuous level measurement – Radar transmitters

SITRANS LR200

Overview



SITRANS LR200 is a 2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in process vessels including high temperature, pressure, agitation, and turbulence to a range of 20 m (65 ft).

Benefits

- Graphical local user interface (LUI) makes operation simple with plug-and-play setup using the intuitive Quick Start Wizard
- LUI displays echo profiles for diagnostic support
- Communication using HART or PROFIBUS PA
- Process Intelligence signal processing for improved measurement reliability and Auto False-Echo Suppression of fixed obstructions
- Programming using infrared Intrinsically Safe handheld programmer or SIMATIC PDM

Application

SITRANS LR200's unique design allows safe and simple programming using the Intrinsically Safe handheld programmer without having to open the instrument's lid. It also features a built-in alphanumeric display in four languages.

The SITRANS LR200 has a standard Uni-Construction polypropylene rod antenna that offers excellent chemical resistance and is hermetically sealed. The Uni-Construction antenna features an internal, integrated shield that eliminates vessel nozzle interference.

Start-up is easy with as few as two parameters for basic operation. Installation is simplified as the electronics are mounted on a rotating head that swivels, allowing the instrument to line up with conduit or wiring connections or simply to adjust the position for easy viewing. SITRANS LR200 features Process Intelligence signal-processing technology for superior reliability.

- Key Applications: liquid process vessels with agitators, vaporous liquids, high temperatures, asphalt, digesters

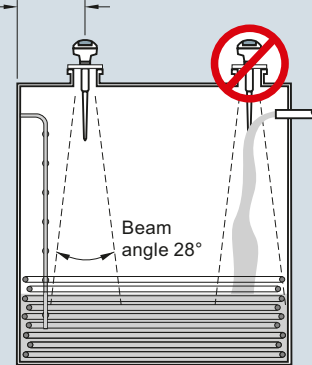
Configuration

Installation

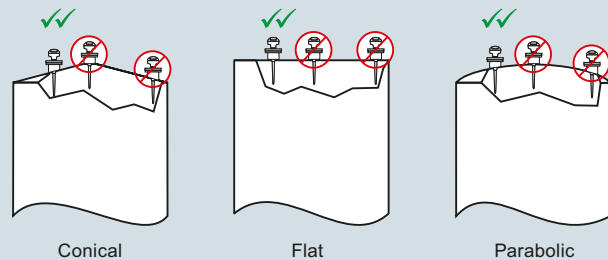
Note:

- Beam angle is the width of the cone where the energy density is half of the peak energy density.
- Beam angle for horn antenna dependent on horn size
- The peak energy density is directly in front of and in line with the rod antenna.
- There is a signal transmitted outside of the beam angle; therefore false targets may be detected.

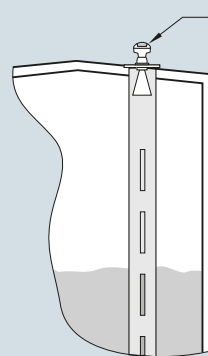
Min. 300 mm (1 ft) for every 3 m (10 ft) of vessel wall.



Mounting unit on vessel

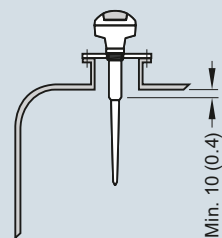


Mounting unit on stilling well



Orient front or back of device toward stillpipe slots.

Mounting on a nozzle



SITRANS LR200 installation, dimensions in mm (inch)

Technical specifications

Mode of operation		Power supply	
Measuring principle	Radar level measurement	4 ... 20 mA/HART	Nominal 24 V DC (max. 30 V DC) with max. 550 Ω Nominal 24 V DC (max. 30 V DC) with max. 250 Ω
Frequency	5.8 GHz (North America 6.3 GHz)	<ul style="list-style-type: none"> General Purpose, Non-incendive, Intrinsically Safe Flame proof, Increased safety, Explosion proof 	
Measuring range	0.3 ... 20 m (1.0 ... 65 ft)	PROFIBUS PA	<ul style="list-style-type: none"> 10.5 mA Per IEC 61158-2
Output		Certificates and approvals	
<ul style="list-style-type: none"> Analog output Accuracy Span Communications 	4 ... 20 mA ± 0.02 mA Proportional or inversely proportional HART Optional: PROFIBUS PA (Profile 3.0, Class B) Programmable as high, low or hold (Loss of Echo)	General	CSA _{US/C} , CE, FM, RCM
<ul style="list-style-type: none"> Fail-safe 		Marine	<ul style="list-style-type: none"> Lloyd's Register of Shipping ABS Type Approval
Performance (according to reference conditions IEC60770-1)		Radio	FCC, Industry Canada and European (R&TTE), RCM
<ul style="list-style-type: none"> From end of antenna to 600 mm: Remainder of range: 	40 mm (1.57 inch) 10 mm (0.4 inch) or 0.1 % of span (whichever is greater)	Hazardous	INMETRO Ex ia IIC T4 Ga CSA/FM, Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III, T4 CSA/FM, Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III, T4 FM, Class I, Div. 2, Groups A, B, C, D, T5 NEPSI Ex d mb ia IIC T4/ Ex e mb ia IIC T4 ATEX II 1/2 G Ex d mb ia IIC T4 Ga/Gb ATEX II 1/2 G Ex e mb ia IIC T4 Ga/Gb ATEX II 1G Ex ia IIC T4 IECEx Ex ia IIC T4 GOST-R Ex ia
Rated operating conditions		<ul style="list-style-type: none"> Intrinsically Safe (Brazil) Explosion Proof (Canada/USA) Intrinsically Safe (Canada/USA) Non-incendive (USA) Flame Proof/Increased Safety (China) Flame Proof (Europe) Increased Safety (Europe) Intrinsically Safe (Europe) Intrinsically Safe (International) Intrinsically Safe (Russia) 	
Installation conditions	Indoor/outdoor	Programming	
<ul style="list-style-type: none"> Location 		<ul style="list-style-type: none"> Intrinsically Safe Siemens handheld programmer - Approvals for handheld programmer 	Infrared receiver
Ambient conditions (enclosure)	-40 ... +80 °C (-40 ... +176 °F)	IS model:	
<ul style="list-style-type: none"> Ambient temperature Installation category Pollution degree 		<ul style="list-style-type: none"> ATEX II 1GD Ex ia IIC T4 Ga Ex iaD 20 T135 °C T_a = -20 ... +50 °C CSA/FM Class I, II, and III, Div. 1, Groups A, B, C, D, E, F, G, T6 T_a = +50 °C HART communicator 375 SIMATIC PDM AMS Multi-segment alphanumeric liquid crystal with bar graph (representing level) available in four languages 	
Medium conditions		<ul style="list-style-type: none"> Handheld communicator PC Display (local) 	
<ul style="list-style-type: none"> Dielectric constant ϵ_r Vessel temperature and pressure 	$\epsilon_r > 1.6$ (for $\epsilon_r < 3$, use stillpipe) Varies with connection type; see Pressure/Temperature curves for more information		
Design			
Enclosure	Aluminum, polyester powder coated		
<ul style="list-style-type: none"> Material Cable inlet 		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	< 2.82 kg (6.21 lb) (polypropylene rod antenna)		
Display (local)	Multi-segment alphanumeric liquid crystal with bar graph (representing level) available in four languages		
Antenna	Polypropylene rod, hermetically sealed construction, optional PTFE		
<ul style="list-style-type: none"> Material 		Standard 100 mm (4 inch) shield for maximum 100 mm (4 inch) nozzle, or optional 250 mm (10 inch) long shield	
<ul style="list-style-type: none"> Dimensions 	Refer to SITRANS LR200 Antennas for optional rods and horns		
<ul style="list-style-type: none"> Optional rods and horn 	1 1/2" NPT [(Taper), ANSI/ASME B1.20.1] R 1 1/2" [(BSPT), EN 10226], or G 1 1/2" [(BSPP), EN ISO 228-1] (polypropylene rod antenna)		
Process connections	Refer to SITRANS LR200 Antennas for more connections		
<ul style="list-style-type: none"> Process connection 			
<ul style="list-style-type: none"> Flange connection 			