

Level Measurement








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You can download all instructions, catalogs and certificates for SITRANS L free of charge: www.siemens.com/level

Level Measurement

Product overview

Overview

Application	Device description	Page	Programming Software	
Point level measurement - RF Capacitance switches				
	Powerful range of level switches suitable for a variety of industries.	Pointek CLS100/CLS200/CLS300		
	<ul style="list-style-type: none">CLS100: compact 2-wire inverse frequency shift capacitance switch for level detection in constricted spaces, interfaces, solids, liquids, slurries, and foam.	4/10	-	
	<ul style="list-style-type: none">CLS200: a versatile inverse frequency shift capacitance level switch with optional rod/cable choices and configurable output, ideal for detection of liquids, solids, slurries, foam, and interfaces; digital version (with PROFIBUS PA) includes a display and provides additional diagnostic features. Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511.	4/16	SIMATIC PDM	
	<ul style="list-style-type: none">CLS300: inverse frequency shift capacitance level switch with optional rod/cable choices and configurable output. It is ideal for detecting liquids, solids, slurries, foam and interfaces in demanding conditions where high pressure and temperatures are present; digital version (with PROFIBUS PA) includes a display and provides additional diagnostic features.	4/40	SIMATIC PDM	
Point level measurement - Vibrating switches				
	Reliable vibrating point level switches for liquid and slurry applications across all industries.	SITRANS LVL100/LVL200		
	<ul style="list-style-type: none">LVL100: compact vibrating level switch for use in liquid and slurry applications such as overflow, high, low, and demand level applications. Also ideal for dry run protection.	4/62	-	
	<ul style="list-style-type: none">LVL200: advanced vibrating level switch for use in liquid and slurry applications. Suited for most hazardous area applications such as: overflow, high, low, demand, and dry run protection. Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511.	4/69	-	
	Reliable vibrating point level switches for bulk solids in a wide variety of applications.	SITRANS LVS100/LVS200		
	<ul style="list-style-type: none">LVS100: vibrating point level switch designed to be impervious to external vibrations and to provide reliable performance in demanding bulk solids applications.	4/94	-	
	<ul style="list-style-type: none">LVS200: vibrating point level switch designed to be impervious to external vibrations and to provide reliable performance in demanding bulk solids applications.	4/98	-	
Point level measurement - Rotating paddle switches				
	Reliable rotating point level switches for bulk solids in a wide variety of applications.	SITRANS LPS200		
	<ul style="list-style-type: none">Rotating paddle switch for detection of high, low, and demand levels in a wide variety of bulk solids industries. Unique engineering provides long-lasting, reliable performance.Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511.	4/108	-	
Point level measurement - Ultrasonic switch				
	Ultrasonic non-contacting switch with two switch points for level detection of bulk solids, liquids and slurries in a wide variety of industries.	Pointek ULS200 <ul style="list-style-type: none">Rugged design, no moving parts, and virtually maintenance-free.Transducer available in ETFE or PVDF copolymer and therefore inert to most chemicals.	4/120	-




Application	Device description	Page	Programming Software	
Continuous level measurement - Ultrasonic transmitters				
	SITRANS LU150 and LU180 are short-range integrated ultrasonic level transmitters. These 2-wire, 4 to 20 mA loop powered transmitter are ideal for liquids, slurries, and bulk materials in open or closed vessels to 5 m (16.4 ft).	SITRANS LU150 <ul style="list-style-type: none">• LU150 is approved for general purpose applications.• Easy to install, program, and maintain.• Patented Sonic Intelligence echo processing.	4/126	-
		SITRANS LU180 <ul style="list-style-type: none">• LU180 is approved for intrinsically safe applications.• Easy to install, program, and maintain.• Patented Sonic Intelligence echo processing.	4/131	-
	2-wire loop powered ultrasonic transmitter for level, volume, and flow monitoring of liquids in open channels, storage vessels and simple process vessels.	SITRANS Probe LU <ul style="list-style-type: none">• Continuous level measurement up to 12 m (40 ft) range.• Sonic Intelligence signal processing.• Auto False-Echo Suppression.	4/136	SIMATIC PDM
	Compact level transmitter with integrated transducer for accurate level measurement of liquid applications.	The Probe <ul style="list-style-type: none">• A short-range integrated ultrasonic level transmitter, ideal for liquids and slurries in open or closed vessels.• 3 wire system with mA output and alarm relay.	4/141	-
Continuous level measurement - Ultrasonic controllers				
	The SITRANS LUT400 series controllers are compact, single point, long-range ultrasonic controllers for continuous level or volume measurement of liquids, slurries, and solids, and high accuracy monitoring of open channel flow.	SITRANS LUT420/430/440 <p>In addition to industry leading 1 mm (0.04 inch) accuracy, each of the three models in the series are compatible with our full range of EchoMax transducers and offer varying degrees of pump, alarm, and other control functionality, all from a very compact and easy-to-use interface.</p> <ul style="list-style-type: none">• 1 mm accuracy.• HART communications.• Next Generation Sonic Intelligence.	4/144	SIMATIC PDM
	Versatile short- to medium-range ultrasonic single- and dual-vessel level controller for virtually any application in a wide range of industries.	MultiRanger 100/200 <ul style="list-style-type: none">• Using non-contacting ultrasonic technology, the controller measures the level in short to medium range applications up to 15 m (50 ft) of solids, liquids, or slurries• Auto False-Echo Suppression of false echoes	4/152	SIMATIC PDM
	Ultrasonic level controller for up to six pumps - control, differential control, and open channel flow monitoring.	HydroRanger 200 <ul style="list-style-type: none">• An economical, low-maintenance solution delivering control efficiency and productivity needed to meet today's exacting standards• Auto False-Echo Suppression of false echoes	4/161	SIMATIC PDM

Level Measurement

Product overview

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Application	Device description	Page	Programming Software
Continuous level measurement - Ultrasonic transducers			
	ST-H: ETFE or PVDF transducer for chemicals XRS-5: Standard transducer for applications to 8 m (26 ft)	ST-H/EchoMax XRS-5 <ul style="list-style-type: none"> ST-H: the narrow design of the ST-H allows the sensor to be mounted using a 2 inch connection XRS-5: narrow beam angle of only 10°, measuring range maximum 8 m (26 ft) for measurement of liquids, solids, and slurries 	4/170 - 4/173 -
	Transducers for liquids and bulk solids XPS series: Hermetically sealed PVDF enclosure for chemical immunity	EchoMax XPS <ul style="list-style-type: none"> XPS series offers versions for various distances up to 30 m (100 ft) and up to a maximum temperature of 95 °C (203 °F) 	4/177 -
Continuous level measurement - Radar transmitters			
	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).	SITRANS Probe LR <ul style="list-style-type: none"> Uni-Construction polypropylene rod antenna standard Process Intelligence signal processing Auto False-Echo Suppression of false echoes 	4/192 SIMATIC PDM
	2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, to a range of 20 m (66 ft).	SITRANS LR200 <ul style="list-style-type: none"> Program without opening the lid, even in hazardous areas, using patented infrared IS handheld programmer Special Uni-Construction hermetically sealed polypropylene rod antenna has integrated threaded connection Built-in alphanumeric display with support in four languages 	4/196 SIMATIC PDM AMS SITRANS DTM
	2-wire, 25 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, to a range of 20 m (66 ft); antenna designs ideal for small vessels, low dielectric media, food & beverages and corrosive/aggressive media.	SITRANS LR250 <ul style="list-style-type: none"> Simple operation using the graphical local user interface (LUI) Plug-and-play setup using the intuitive Quick Start Wizard 25 GHz high frequency allows for small horn antennas and easy mounting in nozzles Process Intelligence signal processing for improved measurement reliability and Auto False-Echo Suppression of fixed obstructions 	4/211 SIMATIC PDM AMS SITRANS DTM
	2-wire, 25 GHz pulse radar level transmitter for continuous monitoring of solids and liquids up to 30 m (98.4 ft); ideal for level measurement with quick response or intrinsically safe requirements.	SITRANS LR260 <ul style="list-style-type: none"> Simple operation using the graphical local user interface (LUI) Plug-and-play setup using the intuitive Quick Start Wizard 25 GHz high frequency allows for small horn antennas and easy mounting in nozzles Process Intelligence signal processing for improved measurement reliability and Auto False-Echo Suppression of fixed obstructions 	4/269 SIMATIC PDM SITRANS DTM

Application	Device description	Page	Programming Software
 <p>4-wire, 24 GHz FMCW radar level transmitter with extremely high signal-to-noise ratio and advanced signal processing for continuous monitoring of solids up to 100 m (328 ft); ideal for measurement in extreme dust and high temperature applications</p>	<p>SITRANS LR460</p> <ul style="list-style-type: none"> • Process Intelligence for advanced signal processing and quick and easy adjustment • Self-guided Quick Start Wizard for plug and play start-up • 100 m (328 ft) range for long-range and difficult applications 	4/275	SIMATIC PDM
 <p>2-wire, 78 GHz FMCW radar level transmitter for continuous monitoring of solids and liquids to a range of 100 m (328 ft); easy to install, plug and play, virtually no maintenance</p>	<p>SITRANS LR560</p> <ul style="list-style-type: none"> • Rugged stainless steel design • 78 GHz high frequency provides very narrow beam, virtually no mounting nozzle noise, and optimal reflection from sloped solids • Aimer option to direct beam to area of interest, such as draw point of cone • Air purge connection is included for self-cleaning of extremely sticky solids • Lens antenna is highly resistant to product buildup • Local display interface (LDI) allows local programming and diagnostics 	4/281	SIMATIC PDM AMS SITRANS DTM
Continuous level measurement - Guided wave radar transmitters			
 <p>Guided wave radar transmitters for short- and medium-range level, level/interface, and volume measurement of liquids, slurries, and solids. The four LG models are unaffected by changes in process conditions, high temperatures and pressures, and provide a wide range of hygienic options.</p>	<p>SITRANS LG240/250/260/270</p> <ul style="list-style-type: none"> • Measures accurately on materials with dielectric (dK) as low as 1.4 • Guided wave radar measurement for up to 2 mm (0.08 inch) accuracy • Measures level, level/interface, and volume of solids, slurries, and liquids • 4 button programming for quick setup • Reliable level measurement on harsh applications with pressure up to 400 bar g (40 000 kPa) and temperatures as high as 450 °C (842 °F) 	4/288	SIMATIC PDM SITRANS DTM
Continuous level measurement -Capacitance transmitters			
 <p>For liquids and solids applications, ideal for standard industrial applications in chemical, hydrocarbon processing, food and beverage, and mining, aggregate and cement industries.</p>	<p>SITRANS LC300</p> <ul style="list-style-type: none"> • Sophisticated, but easy-to-adjust microprocessor combined with field-proven probes • Active shield technology ensures measurements are unaffected by vapors, product deposits, dust, and condensation 	4/332	-
Communications			
	<p>SmartLinx Module, Dolphin Plus software</p> <ul style="list-style-type: none"> • Optional communication modules, SmartLinx, provide direct digital connection to popular industrial fieldbus systems • Dolphin Plus for quick and easy configuring, monitoring, tuning, and diagnostics of Siemens devices 	4/348 4/349	- -

Supplied product documentation on DVD and safety instructions



The scope of delivery of the Siemens products for process instrumentation includes a multilingual instruction sheet with **safety instructions** as well as a uniform **mini DVD – Process Instrumentation and Weighing Systems**.

This DVD contains the most important manuals and certificates for the Siemens process instrumentation and weighing technology portfolio. The delivery may also contain product-specific or order-specific printed materials.

For additional information, refer to the Annex on page 10/3.

Level Measurement

Product overview

Level Measurement Selector

Continuous Level						
Conditions	Ultrasonic	Radar	Guided Wave Radar	Capacitance	Gravimetric	Hydrostatic pressure
Measurement						
Level	■	■	■	■	◆	■
Interface (liquid/liquid)			■	◆		■
Interface (liquid/solid)	◆			◆		
Volume	■	■	■	◆	◆	■
Mass					■	■
Flow (open channel)	■	◆				
Level Applications						
Changing density	■	■	■	■		
Changing dielectric	■	■	■	◆	■	■
Aggressive chemicals	■	■	■	■	■	■
Pressure/vacuum		■	■	■	■	■
High temperature		■	■	■	■	■
Cryogenic			■		■	
Turbulence	■	■	◆	◆	■	■
Steam		◆	■	◆	■	■
Hydrocarbon vapors/solvents		■	■	■	■	■
Foam	◆	◆	◆	◆	■	■
Buildup	◆	◆	◆	◆	■	◆
High viscosity	■	■	◆	◆	■	◆
Dust	◆	■	■	■	■	
Solids powders	◆	■	◆	◆	■	
Solids granules/pellets < 25 mm (1 inch)	■	■	◆	◆	■	
Solids > 25 mm (1 inch)	■	■			■	
High angle of repose	◆	■	■	◆	■	
■ preferred ◆ condition dependent						

Level Measurement

Product overview

Level Measurement Selector

Point Level				
Conditions	Vibration	Capacitance	Paddle	Ultrasonic
Measurement				
Level	■	■	■	■
Interface (liquid/liquid)		■		
Interface (liquid/solid)	◆			
Volume				
Mass				
Flow (open channel)				
Level Applications				
Changing density	■	■	■	■
Changing dielectric	■	◆	■	■
Aggressive chemicals	■	■	◆	■
Pressure/vacuum	■	■	■	
High temperature	■	■	■	
Cryogenic	■			
Turbulence	◆	◆		■
Steam	■	◆	■	
Hydrocarbon vapors/solvents	■	◆		
Foam	◆	◆		◆
Buildup	◆	◆	■	◆
High viscosity	◆	◆	◆	■
Dust	■	■	■	◆
Solids powders	■	◆	■	◆
Solids granules/pellets < 25 mm (1 inch)	■	◆	■	■
Solids > 25 mm (1 inch)	◆	◆	■	■
High angle of repose	■	■	■	◆
■ preferred ◆ condition dependent				

Level Measurement

Point level measurement
RF Capacitance switches

RF Capacitance

Overview

Introduction

Inverse frequency shift capacitance point level and material detection switches are designed to withstand the harsh environments of high pressure and high temperature applications.

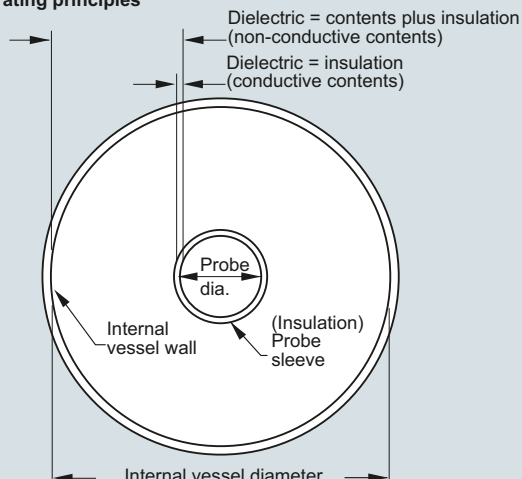
Inverse Frequency Technology

Siemens inverse frequency shift capacitance devices incorporate a unique frequency-based approach to level measurement. The capacitance units monitor the effect of capacitance based on frequency change. The relationship between capacitance and frequency is inverse. Because small level changes result in a large frequency change, the result is excellent resolution and accuracy.

Principle of Operation

Inverse frequency shift capacitance devices require two components: a reference electrode of a variable capacitor and the measurement electrode. In capacitive level measurement, the environment (typically the vessel wall) acts as the reference electrode, while the probe supplies the measurement electrode. The dielectric is composed of the vessel contents and, if the measurement electrode is insulated, the insulating layer.

Operating principles



Inverse frequency shift capacitance operation

Capacitance is affected by the surface area of the electrodes, the separation distance between the electrodes and the dielectric constant of the vessel contents. The dielectric constant is the measure of a material's ability to store energy. The relative dielectric constant of air (vacuum) is 1; all other materials have a higher value.

Mode of operation

Common Terms

Capacitance

The property of a system of conductors and dielectrics that permits the storage of electricity when a potential difference exists between the conductors. Its value is expressed as the ratio of a quantity of electricity to a potential difference and the unit is a Farad.

Capacitor

A device in a circuit that has the potential to store an electric charge. Typically a capacitor has two conductors or electrodes separated by a layer of a non-conducting material called a dielectric. With the conductors on opposite sides of the dielectric layer oppositely charged by a source of voltage, the electrical energy of the charged system is stored in the polarized dielectric.

Dielectric constant

The ability of a dielectric to store electrical potential energy under the influence of an electric field. This is measured by a ratio which compares the capacitance of a condenser with the material as dielectric to its capacitance with a vacuum/dry air as dielectric: the dielectric constant of air is 1.

Active shield

The portion of the probe isolated from the active measurement section. The sensor signal is connected to the active shield portion of the probe, eliminating the electrical potential difference between the shield and the measurement section. So, the shield portion of the probe near the process connection is not affected by changes in vapor concentration, material buildup, dust, or condensation.

Technical specifications

Point Level Measurement			
Criteria	Pointek CLS100	Pointek CLS200	Pointek CLS300
Typical applications	Liquids, slurries, powders, granules, applications in constricted spaces	Liquids, slurries, powders, granules, foam, food, and pharmaceuticals, petrochemicals	Liquids, slurries, powders, granules, relatively high pressure, and temperature, hazardous areas
Max. length including sensor	100 mm (4 inch)	Rod: 5.5 m (18 ft) Cable: up to 30 m (98 ft)	Rod: 1 m (40 inch) Cable: 25 m (82 ft)
Process temperature (Temperature ratings are pressure dependent. See Pressure/Temperature curves for respective product.)	<ul style="list-style-type: none"> Stainless steel process connection: -30 ... +100 °C (22 ... +212 °F) Fully Synthetic (PPS process connection): -10 ... +100 °C (14 ... 212 °F) 	<ul style="list-style-type: none"> -40 ... +85 °C (-40 ... +185 °F) With thermal isolator: -40 ... +125 °C (-40 ... +257 °F) 	<ul style="list-style-type: none"> -40 ... +200 °C (-40 ... +392 °F) HT version: -40 ... +400 °C (-40 ... +752 °F)
Process pressure (Pressure ratings are temperature dependent. See Pressure/Temperature curves for respective product.)	Up to 10 bar g (146 psi g)	<ul style="list-style-type: none"> Rod versions: Up to 25 bar g (365 psi g) Cable version: Up to 10 bar g (146 psi g) 	Up to 35 bar g (511 psi g)
Output	Stainless steel cable or enclosure version: <ul style="list-style-type: none"> 4 ... 20/20 ... 4 mA, 2-wire current loop Solid-state output Fully-synthetic version (PPS) <ul style="list-style-type: none"> Relay output 	Standard: <ul style="list-style-type: none"> 1 SPDT Form C relay, solid-state switch Digital: <ul style="list-style-type: none"> Solid-state switch included 	Standard: <ul style="list-style-type: none"> 1 SPDT Form C relay, solid-state switch Digital: <ul style="list-style-type: none"> Solid-state switch included
Communications		Standard: <ul style="list-style-type: none"> 3 LED indicators Digital: <ul style="list-style-type: none"> PROFIBUS PA; SIMATIC PDM compatible 	Standard: <ul style="list-style-type: none"> 3 LED indicators Digital: <ul style="list-style-type: none"> PROFIBUS PA; SIMATIC PDM compatible
Power Specifications	Standard: <ul style="list-style-type: none"> 12 ... 33 V DC Intrinsically Safe (Stainless steel version only): <ul style="list-style-type: none"> 10 ... 30 V DC 	Standard: <ul style="list-style-type: none"> 12 ... 250 V AC/DC, 0 ... 60 Hz, 2 W max. Digital: <ul style="list-style-type: none"> Bus voltage: 12 ... 30 V DC, IS version: 12 ... 24 V DC Current consumption: 12.5 mA 	Standard: <ul style="list-style-type: none"> 12 ... 250 V AC/DC, 0 ... 60 Hz, 2 W max. Digital: <ul style="list-style-type: none"> Bus voltage: 12 ... 30 V DC, IS version: 12 ... 24 V DC Current consumption: 12.5 mA
Approvals	Stainless steel cable or enclosure version: <ul style="list-style-type: none"> CE, CSA, FM, ATEX, RCM, Lloyds Register, WHG Fully-synthetic version (PPS): <ul style="list-style-type: none"> CSA, FM 	CSA, FM, CE, ATEX, RCM, Lloyds Register, WHG, Vlare II	CSA, FM, CE, ATEX, RCM, Lloyds Register, WHG, Vlare II

Level Measurement

Point level measurement
RF Capacitance switches

Pointek CLS100

Overview



Pointek CLS100 is a compact, 2-wire, inverse frequency shift capacitance switch for level and material detection in constricted spaces, interfaces, solids, liquids, slurries, and foam; with the ability to tune out buildup on probe.

Benefits

- Easy installation with verification by built-in LED
- Low maintenance with no moving parts
- Sensitivity adjustment
- Integrated cable or PBT enclosure versions available
- Intrinsically Safe, Dust Ignition Proof, and General Purpose options available

Application

Pointek CLS100's short insertion length of 100 mm (4 inch) and versatility in various applications and in vessels or pipes makes it a good replacement for traditional capacitance sensors.

Its advanced tip-sensing technology provides accurate, repeatable switchpoint performance. The PPS (Polyphenylene sulfide) probe [optional PVDF (Polyvinylidene Fluoride)] is chemically resistant with an effective process operating temperature range from -30 to +100 °C (-22 to +212 °F) (7ML5501), and -10 to +100 °C (14 to 212 °F) (7ML5610). The fully potted design ensures reliability in a vibrating environment such as agitated tanks up to 4 g. When used with a SensGuard protection cover, the CLS100 is protected from shearing, impact, and abrasion in tough primary processes.

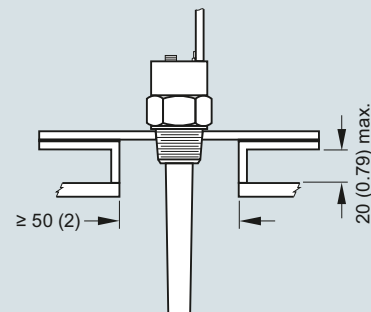
The Pointek CLS100 is available in three versions. The integral cable version has a stainless steel process connection and probe options of PPS or PVDF. The fully synthetic version has a thermoplastic polyester enclosure with a PPS process connection combined with a PPS probe. The standard enclosure version has a thermoplastic polyester enclosure with a stainless steel process connection in combination with a PPS or PVDF probe.

- Key Applications: liquids, slurries, powders, granules, food and pharmaceuticals, chemicals, hazardous areas

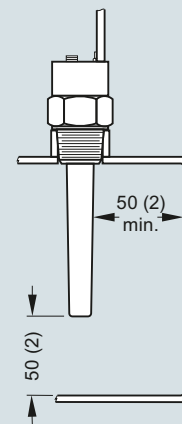
Configuration

Installation

Standpipes



Wall restriction



Pointek CLS100 installation, dimensions in mm (inch)

Technical specifications

	Stainless steel process connection (integral cable or enclosure version) (7ML5501)	Fully synthetic process connection (enclosure version only) (7ML5610)
Mode of operation		
Measuring principle	Inverse frequency shift capacitive level detection	Inverse frequency shift capacitive level detection
Input		
Measured variable	Change in picoFarad (pF)	Change in picoFarad (pF)
Output		
Output signal		
• Alarm output	4 ... 20/20 ... 4 mA 2-wire loop	4 ... 20/20 ... 4 mA 2-wire loop
• Switch output ¹⁾	Solid-state: 30 V DC/30 V AC, max. 82 mA	Max. switching voltage: 60 V DC/30 V AC Max. switching current: 1 A
• Fail-safe mode	Min. or max.	Min. or max.
Accuracy		
Repeatability	2 mm (0.08 inch)	2 mm (0.08 inch)
Rated operating conditions²⁾		
Installation conditions		
• Location	Indoor/outdoor	Indoor/outdoor
Ambient conditions		
• Ambient temperature	-30 ... +85 °C (-22 ... +185 °F)	-10 ... +85 °C (14 ... 185 °F)
• Installation category	I	I
• Pollution degree	4	4
Medium conditions		
• Relative dielectric constant ϵ_r	Min. 1.5	Min. 1.5
• Process temperature	-30 ... +100 °C (-22 ... +212 °F)	-10 ... +100 °C (14 ... 212 °F)
• Pressure (vessel)	-1 ... +10 bar g (-14.6 ... +146 psi g), nominal ²⁾	-1 ... +10 bar g (-14.6 ... +146 psi g), nominal
• Degree of protection		
- Enclosure version	IP68/Type 4/NEMA 4	IP68/Type 4/NEMA 4
- Integral cable version	IP65/Type 4/NEMA 4	Not applicable
• Cable inlet	½" NPT (M20 x 1.5 optional)	½" NPT (M20 x 1.5 optional)
Design		
	Enclosure/Integral cable version	Fully synthetic version
Material		
• Body (Enclosure version)	Thermoplastic polyester	Thermoplastic polyester
• Lid (Enclosure version)	Transparent thermoplastic polycarbonate (PC)	Transparent thermoplastic polycarbonate (PC)
• Integrated cable body (Integral cable version)	316L stainless steel	Not applicable

	Stainless steel process connection (integral cable or enclosure version) (7ML5501)	Fully synthetic process connection (enclosure version only) (7ML5610)
Sensor length (nominal)	100 mm (4 inch)	100 mm (4 inch)
Process connection material of probe/wetted parts ³⁾	Connection: 316L stainless steel; Process seal: FKM (optional FFKM); Sensor: PPS (optional PVDF) ⁴⁾	PPS process connection and PPS sensor (Uni-Construction)
Connection (Enclosure version)	Internal 5-point terminal block, ½" NPT wiring entrance, M20 x 1.5 optional	Removable internal 5-point terminal block, ½" NPT wiring entrance, M20 x 1.5 optional
Connection (Integral cable version)	4 conductors, 1 m (3.3 ft), 0.5 mm² (22 AWG), shielded, polyester jacket	Not applicable
Process connection	¾" NPT [(Taper), ANSI/ASME B1.20.1] R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	¾" NPT [(Taper), ANSI/ASME B1.20.1] R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]
Power supply		
Standard	12 ... 33 V DC	12 ... 33 V DC
Intrinsically Safe	10 ... 30 V DC (Intrinsically Safe barrier required)	Not applicable
Certificates and approvals	<ul style="list-style-type: none"> • General: CE, CSA, FM, RCM • Marine: Lloyds Register of Shipping, categories ENV1, ENV2, and ENV5 Dust Ignition Proof (barrier required): CSA/FM Class II and III, Div. 1, Groups E, F, G T4 • Intrinsically Safe (barrier required): CSA/FM Class I, II, and III, Div. 1, Groups A, B, C, D, E, F, G T4 ATEX II 1 GD 1/2GD EEx ia IIC T4 to T6 T107 °C • Overfill protection: WHG (Germany) 	<ul style="list-style-type: none"> • General: CSA, FM

¹⁾ When synthetic process connection version (7ML5610) is used in wet locations, switching voltage of the relay is limited to 35 V DC/16 V AC.

²⁾ When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves on page 4/14.

³⁾ For caustic materials, consult a local sales person for alternative O-rings. For more information, please visit http://www.automation.siemens.com/aspa_app.

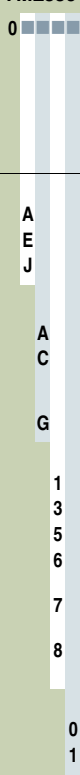
⁴⁾ When FFKM O-ring (Option A22) is selected, process temperature is restricted to -20 °C (-4 °F).

Level Measurement

Point level measurement

RF Capacitance switches

Pointek CLS100

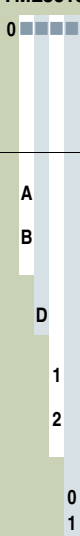
Selection and Ordering data	Article No.
Pointek CLS100, stainless steel process connection Compact 2-wire inverse frequency shift capacitance switch for level and material detection in constricted spaces, interfaces, solids, liquids, slurries and foam, with the ability to tune out buildup on probe. Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5501- 
Process connection ¾" NPT [(Taper), ANSI/ASME B1.20.1] R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	A E J
Approvals General Purpose: CE, CSA, FM, RCM CSA/FM Class I, II, and III, Div. 1, Groups A, B, C, D, E, F, G T4; ATEX II 1 GD 1/2GD EEx ia IIC T4 ... T6 T107 °C ¹⁾ CSA/FM Class II and III, Div. 1, Groups E, F, G ¹⁾	A C G
Device version Integral cable version (PPS probe) Enclosure version (PPS probe), ½" NPT cable inlet Integral cable version with PVDF probe body Enclosure version with PVDF probe body (½" NPT cable inlet) Enclosure version (PPS probe), M20 x 1.5 cable inlet Enclosure version with PVDF probe body, M20 x 1.5 cable inlet	1 3 5 6 7 8
Overfill protection Not required Required (WHG)	0 1

¹⁾ Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection

Selection and Ordering data	Order code
Further designs Please add "-Z" to Article No. and specify Order code(s).	
Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 20 characters) specify in plain text	Y17
FFKM seal O-ring ¹⁾	A22
Material inspection Certificate Type 3.1 per EN 10204	C12
Operating Instructions Note: due to ATEX regulations one Quick start manual is included with every product. All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	

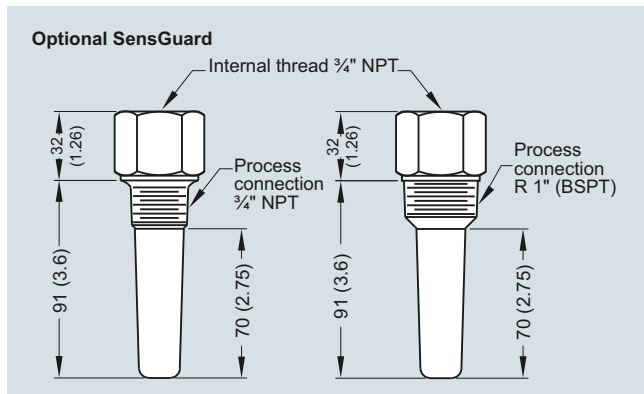
¹⁾ See Temperature restriction on page 4/14

Selection and Ordering data	Article No.
Accessories SensGuard, ¾" NPT (PPS) Only available for CLS100 with ¾" NPT thread SensGuard, R 1" (BSPT) (PPS) Only available for CLS100 with ¾" NPT thread Tag, stainless steel, 12 x 45 mm (0.47 x 1.77 inch), one text line, suitable for enclosures Siemens Intrinsically Safe Barrier (DC powered), ATEX II 1 G EEx ia ½" NPT cable gland, nickel plated brass, fits cable diameter 6 ... 12 mm (0.24 ... 0.47 inch) -40 ... +100 °C (-40 ... +212 °F), IP68 (General Purpose) M20 x 1.5 cable gland, PA polyamide, ATEX II 2G EEx e II, fits cable diameter 7 ... 12 mm (0.28 ... 0.47 inch), -20 ... +70 °C (-4 ... +158 °F), IP68 (General Purpose)	7ML1830-1DL 7ML1830-1DM 7ML1930-1AC 7NG4124-0AA00 7ML1830-1JA 7ML1830-1JC

Selection and Ordering data	Article No.
Pointek CLS100, PPS process connection Compact 2-wire inverse frequency shift capacitance switch for level and material detection in constricted spaces, interfaces, solids, liquids, slurries and foam, with the ability to tune out buildup on foam. Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5610- 
Process connection (PPS) ¾" NPT [(Taper), ANSI/ASME B1.20.1] (PPS probe body) R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] (PPS probe body)	A B
Approvals General Purpose: CSA, FM	D
Versions/Options Enclosure version, PPS process connection, ½" NPT cable inlet Enclosure version, PPS process connection, M20 x 1.5	1 2
Overfill protection Not required Required	0 1

Selection and Ordering data	Order code
Further designs Please add "-Z" to Article No. and specify Order code(s).	
Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 20 characters) specify in plain text	Y17
FFKM seal O-ring ¹⁾	A22
Material inspection Certificate Type 3.1 per EN 10204	C12
Operating Instructions Note: due to ATEX regulations one Quick start manual is included with every product. All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories SensGuard, ¾" NPT (PPS) Only available for CLS100 with ¾" NPT thread SensGuard, R 1" (BSPT) (PPS) Only available for CLS100 with ¾" NPT thread Tag, stainless steel, 12 x 45 mm, (0.47 x 1.77 inch) one text line, suitable for enclosures	7ML1830-1DL 7ML1830-1DM 7ML1930-1AC

¹⁾ See Temperature restriction on page 4/14

Options

Optional SensGuard, dimensions in mm (inch)

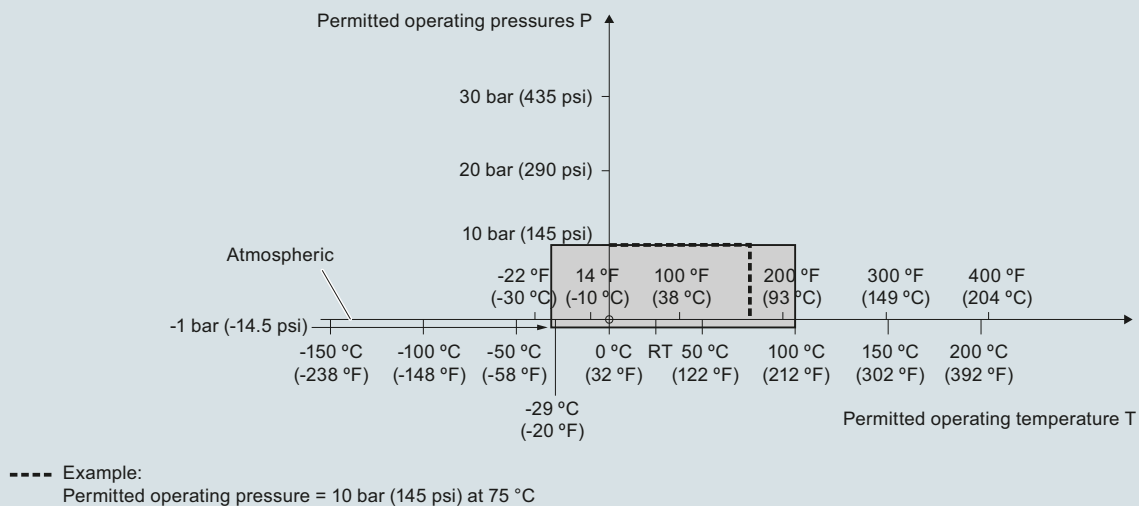
Level Measurement

Point level measurement
RF Capacitance switches

Pointek CLS100

Characteristic curves

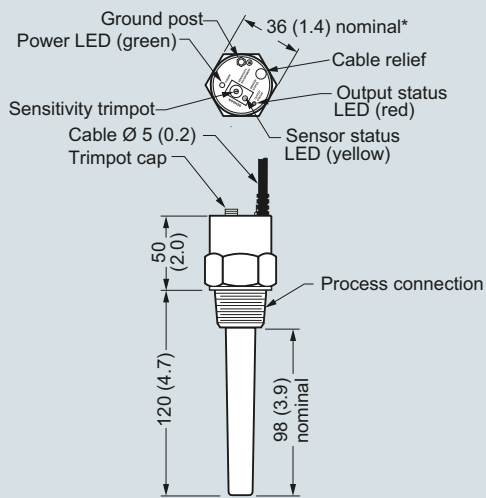
Pressure/temperature curve CLS100
Threaded process connections (7ML5501)



Pointek CLS100 process pressure/temperature derating curves

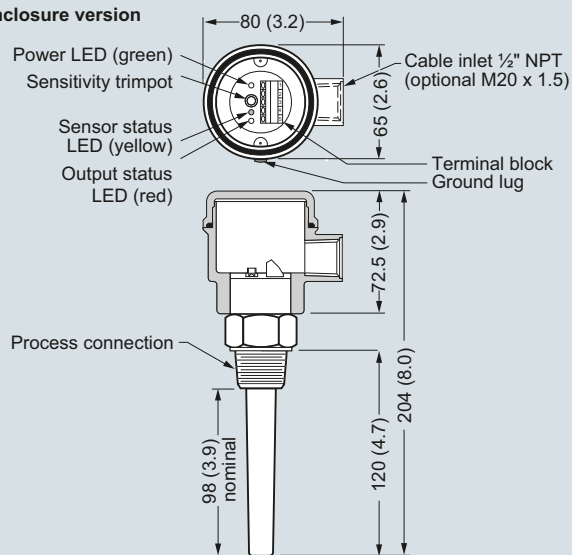
Dimensional drawings

Integral cable version



*Some G thread configurations deviate from this size.

Enclosure version

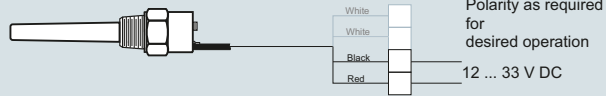


Pointek CLS100, dimensions in mm (inch)

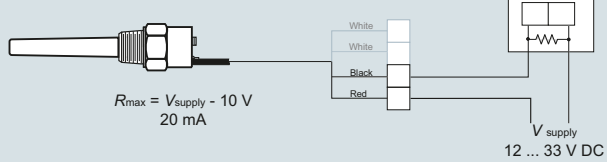
Circuit diagrams

Integral Cable Version - Non Intrinsically Safe only

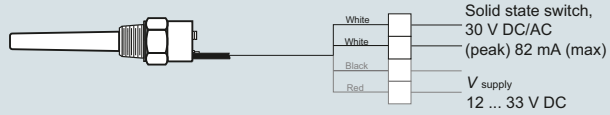
LOW/HIGH Alarm



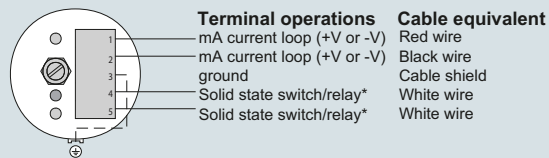
4/20 mA Loop Alarm



Solid State Switch Version



Enclosure and Fully Synthetic Version



* Switch/relay normally open in unpowered state

* Relay not available on Pointek CLS100 IS version (7ML5501)

Note:

When driving an inductive load (for example, an external relay), a protection diode must be connected in the correct polarity to prevent possible switch damage due to inductive spikes generated by switching the inductor (please refer to instruction manual). Intrinsically Safe Models - please follow local regulations and area classifications; refer to instruction manual for more details.

Pointek CLS100 connections

Level Measurement

Point level measurement
RF Capacitance switches

Pointek CLS200 - Standard

Overview



Pointek CLS200 (standard version) is a versatile inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. CLS200 is ideal for detection of liquids, solids, slurries, foam, and interfaces and has the ability to tune out buildup on the probe.

Benefits

- Potted construction protects signal circuit from shock, vibration, humidity, and/or condensation
- High chemical resistance
- Level detection independent of tank or pipe earth reference
- Insensitive to product buildup due to high frequency oscillation
- 3 LED indicators for sensor status, output status, and power
- Suitable for API 2350

Application

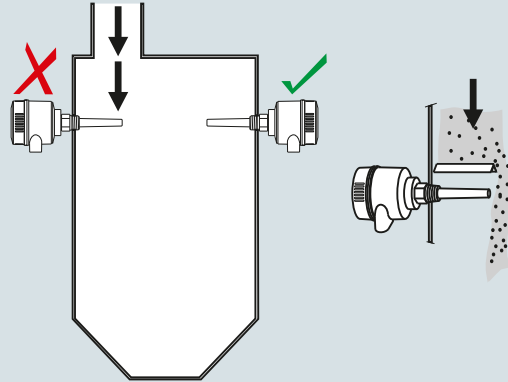
Pointek CLS200 standard version has 3 LED indicators with basic relay and solid-state switch alarms. Universal switch for solids/liquids and interface.

The power supply is galvanically isolated and accepts a wide range of voltages (12 to 250 V AC/DC). When used with thermal isolator, the stainless steel and PPS (PVDF optional) materials used in the probe construction provide a temperature rating up to 125 °C (257 °F) on the process wetted portion of the probe. The switch responds to any material with a dielectric constant of 1.5 or more by detecting a change in oscillating frequency, and it can be set to detect before contact or on contact with the probe. The CLS200 operates independently of the tank wall or pipe so it does not require an external reference electrode for level detection in a non-conductive vessel such as concrete or plastic (EMC regulations applicable in some regions).

- Key Applications: liquids, slurries, powders, granules, pressurized applications, hazardous areas

Configuration

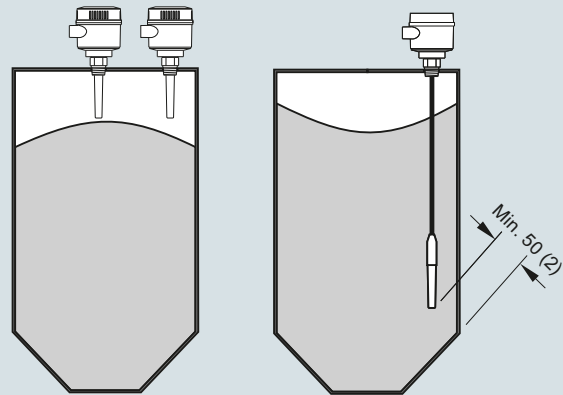
Installation



Keep unit out of path of falling material, or protect probe from falling material.



Avoid areas where material build up occurs.



Install probe at least 50 (2) from tank wall.

Pointek CLS200 installation, dimensions in mm (inch)

Technical specifications

Mode of operation		Design	
Measuring principle	Inverse frequency shift capacitive level detection	Material	Epoxy-coated aluminum with gasket 316L stainless steel
Input		• Enclosure	
Measured variable	Change in picoFarad (pF)	• Optional thermal isolator	
Output		Connection	Removable terminal block, max. 2.5 mm ²
Output signal		Degree of protection	IP65/Type 4/NEMA 4 (optional IP68)
• Relay output	1 SPDT Form C relay	Cable inlet	2 x M20 x 1.5 thread (option: 2 x ½" NPT conduit entry including 1 plugged entry)
- Max. contact voltage	• 30 V DC • 250 V AC	Power supply	
- Max. contact current	• 5 A DC • 8 A AC	12 ... 250 V AC/DC, 0 ... 60 Hz max. 2 W	
- Max. switching capacity	150 W DC 2 000 VA AC	Certificates and approvals	
- Time delay (ON and/or OFF)	1 ... 60 s	General Purpose	CSA, FM, CE, RCM
• Solid-state output		Dust Ignition Proof	ATEX II 1/2 D T100 °C
- Output	Galvanically isolated	Flameproof Enclosure With IS Probe	ATEX II 1 G EEx d[ia] IIC T6 ... T4 ATEX II 1/2 D T100 °C
- Protection	Against reversed polarity (bipolar)	Dust Ignition Proof with IS Probe	CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4
- Max. switching voltage	• 30 V DC • 30 V peak AC	Explosion Proof Enclosure With IS Probe	CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4
- Max. load current	82 mA	Marine	Lloyds Register of Shipping, Categories ENV1, ENV2, and ENV5
- Voltage drop	< 1 V, typical at 50 mA	Overfill Protection	WHG (Germany) VLAREM II
- Time delay (pre or post switching)	1 ... 60 s	Others	Pattern Approval (China), SIL
Rated operating conditions¹⁾		¹⁾ When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves on page 4/33. ²⁾ Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F) ³⁾ Pressure rating of process seal is temperature dependent. See Pressure/Temperature curves on page 4/33.	
Installation conditions			
• Location	Indoor/outdoor		
Ambient conditions			
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) ²⁾		
• Installation category	II		
• Pollution degree	4		
Medium conditions	Liquids, bulk solids, slurries and interfaces		
• Relative dielectric constant ϵ_r	Min. 1.5		
• Process temperature			
- Without thermal isolator	-40 ... +85 °C (-40 ... +185 °F) ²⁾		
- With thermal isolator	-40 ... +125 °C (-40 ... +257 °F)		
• Process pressure (rod version)	-1 ... +25 bar g (-14.6 ... +365 psi g) (nominal)		
• Process pressure (cable version) ³⁾	-1 ... +10 bar g (-14.6 ... +150 psi g) (nominal)		
• Process pressure (sliding coupling version)	-1 ... +10 bar g (-14.6 ... +150 psi g) (nominal)		
Electromagnetic compatibility		To comply with CE EMC regulations (where applicable); the CLS200 should be installed per the instruction manual.	

Level Measurement

Point level measurement
RF Capacitance switches

Pointek CLS200 - Standard

Design: Probe				
	Rod version	Sanitary version	Cable version	Sliding Coupling version
Max. length	5 500 mm (216.53 inch)	5 500 mm (216.53 inch)	<ul style="list-style-type: none"> 30 000 mm (1 181.1 inch) liquids and slurries 5 000 mm (196.85 inch) solids (under loads) 	5 500 mm (216.53 inch)
Process connection	R ¾", 1", 1¼", 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] ¾", 1", 1¼", 1½" NPT [(Taper), ANSI/ASME B1.20.1] G ¾", 1", 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 316L stainless steel ASME/EN flange	1½", 2" sanitary fitting clamp 316L stainless steel	R ¾", 1", 1¼", 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] ¾", 1", 1¼", 1½" NPT [(Taper), ANSI/ASME B1.20.1] G ¾", 1", 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 316L stainless steel ASME/EN flange	R ¾", 1", 1¼", 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] ¾", 1", 1¼", 1½" NPT [(Taper), ANSI/ASME B1.20.1] G ¾", 1", 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]
Extension material	316L stainless steel optional PFA coated ¹⁾	316L stainless steel	Fluoroethylene propylene (FEP) cable with stainless steel core	316L stainless steel
Sensor wetted parts	PPS (optional PVDF)	PPS (optional PVDF)	PPS (optional PVDF)	PPS (optional PVDF)
O-ring seal material	FKM (optional FFKM) ²⁾	FKM (optional FFKM) ²⁾	FKM (optional FFKM) ²⁾	FKM (optional FFKM) ²⁾
Thermal isolator ³⁾	Optional	Optional	Optional	Optional
Extension	User selected length	User selected length	Cable extension	User selected length

¹⁾ PFA coating (7ML5634 and 7ML5644) has 120 micron thickness

²⁾ For caustic materials, consult a local sales person for alternative O-rings. For more information, please visit http://www.automation.siemens.com/aspa_app.



³⁾ Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F)

Level Measurement

Point level measurement

RF Capacitance switches

Pointek CLS200 - Standard

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Pointek CLS200 - Standard - Rod Version with Threaded or Flanged process connection Versatile inverse frequency shift capacitance level and material detection switch with optional rod/ cable choices and configurable output. CLS200 is ideal for detection of liquids, solids, slurries, foam, and interfaces, and has the ability to tune out buildup on the probe. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5630- 	Pointek CLS200 - Standard - Rod Version with Threaded or Flanged process connection Versatile inverse frequency shift capacitance level and material detection switch with optional rod/ cable choices and configurable output. CLS200 is ideal for detection of liquids, solids, slurries, foam, and interfaces, and has the ability to tune out buildup on the probe. Add Order code Y01 and plain text: "Insertion length ... mm"	7ML5630- 
Process connection Threaded, 316L stainless steel ¾" NPT [(Taper), ANSI/ASME B1.20.1] 1" NPT [(Taper), ANSI/ASME B1.20.1] 1¼" NPT [(Taper), ANSI/ASME B1.20.1] 1½" NPT [(Taper), ANSI/ASME B1.20.1] R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] Welded flange, 316L stainless steel, raised face 1" ASME, 150 lb 1" ASME, 300 lb 1" ASME, 600 lb 1½" ASME, 150 lb 1½" ASME, 300 lb 1½" ASME, 600 lb 2" ASME, 150 lb 2" ASME, 300 lb 2" ASME, 600 lb 3" ASME, 150 lb 3" ASME, 300 lb 3" ASME, 600 lb 4" ASME, 150 lb 4" ASME, 300 lb 4" ASME, 600 lb Welded flange, 316L stainless steel, Type A flat faced DN 25, PN 16 DN 25, PN 40 DN 40, PN 16 DN 40, PN 40 DN 50, PN 16 DN 50, PN 40 DN 80, PN 16 DN 80, PN 40 DN 100, PN 16 DN 100, PN 40 (Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)	0 A 0 B 0 C 0 D 1 A 1 B 1 D 3 A 3 B 3 D 5 A 5 B 5 C 5 D 5 E 5 F 5 G 5 H 5 J 5 K 5 L 5 M 5 N 5 P 5 Q 6 A 6 B 6 C 6 D 6 E 6 F 6 G 6 H 6 J 6 K	Extended rod, 210 ... 1 000 mm (8.27 ... 39.37 inch) Extended rod, 1 001 ... 2 000 mm (39.41 ... 78.74 inch) Extended rod, 2 001 ... 3 000 mm (78.78 ... 118.11 inch) Extended rod, 3 001 ... 4 000 mm (118.15 ... 157.48 inch) Extended rod, 4 001 ... 5 000 mm (157.52 ... 196.85 inch) Extended rod, 5 001 ... 5 500 mm (196.89 ... 216.53 inch) Thermal isolator Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)] Remote mount electronics and mounting bracket With 2 m (79 inch) of cable ¹⁾²⁾ With 5 m (197 inch) of cable ¹⁾²⁾ Wetted seals FKM FFKM [for process temperatures above -20 °C (-4 °F)] Probe material 316L stainless steel with PPS probe body 316L stainless steel with PVDF probe body Approvals Dust Ignition Proof: CE, RCM, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) General Purpose (CE, RCM) General Purpose (CSA, FM, CE, RCM) with WHG approval Enclosure and lid Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP65 2 x M20 x 1.5 cable inlet IP65 2 x ½" NPT via adapter - cable inlet, IP68 2 x M20 x 1.5 cable inlet IP68	M N P Q R S 0 1 2 3 0 1 0 1 C D E F G H J K A B C D
Probe length (length from flange face) (threaded lengths include process thread) Note: No Y01 needed in Order code for standard lengths Compact [threaded 120 mm (4.72 inch), Flanged 98 mm (3.86 inch)] Extended rod, 250 mm (9.84 inch) Extended rod, 350 mm (13.78 inch) Extended rod, 500 mm (19.69 inch) Extended rod, 750 mm (29.53 inch) Extended rod, 1 000 mm (39.37 inch) Extended rod, 1 250 mm (49.21 inch) Extended rod, 1 350 mm (53.15 inch) Extended rod, 1 500 mm (59.06 inch) Extended rod, 1 750 mm (68.90 inch) Extended rod, 2 000 mm (78.74 inch)	A B C D E F G H J K L		

¹⁾ Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection

²⁾ Available with Approval options F, G, and H

Level Measurement

Point level measurement

RF Capacitance switches

Pointek CLS200 - Standard

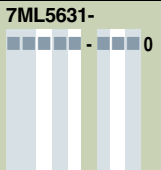
Selection and Ordering data		Order code	Selection and Ordering data	Article No.
Further designs			Pointek CLS200 - Standard - Cable Version with Threaded or Flanged process connection	7ML5631-
Please add "-Z" to Article No. and specify Order code(s).			Versatile inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. CLS200 is ideal for detection of liquids, solids, slurries, foam, and interfaces, and has the ability to tune out buildup on the probe.	- 0
Total insertion length: enter the total insertion length in plain text description		Y01	➔ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text		Y15	Process connection	
Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000		C11	Threaded, 316L stainless steel	
Material inspection Certificate Type 3.1 per EN 10204		C12	¾" NPT [(Taper), ANSI/ASME B1.20.1]	0 A
SIL/IEC 61508 Declaration of Conformity [SIL 2 (overspill)]		C20	1" NPT [(Taper), ANSI/ASME B1.20.1]	0 B
Operating Instructions			1¼" NPT [(Taper), ANSI/ASME B1.20.1]	0 C
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation			1½" NPT [(Taper), ANSI/ASME B1.20.1]	0 D
Accessories		See page 4/32	R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 A
			R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 B
			R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 D
			G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 A
			G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 B
			G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 D
			<u>Welded flange, 316L stainless steel, raised face</u>	
			1" ASME, 150 lb	5 A
			1" ASME, 300 lb	5 B
			1" ASME, 600 lb	5 C
			1½" ASME, 150 lb	5 D
			1½" ASME, 300 lb	5 E
			1½" ASME, 600 lb	5 F
			2" ASME, 150 lb	5 G
			2" ASME, 300 lb	5 H
			2" ASME, 600 lb	5 J
			3" ASME, 150 lb	5 K
			3" ASME, 300 lb	5 L
			3" ASME, 600 lb	5 M
			4" ASME, 150 lb	5 N
			4" ASME, 300 lb	5 P
			4" ASME, 600 lb	5 Q
			<u>Welded flange, 316L stainless steel, Type A flat faced</u>	
			DN 25, PN 16	6 A
			DN 25, PN 40	6 B
			DN 40, PN 16	6 C
			DN 40, PN 40	6 D
			DN 50, PN 16	6 E
			DN 50, PN 40	6 F
			DN 80, PN 16	6 G
			DN 80, PN 40	6 H
			DN 100, PN 16	6 J
			DN 100, PN 40	6 K
			(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)	
			Probe length	
			(length from flange face)	
			(threaded lengths include process thread)	
			<u>Note: No Y01 needed in Order code for standard lengths</u>	
			Extended cable, 3 000 mm (118.11 inch), length can be determined by customer on assembly ¹⁾	A
			Extended cable, 6 000 mm (236.22 inch), length can be determined by customer on assembly ¹⁾	B
			<u>Add Order code Y01 and plain text:</u>	
			<u>"Insertion length ... mm"</u>	
			Extended cable, 500 ... 5 000 mm (19.69 ... 196.85 inch)	C
			Extended cable, 5 001 ... 10 000 mm (196.89 ... 393.70 inch)	D
			Extended cable, 10 001 ... 15 000 mm (393.74 ... 590.55 inch)	E
			Extended cable, 15 001 ... 20 000 mm (590.59 ... 787.4 inch)	F
			Extended cable, 20 001 ... 25 000 mm (787.44 ... 984.25 inch)	G
			Extended cable, 25 001 ... 30 000 mm (984.29 ... 1 181.1 inch)	H

Level Measurement

Point level measurement

RF Capacitance switches

Pointek CLS200 - Standard

Selection and Ordering data	Article No.	Selection and Ordering data	Order code
Pointek CLS200 - Standard - Cable Version with Threaded or Flanged process connection Versatile inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. CLS200 is ideal for detection of liquids, solids, slurries, foam, and interfaces, and has the ability to tune out buildup on the probe.	7ML5631- 	Further designs Please add "-Z" to Article No. and specify Order code(s). Total insertion length: enter the total insertion length in plain text description Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000 Material inspection Certificate Type 3.1 per EN 10204 SIL/IEC 61508 Declaration of Conformity [SIL 2 (overspill)]	 Y01 Y15 C11 C12 C20
Thermal isolator Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	0 1		
Remote mount electronics and mounting bracket With 2 m (79 inch) of cable ²⁾ With 5 m (197 inch) of cable ²⁾	2 3		
Wetted seals FKM and PTFE FFKM and PTFE [for process temperatures above -20 °C (-4 °F)]	0 1		
Probe material FEP jacketed cable with PPS probe body FEP jacketed cable with PVDF probe body	0 1		
Approvals Dust Ignition Proof: CE, RCM, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) General Purpose (CE, RCM) General Purpose (CSA, FM, CE, RCM) with WHG approval	C D E F G H J K		
Enclosure and lid Aluminum epoxy coated 2 x 1/2" NPT via adapter - cable inlet, IP65 2 x M20 x 1.5 cable inlet, IP65 2 x 1/2" NPT via adapter - cable inlet, IP68 2 x M20 x 1.5 cable inlet, IP68	A B C D		

¹⁾ Sensor detached to allow customer to set desired cable length

²⁾ Available with Approvals options F ... H

Operating Instructions

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Accessories


See page 4/32


Level Measurement

Point level measurement

RF Capacitance switches

Pointek CLS200 - Standard

Selection and Ordering data	Article No.
Pointek CLS200 - Standard - Rod with Sanitary process connection Versatile inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. CLS200 is ideal for detection of liquids, solids, slurries, foam, and interfaces, and has the ability to tune out buildup on the probe. ➔ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5632- 
Process connection Sanitary 316L stainless steel 1" sanitary fitting clamp 1½" sanitary fitting clamp 2" sanitary fitting clamp 2½" sanitary fitting clamp 3" sanitary fitting clamp (Note: Sanitary connection dimensionally corresponds to the applicable ISO 2852 standard)	8 A 8 B 8 C 8 D 8 E
Probe length (length from process connection face) Note: No Y01 needed in Order code for standard lengths Compact, 98 mm (3.86 inch) Extended rod, 250 mm (9.84 inch) Extended rod, 350 mm (13.78 inch) Extended rod, 500 mm (19.69 inch) Extended rod, 750 mm (29.53 inch) Extended rod, 1 000 mm (39.37 inch) Extended rod, 1 250 mm (49.21 inch) Extended rod, 1 350 mm (53.15 inch) Extended rod, 1 500 mm (59.06 inch) Extended rod, 1 750 mm (68.90 inch) Extended rod, 2 000 mm (78.74 inch) Add Order code Y01 and plain text: "Insertion length ... mm" Extended rod, 110 ... 350 mm (4.3 ... 13.78 inch) Extended rod, 351 ... 1 000 mm (13.78 ... 39.37 inch) Extended rod, 1 001 ... 2 000 mm (39.41 ... 78.74 inch) Extended rod, 2 001 ... 3 000 mm (78.78 ... 118.11 inch) Extended rod, 3 001 ... 4 000 mm (118.15 ... 157.48 inch) Extended rod, 4 001 ... 5 000 mm (157.52 ... 196.85 inch) Extended rod, 5 001 ... 5 500 mm (196.89 ... 216.53 inch)	A B C D E F G H J K L
Thermal isolator Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	0 1
Remote mount electronics and mounting bracket Remote mount electronics with 2 m (79 inch) of cable Remote mount electronics with 5 m (197 inch) of cable	2 3
Wetted seals FKM FFKM [for process temperatures above -20 °C (-4 °F)]	0 1
Probe material 316L stainless steel with PPS probe body 316L stainless steel with PVDF probe body	0 1

Selection and Ordering data	Article No.
Pointek CLS200 - Standard - Rod with Sanitary process connection Versatile inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. CLS200 is ideal for detection of liquids, solids, slurries, foam, and interfaces, and has the ability to tune out buildup on the probe.	7ML5632- 
Approvals Dust Ignition Proof: CE, RCM, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) General Purpose (CE, RCM) General Purpose (CSA, FM, CE, RCM) with WHG approval	C D E F G H J K
Enclosure and lid Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP65 2 x M20 x 1.5 cable inlet, IP65 2 x ½" NPT via adapter - cable inlet, IP68 2 x M20 x 1.5 cable inlet, IP68	A B C D

Selection and Ordering data	Order code
Further designs Please add "-Z" to Article No. and specify Order code(s).	
Total insertion length: enter the total insertion length in plain text description	Y01
Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y15
Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000	C11
Material inspection Certificate Type 3.1 per EN 10204	C12
SIL/IEC 61508 Declaration of Conformity [SIL 2 (overspill)]	C20
Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories	See page 4/32

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Pointek CLS200 - Standard - Sliding Coupling with Threaded process connection Versatile inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. CLS200 is ideal for detection of liquids, solids, slurries, foam, and interfaces, and has the ability to tune out buildup on the probe. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5633- 	Pointek CLS200 - Standard - Sliding Coupling with Threaded process connection Versatile inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. CLS200 is ideal for detection of liquids, solids, slurries, foam, and interfaces, and has the ability to tune out buildup on the probe.	7ML5633-
Process connection Threaded, 316L stainless steel 3/4" NPT [(Taper), ANSI/ASME B1.20.1] 1" NPT [(Taper), ANSI/ASME B1.20.1] 1 1/4" NPT [(Taper), ANSI/ASME B1.20.1] 1 1/2" NPT [(Taper), ANSI/ASME B1.20.1] R 3/4" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] R 1 1/2" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] G 3/4" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] G 1 1/2" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	0 A 0 B 0 C 0 D 1 A 1 B 1 D 3 A 3 B 3 D	Approvals Dust Ignition Proof: CE, RCM, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) General Purpose (CE, RCM) General Purpose (CSA, FM, CE, RCM) with WHG approval	C D E F G H J K
Probe length (length from flange face) (threaded lengths include process thread) Note: No Y01 needed in Order code for standard lengths Extended rod, 350 mm (13.78 inch) Extended rod, 500 mm (19.69 inch) Extended rod, 750 mm (29.53 inch) Extended rod, 1 000 mm (39.37 inch) Extended rod, 1 250 mm (49.21 inch) Extended rod, 1 350 mm (53.15 inch) Extended rod, 1 500 mm (59.06 inch) Extended rod, 1 750 mm (68.90 inch) Extended rod, 2 000 mm (78.74 inch) Add Order code Y01 and plain text: "Insertion length ... mm" Extended rod, 350 ... 1 000 mm (13.78 ... 39.37 inch) Extended rod, 1 001 ... 2 000 mm (39.41 ... 78.74 inch) Extended rod, 2 001 ... 3 000 mm (78.78 ... 118.11 inch) Extended rod, 3 001 ... 4 000 mm (118.15 ... 157.48 inch) Extended rod, 4 001 ... 5 000 mm (157.52 ... 196.85 inch) Extended rod, 5 001 ... 5 500 mm (196.89 ... 216.53 inch)	C D E F G H J K L	Enclosure and lid Aluminum epoxy coated 2 x 1/2" NPT via adapter - cable inlet, IP65 2 x M20 x 1.5 cable inlet, IP65 2 x 1/2" NPT via adapter - cable inlet, IP68 2 x M20 x 1.5 cable inlet, IP68	A B C D
Thermal isolator Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	0 1	General Purpose (CSA, FM) General Purpose (CE, RCM) General Purpose (CSA, FM, CE, RCM) with WHG approval	H J K
Remote mount electronics and mounting bracket With 2 m (79 inch) of cable ¹⁾ With 5 m (197 inch) of cable ¹⁾	2 3	Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4	G
Wetted seals FKM and PTFE FFKM and PTFE [for process temperatures above -20 °C (-4 °F)]	0 1	General Purpose (CSA, FM) General Purpose (CE, RCM) General Purpose (CSA, FM, CE, RCM) with WHG approval	H J K
Probe material 316L stainless steel with PPS probe body 316L stainless steel with PVDF probe body	0 1	General Purpose (CSA, FM) General Purpose (CE, RCM) General Purpose (CSA, FM, CE, RCM) with WHG approval	H J K

¹⁾ Available with Approvals options F ... H

Selection and Ordering data	Order code
Further designs Please add "-Z" to Article No. and specify Order code(s). Total insertion length: enter the total insertion length in plain text description Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000 Material inspection Certificate Type 3.1 per EN 10204 SIL/IEC 61508 Declaration of Conformity [SIL 2 (overspill)]	Y01 Y15 C11 C12 C20
Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories	See page 4/32

Level Measurement

Point level measurement
RF Capacitance switches

Pointek CLS200 - Digital

Overview



Pointek CLS200 (digital version) is a versatile inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. CLS200 is ideal for detection of liquids, solids, slurries, foam, and interfaces and has the ability to tune out buildup on the probe. The digital version includes PROFIBUS PA, an LCD display, and advanced diagnostic features.

Benefits

- Potted construction protects signal circuit from shock, vibration, humidity, and/or condensation
- High chemical resistance
- Level detection independent of tank or pipe earth reference
- Insensitive to product buildup due to high frequency oscillation
- High sensitivity allows installation in a wide range of liquids, solids or slurry applications
- Integral LCD display allows for easy menu-driven setup
- PROFIBUS PA communication (SIMATIC PDM compatible)

Application

Pointek CLS200 digital version provides an integral LCD display for stand-alone use, and also provides PROFIBUS PA communication (Profile version 3.0, Class B) for connection to a network.

The power supply is galvanically isolated and accepts a wide range of voltages (12 to 30 V DC). When used with thermal isolator, the stainless steel and PPS (PVDF optional) materials used in the probe construction provide a temperature rating up to 125 °C (257 °F) on the process wetted portion of the probe. The switch responds to any material with a dielectric constant of 1.5 or more by detecting a change in oscillating frequency, and it can be set to detect before contact or on contact with the probe. The menu-driven setup allows precise control of the switch point signal damping and alarm functions.

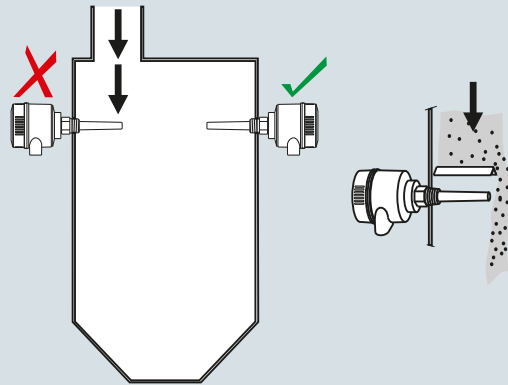
When connected to the PROFIBUS network, advanced diagnostics and set up using SIMATIC PDM are possible.

The CLS200 operates independently of the tank wall or pipe so it does not require an external reference electrode for level detection in a non-conductive vessel such as concrete or plastic (EMC regulations applicable in some regions).

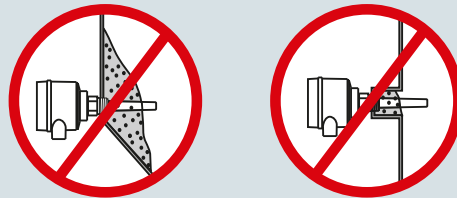
- Key Applications: liquids, slurries, powders, granules, pressurized applications, hazardous areas

Configuration

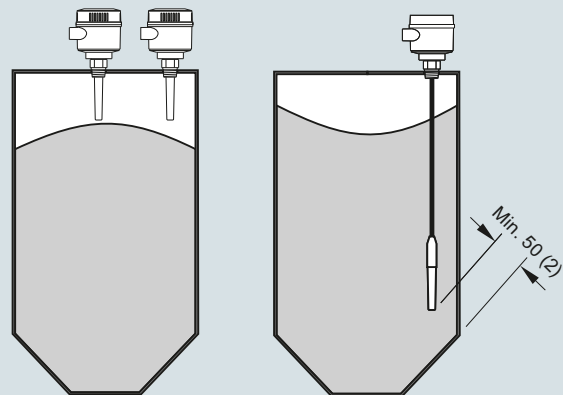
Installation



Keep unit out of path of falling material, or protect probe from falling material.



Avoid areas where material build up occurs.



Install probe at least 50 (2) from tank wall.

Pointek CLS200 installation, dimensions in mm (inch)

Technical specifications

Mode of operation		Power supply	
Measuring principle	Inverse frequency shift capacitive level detection	Bus voltage	Standard: 12 ... 30 V DC Intrinsically Safe: 12 ... 24 V DC
Input		Current consumption	12.5 mA
Measured variable	Change in picoFarad (pF)	Certificates and approvals	
Output		General Purpose	CSA, FM, CE, RCM
Output signal		Dust Ignition Proof	ATEX II 1/2 D T100 °C
• Solid-state output		Dust Ignition Proof with IS Probe	CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4
- Output	Galvanically isolated	Flameproof Enclosure with IS Probe	ATEX II 1/2 G EEx d[ia] IIC T6 ... T4 ATEX II 1/2 D T100 °C
- Protection	Against reversed polarity (bipolar)	Explosion Proof with IS Probe	CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4
- Max. switching voltage	• 30 V (DC) • 30 V peak (AC)	Intrinsically Safe ⁴⁾	ATEX II 1 G EEx ia IIC T6 ... T4 ATEX II 1/2 D IP6X T100 °C CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4
- Max. load current	82 mA	Non-incendive	CSA/FM Class I, Div. 2, Groups A, B, C, D CSA/FM Class II, Div. 2, Groups F, G CSA/FM Class III T4 or T6
- Voltage drop	< 1 V, typical at 50 mA	Non-Sparking	ATEX II 3 G Ex nA II T6 ... T4 ATEX II 2 D IP6X T100 °C
- Time delay (ON and/or OFF)	Programmable by user (0 ... 100 s)	Marine	Lloyds Register of Shipping, Categories ENV1, ENV2, and ENV5
• Fail-safe mode	Min. or max.	Others	Pattern Approval (China)
• Connection	Removable terminal block	Communication	PROFIBUS PA (IEC 61158 CPF3 CP3/2) Bus physical layer: IEC 61158-2 MBP (IS) Device profile: PROFIBUS PA profile for Process Control Devices Version 3.0, Class B FISCO field device
Rated operating conditions¹⁾			
Installation conditions			
• Location	Indoor/outdoor		
Ambient conditions			
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) ²⁾		
• Installation category	II		
• Pollution degree	4		
Medium conditions			
	Liquids, bulk solids, slurries, and interfaces		
• Relative dielectric constant ϵ_r	Min. 1.5		
• Process temperature			
- Without thermal isolator	-40 ... +85 °C (-40 ... +185 °F) ²⁾		
- With thermal isolator	-40 ... +125 °C (-40 ... +257 °F)		
• Process pressure (rod version)	-1 ... +25 bar g (-14.6 ... +365 psi g) (nominal)		
• Process pressure (cable version) ³⁾	-1 ... +10 bar g (-14.6 ... +150 psi g) (nominal)		
• Process pressure (sliding coupling version)	-1 ... +10 bar g (-14.6 ... +150 psi g) (nominal)		
Design			
Material			
• Enclosure	Epoxy-coated aluminum with gasket		
• Optional thermal isolator	316L stainless steel		
Connection	Removable terminal block, max. 2.5 mm ²		
Degree of protection	IP65/Type 4/NEMA 4 (optional IP68)		
Cable inlet	2 x M20 x 1.5 thread (option: 2 x ½" NPT conduit entry including 1 plugged entry)		
Electromagnetic compatibility	To comply with CE EMC regulations (where applicable); the CLS200 should be installed per the instruction manual.		

¹⁾ When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves on page 4/33.

²⁾ Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F)

³⁾ Pressure rating of process seal is temperature dependent. See Pressure/Temperature curves on page 4/33.

⁴⁾ Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection

Level Measurement

Point level measurement

RF Capacitance switches

Pointek CLS200 - Digital

Design: Probe				
	Rod version	Sanitary version	Cable version	Sliding Coupling version
Max. length	5 500 mm (216.53 inch)	5 500 mm (216.53 inch)	<ul style="list-style-type: none"> 30 000 mm (1 181.1 inch) liquids and slurries 5 000 mm (196.85 inch) solids (under loads) 	5 500 mm (216.53 inch)
Process connection	R ¾", 1", 1¼", 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] ¾", 1", 1¼", 1½" NPT [(Taper), ANSI/ASME B1.20.1] G ¾", 1", 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 316L stainless steel ASME/EN flange	1½", 2" sanitary fitting clamp 316L stainless steel	R ¾", 1", 1¼", 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] ¾", 1", 1¼", 1½" NPT [(Taper), ANSI/ASME B1.20.1] G ¾", 1", 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 316L stainless steel ASME/EN flange	R ¾", 1", 1¼", 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] ¾", 1", 1¼", 1½" NPT [(Taper), ANSI/ASME B1.20.1] G ¾", 1", 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]
Extension material	316L stainless steel optional PFA coated ¹⁾	316L stainless steel	Fluoroethylene propylene (FEP) cable with stainless steel core	316L stainless steel
Sensor wetted parts	PPS (optional PVDF)	PPS (optional PVDF)	PPS (optional PVDF)	PPS (optional PVDF)
O-ring seal material	FKM (optional FFKM) ²⁾	FKM (optional FFKM) ²⁾	FKM (optional FFKM) ²⁾	FKM (optional FFKM) ²⁾
Thermal isolator ³⁾	Optional	Optional	Optional	Optional
Extension	User selected length	User selected length	Cable extension	User selected length

¹⁾ PFA coating (7ML5634 and 7ML5644) has 120 micron thickness

²⁾ For caustic materials, consult a local sales person for alternative O-rings. For more information, please visit http://www.automation.siemens.com/aspa_app.



³⁾ Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F).

Level Measurement

Point level measurement

RF Capacitance switches

Pointek CLS200 - Digital

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Pointek CLS200 - Digital - Rod with Threaded or Flanged process connection Versatile inverse frequency shift capacitance level and material detection switch with optional process connection choices and configurable output. CLS200 is ideal for detection of liquids, solids, slurries, foam, and interfaces, and has the ability to tune out buildup on the probe. Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5640- 	Pointek CLS200 - Digital - Rod with Threaded or Flanged process connection Versatile inverse frequency shift capacitance level and material detection switch with optional process connection choices and configurable output. CLS200 is ideal for detection of liquids, solids, slurries, foam, and interfaces, and has the ability to tune out buildup on the probe. Add Order code Y01 and plain text: "Insertion length ... mm"	7ML5640- 
Process connection <u>Threaded, 316L stainless steel</u> 3/4" NPT [(Taper), ANSI/ASME B1.20.1] 1" NPT [(Taper), ANSI/ASME B1.20.1] 1 1/4" NPT [(Taper), ANSI/ASME B1.20.1] 1 1/2" NPT [(Taper), ANSI/ASME B1.20.1] R 3/4" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] R 1 1/2" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] G 3/4" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] G 1 1/2" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] <u>Welded flange, 316L stainless steel, raised face</u> 1" ASME, 150 lb 1" ASME, 300 lb 1" ASME, 600 lb 1 1/2" ASME, 150 lb 1 1/2" ASME, 300 lb 1 1/2" ASME, 600 lb 2" ASME, 150 lb 2" ASME, 300 lb 2" ASME, 600 lb 3" ASME, 150 lb 3" ASME, 300 lb 3" ASME, 600 lb 4" ASME, 150 lb 4" ASME, 300 lb 4" ASME, 600 lb <u>Welded flange, 316L stainless steel, Type A flat faced</u> DN 25, PN 16 DN 25, PN 40 DN 40, PN 16 DN 40, PN 40 DN 50, PN 16 DN 50, PN 40 DN 80, PN 16 DN 80, PN 40 DN 100, PN 16 DN 100, PN 40 (Note: flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.) Probe length (length from flange face) (threaded lengths include process thread) Note: No Y01 needed in Order code for standard lengths Compact [threaded 120 mm (4.72 inch), Flanged 98 mm (3.86 inch)] Extended rod, 250 mm (9.84 inch) Extended rod, 350 mm (13.78 inch) Extended rod, 500 mm (19.69 inch) Extended rod, 750 mm (29.53 inch) Extended rod, 1 000 mm (39.37 inch) Extended rod, 1 250 mm (49.21 inch) Extended rod, 1 350 mm (53.15 inch) Extended rod, 1 500 mm (59.06 inch) Extended rod, 1 750 mm (68.90 inch) Extended rod, 2 000 mm (78.74 inch)	0 A 0 B 0 C 0 D 1 A 1 B 1 D 3 A 3 B 3 D 5 A 5 B 5 C 5 D 5 E 5 F 5 G 5 H 5 J 5 K 5 L 5 M 5 N 5 P 5 Q 6 A 6 B 6 C 6 D 6 E 6 F 6 G 6 H 6 J 6 K A B C D E F G H J K L	Thermal isolator Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)] Remote mount electronics and mounting bracket With 2 m (79 inch) of cable ²⁾ With 5 m (197 inch) of cable ²⁾ Wetted seals FKM FFKM [for process temperatures above -20 °C (-4 °F)] Probe material 316L stainless steel with PPS probe body 316L stainless steel with PVDF probe body Approvals Non-Sparking: CE, RCM, ATEX II 3 G Ex nA II T6 ... T4, ATEX II 2 D IP6X T100 °C Dust Ignition Proof: CE, RCM, ATEX II 1/2 D T100 °C Intrinsically Safe: ¹⁾ CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II 1/2 D IP6X T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Non-incendive: CSA/FM Class I, Div. 2, Groups A, B, C, D CSA/FM Class II, Div. 2, Groups F, G CSA/FM Class III T4 or T6 Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Intrinsically Safe: ¹⁾ CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Explosion Proof with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) General Purpose (CE, RCM)	M N P Q R S 0 1 2 3 0 1 0 1 B C D E F G H J K L

Level Measurement

Point level measurement
RF Capacitance switches

Pointek CLS200 - Digital

Selection and Ordering data

Article No.

Pointek CLS200 - Digital - Rod with Threaded or Flanged process connection

Versatile inverse frequency shift capacitance level and material detection switch with optional process connection choices and configurable output. CLS200 is ideal for detection of liquids, solids, slurries, foam, and interfaces, and has the ability to tune out buildup on the probe.

Enclosure and lid

Aluminum epoxy coated

2 x 1/2" NPT via adapter - cable inlet, IP65

2 x M20 x 1.5 cable inlet, IP65

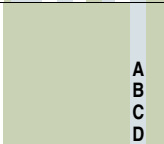
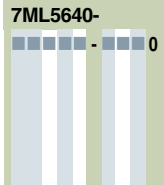
2 x 1/2" NPT via adapter - cable inlet, IP68

2 x M20 x 1.5 cable inlet, IP68

1) Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection

2) Available with Approvals options F, G, H, J, and K

Article No.



Selection and Ordering data

Article No.

Pointek CLS200 - Digital - Cable with Threaded or Flanged process connection

Versatile inverse frequency shift capacitance level and material detection switch with optional process connection choices and configurable output. CLS200 is ideal for detection of liquids, solids, slurries, foam, and interfaces, and has the ability to tune out buildup on the probe.

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Process connection

Threaded, 316L stainless steel

3/4" NPT [(Taper), ANSI/ASME B1.20.1]

1" NPT [(Taper), ANSI/ASME B1.20.1]

1 1/4" NPT [(Taper), ANSI/ASME B1.20.1]

1 1/2" NPT [(Taper), ANSI/ASME B1.20.1]

R 3/4" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]

R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]

R 1 1/2" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]

G 3/4" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]

G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]

G 1 1/2" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]

Welded flange, 316L stainless steel, raised face

1" ASME, 150 lb

1" ASME, 300 lb

1" ASME, 600 lb

1 1/2" ASME, 150 lb

1 1/2" ASME, 300 lb

1 1/2" ASME, 600 lb

2" ASME, 150 lb

2" ASME, 300 lb

2" ASME, 600 lb

3" ASME, 150 lb

3" ASME, 300 lb

3" ASME, 600 lb

4" ASME, 150 lb

4" ASME, 300 lb

4" ASME, 600 lb

Welded flange, 316L stainless steel, Type A flat faced

DN 25, PN 16

DN 25, PN 40

DN 40, PN 16

DN 40, PN 40

DN 50, PN 16

DN 50, PN 40

DN 80, PN 16

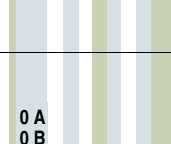
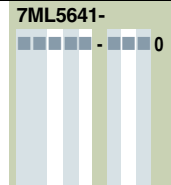
DN 80, PN 40

DN 100, PN 16

DN 100, PN 40

(Note: flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)

Article No.



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Selection and Ordering data

Order code

Further designs

Please add "-Z" to Article No. and specify Order code(s).

Total insertion length: enter the total insertion length in plain text description

Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]:
Measuring-point number/identification
(max. 27 characters) specify in plain text

Manufacturer's test certificate: M to DIN 55350,
Part 18 and ISO 9000


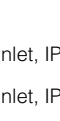
Material inspection Certificate Type 3.1 per
EN 10204

Operating Instructions

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Accessories

See page 4/32

Selection and Ordering data	Article No.
Pointek CLS200 - Digital - Cable with Threaded or Flanged process connection Versatile inverse frequency shift capacitance level and material detection switch with optional process connection choices and configurable output. CLS200 is ideal for detection of liquids, solids, slurries, foam, and interfaces, and has the ability to tune out buildup on the probe.	7ML5641- 
Enclosure and lid <u>Aluminum epoxy coated</u> 2 x 1/2" NPT via adapter - cable inlet, IP65 2 x M20 x 1.5 cable inlet, IP65 2 x 1/2" NPT via adapter - cable inlet, IP68 2 x M20 x 1.5 cable inlet, IP68	
1) Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection 2) Available with Approvals options F, G, H, J, and K	
Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Article No. and specify Order code(s).	
Total insertion length: enter the total insertion length in plain text description	Y01
Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y15
Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000	C11
Material inspection Certificate Type 3.1 per EN 10204	C12
Operating Instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories	See page 4/32

Level Measurement

Point level measurement

RF Capacitance switches

Pointek CLS200 - Digital

Selection and Ordering data

Article No.

Pointek CLS200 - Digital - Rod with Sanitary process connection

Versatile inverse frequency shift capacitance level and material detection switch with optional process connection choices and configurable output. CLS200 is ideal for detection of liquids, solids, slurries, foam, and interfaces, and has the ability to tune out buildup on the probe.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Process connection

Sanitary 316L stainless steel

1" sanitary fitting clamp
1½" sanitary fitting clamp
2" sanitary fitting clamp

2½" sanitary fitting clamp

3" sanitary fitting clamp

(Note: Sanitary connection dimensionally corresponds to the applicable ISO 2852 standard.)

Probe length

(length from process connection face)

Note: No Y01 needed in Order code for

standard lengths

Compact, 98 mm (3.86 inch)

Extended rod, 250 mm (9.84 inch)

Extended rod, 350 mm (13.78 inch)

Extended rod, 500 mm (19.69 inch)

Extended rod, 750 mm (29.53 inch)

Extended rod, 1 000 mm (39.37 inch)

Extended rod, 1 250 mm (49.21 inch)

Extended rod, 1 350 mm (53.15 inch)

Extended rod, 1 500 mm (59.06 inch)

Extended rod, 1 750 mm (68.90 inch)

Extended rod, 2 000 mm (78.74 inch)

Add Order code Y01 and plain text:

"Insertion length ... mm"

Extended rod, 110 ... 350 mm

(4.3 ... 13.78 inch)

Extended rod, 351 ... 1 000 mm

(13.82 ... 39.37 inch)

Extended rod, 1 001 ... 2 000 mm

(39.41 ... 78.74 inch)

Extended rod, 2 001 ... 3 000 mm

(78.78 ... 118.11 inch)

Extended rod, 3 001 ... 4 000 mm

(118.15 ... 157.48 inch)

Extended rod, 4 001 ... 5 000 mm

(157.52 ... 196.85 inch)

Extended rod, 5 001 ... 5 500 mm

(196.89 ... 216.53 inch)

Thermal isolator

Without thermal isolator

With thermal isolator [for process connection

temperatures over 85 °C (185 °F)]

Extended rod, 110 ... 350 mm

(4.3 ... 13.78 inch)

Extended rod, 351 ... 1 000 mm

(13.82 ... 39.37 inch)

Extended rod, 1 001 ... 2 000 mm

(39.41 ... 78.74 inch)

Extended rod, 2 001 ... 3 000 mm

(78.78 ... 118.11 inch)

Extended rod, 3 001 ... 4 000 mm

(118.15 ... 157.48 inch)

Extended rod, 4 001 ... 5 000 mm

(157.52 ... 196.85 inch)

Extended rod, 5 001 ... 5 500 mm

(196.89 ... 216.53 inch)

Remote mount electronics and mounting bracket

With 2 m (79 inch) of cable²⁾

With 5 m (197 inch) of cable²⁾

Wetted seals

FKM

FFKM [for process temperatures above -20 °C (-4 °F)]

Probe material

316L stainless steel with PPS probe body

316L stainless steel with PVDF probe body

Approvals

Non-Sparking:

CE, RCM, ATEX II 3 G Ex nA II T6 ... T4,

ATEX II 2 D IP6X T100 °C

Dust Ignition Proof:

CE, RCM, ATEX II 1/2 D T100 °C

Intrinsically Safe:¹⁾

CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4,

ATEX II 1/2 D IP6X T100 °C

Flameproof Enclosure with IS Probe:

CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4,

ATEX II 1/2 D T100 °C

Selection and Ordering data

Article No.

Pointek CLS200 - Digital - Rod with Sanitary process connection

Versatile inverse frequency shift capacitance level and material detection switch with optional process connection choices and configurable output. CLS200 is ideal for detection of liquids, solids, slurries, foam, and interfaces, and has the ability to tune out buildup on the probe.

Non-incendive:

CSA/FM Class I, Div. 2, Groups A, B, C, D

CSA/FM Class II, Div. 2, Groups F, G

CSA/FM Class III T4 or T6

Dust Ignition Proof with IS Probe:

CSA/FM Class II, Div. 1, Groups E, F, G

CSA/FM Class III T4

Intrinsically Safe:¹⁾

CSA/FM Class I, Div. 1, Groups A, B, C, D

CSA/FM Class II, Div. 1, Groups E, F, G

CSA/FM Class III T4

Explosion Proof with IS Probe:

CSA/FM Class I, Div. 1, Groups A, B, C, D

CSA/FM Class II, Div. 1, Groups E, F, G

CSA/FM Class III T4

General Purpose (CSA, FM)

General Purpose (CE, RCM)

Enclosure and lid

Aluminum epoxy coated

2 x ½" NPT via adapter - cable inlet, IP65

2 x M20 x 1.5 cable inlet, IP65

2 x ½" NPT via adapter - cable inlet, IP68

2 x M20 x 1.5 cable inlet, IP68

2 x M20 x 1.5 cable inlet, IP68

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2 x M20 x 1.5 cable inlet, IP68

Selection and Ordering data

Order code

Further designs

Please add **"-Z"** to Article No. and specify Order code(s).

Total insertion length: enter the total insertion length in plain text description

Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]:

Measuring-point number/identification

(max. 27 characters) specify in plain text

Manufacturer's test certificate: M to DIN 55350,

Part 18 and ISO 9000

Material inspection Certificate Type 3.1 per

EN 10204

Operating Instructions

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range of languages, at [http://www.siemens.com/](http://www.siemens.com/processinstrumentation/documentation)

[processinstrumentation/documentation](http://www.siemens.com/processinstrumentation/documentation)

Accessories

See page 4/32

Level Measurement

Point level measurement

RF Capacitance switches

Pointek CLS200 - Digital

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Pointek CLS200 - Digital - Rod with Sliding coupling with Threaded process connection Versatile inverse frequency shift capacitance level and material detection switch with optional process connection choices and configurable output. CLS200 is ideal for detection of liquids, solids, slurries, foam, and interfaces, and has the ability to tune out buildup on the probe. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5643- 	Pointek CLS200 - Digital - Rod with Sliding coupling with Threaded process connection Versatile inverse frequency shift capacitance level and material detection switch with optional process connection choices and configurable output. CLS200 is ideal for detection of liquids, solids, slurries, foam, and interfaces, and has the ability to tune out buildup on the probe. Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Non-incendive: CSA/FM Class I, Div. 2, Groups A, B, C, D CSA/FM Class II, Div. 2, Groups F, G CSA/FM Class III T4 or T6 Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Intrinsically Safe: ¹⁾ CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Explosion Proof with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) General Purpose (CE, RCM)	7ML5643-
Process connection Threaded, 316L stainless steel 3/4" NPT [(Taper), ANSI/ASME B1.20.1] 1" NPT [(Taper), ANSI/ASME B1.20.1] 1 1/4" NPT [(Taper), ANSI/ASME B1.20.1] 1 1/2" NPT [(Taper), ANSI/ASME B1.20.1] R 3/4" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] R 1 1/2" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] G 3/4" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] G 1 1/2" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	0 A 0 B 0 C 0 D 1 A 1 B 1 D 3 A 3 B 3 D	Enclosure and lid Aluminum epoxy coated 2 x 1/2" NPT via adapter - cable inlet, IP65 2 x M20 x 1.5 cable inlet, IP65 2 x 1/2" NPT via adapter - cable inlet, IP68 2 x M20 x 1.5 cable inlet, IP68 ¹⁾ Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection ²⁾ Available with Approvals options F, G, H, J, and K	E F G H J K L A B C D
Probe length (length from flange face) (threaded lengths include process thread) Note: No Y01 needed in Order code for standard lengths Extended rod, 350 mm (13.78 inch) Extended rod, 500 mm (19.69 inch) Extended rod, 750 mm (29.53 inch) Extended rod, 1 000 mm (39.37 inch) Extended rod, 1 250 mm (49.21 inch) Extended rod, 1 350 mm (53.15 inch) Extended rod, 1 500 mm (59.06 inch) Extended rod, 1 750 mm (68.90 inch) Extended rod, 2 000 mm (78.74 inch) Add Order code Y01 and plain text: "Insertion length ... mm" Extended rod, 350 ... 1 000 mm (13.82 ... 39.37 inch) Extended rod, 1 001 ... 2 000 mm (39.41 ... 78.74 inch) Extended rod, 2 001 ... 3 000 mm (78.78 ... 118.11 inch) Extended rod, 3 001 ... 4 000 mm (118.15 ... 157.48 inch) Extended rod, 4 001 ... 5 000 mm (157.52 ... 196.85 inch) Extended rod, 5 001 ... 5 500 mm (196.89 ... 216.53 inch)	C D E F G H J K L M N P Q R S	Selection and Ordering data Further designs Please add "-Z" to Article No. and specify Order code(s). Total insertion length: enter the total insertion length in plain text description Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000 Material inspection Certificate Type 3.1 per EN 10204 Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation Accessories	Order code Y01 Y15 C11 C12 See page 4/32
Thermal isolator Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	0 1		
Remote mount electronics and mounting bracket With 2 m (79 inch) of cable ²⁾ With 5 m (197 inch) of cable ²⁾	2 3		
Wetted seals FKM and PTFE FFKM and PTFE [for process temperatures above -20 °C (-4 °F)]	0 1		
Probe material 316L stainless steel with PPS probe body 316L stainless steel with PVDF probe body	0 1		
Approvals Non-Sparking: CE, RCM, ATEX II 3 G Ex nA II T6 ... T4, ATEX II 2 D IP6X T100 °C Dust Ignition Proof: CE, RCM, ATEX II 1/2 D T100 °C Intrinsically Safe: ¹⁾ CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II 1/2 D IP6X T100 °C	B C D		

Level Measurement

Point level measurement
RF Capacitance switches

Pointek CLS200 – Standard and Digital

Selection and Ordering data

Article No.

Accessories

SensGuard, 3/4" NPT (PPS)

Only available for CLS200 with 3/4" NPT thread

SensGuard, R 1" (BSPT) (PPS)

Only available for CLS200 with 3/4" NPT thread

One metallic cable gland M20 x 1.5, -40 ... +80 °C
(-40 ... +176 °F), Dust Ignition Proof, with integrated
shield connection (available for PROFIBUS PA)

General Purpose

1/2" NPT General Purpose Cable Entry IP68/IP69K
NEMA6, -40 ... +80 °C (-40 ... +176 °F), Dust Igni-
tion Proof, cable size 6 ... 12 mm
(0.236 ... 0.472 inch)

M20 x 1.5 General Purpose Cable Entry IP68/IP69K
NEMA6, -40 ... +80 °C (-40 ... +176 °F), Dust Igni-
tion Proof, cable size 7 ... 12 mm
(0.275 ... 0.472 inch)

Hazardous Locations

1/2" NPT EMC rated Cable Gland: Dust Ignition
Proof, Flameproof Exd, and Increased Safety
ATEX II 2 GD ExtD A21 (Zone 1, Zone 2, Zone 21,
Zone 22, and in Gas Groups IIA, IIB and IIC)
-60 ... +80 °C IP66, IP67, IP68, NEMA4X,
cable sizes 5.5 ... 12 mm (0.216 ... 0.472 inch)

M20 EMC rated Cable Gland: Dust Ignition Proof,
Flameproof Exd, and Increased Safety ATEX II 2
GD ExtD A21 (Zone 1, Zone 2, Zone 21, Zone 22
and in Gas Groups IIA, IIB and IIC)
-60 ... +80 °C IP66, IP67, IP68, NEMA4X,
cable sizes 5.5 ... 12 mm (0.216 ... 0.472 inch)

Blind threaded flanges are available.

Customers interested in a custom designed device
should consult a local sales person. For more
information, please visit

http://www.automation.siemens.com/aspa_app.

Pointek Specials

7ML1830-1DL

7ML1830-1DM

7ML1830-1AQ

7ML1830-1JA

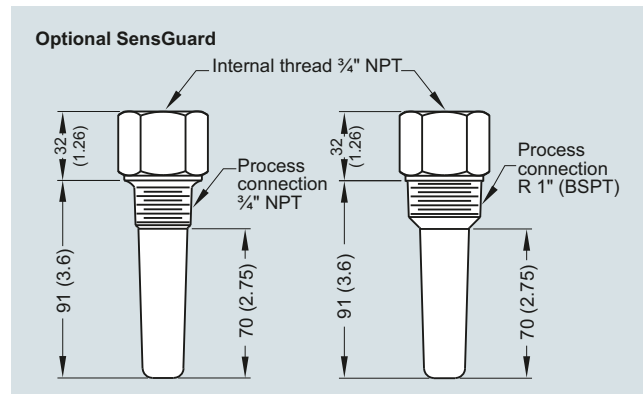
7ML1830-1JC

7ML1830-1JB

7ML1830-1JD

See page 4/60

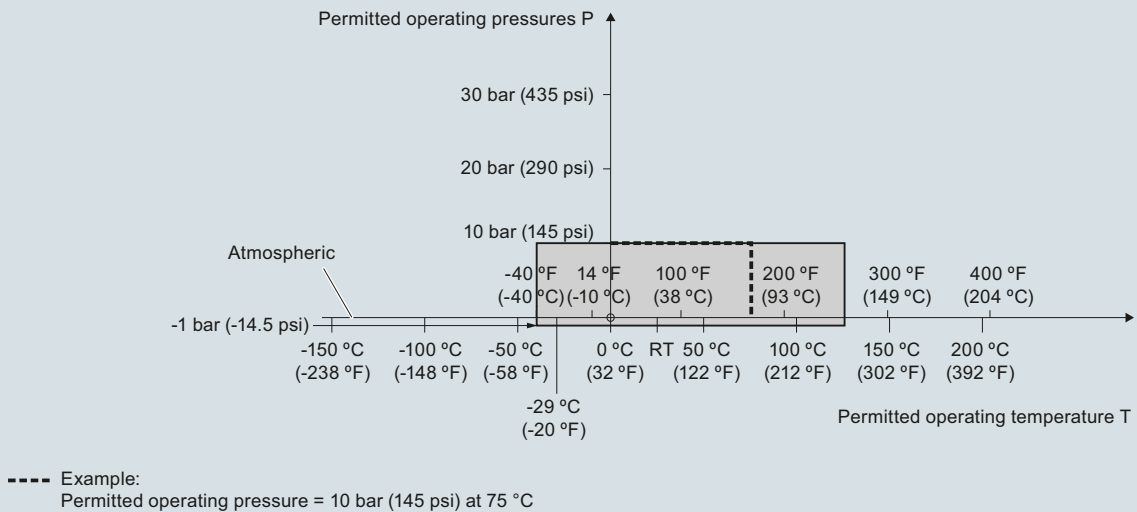
Options



Optional SensGuard, dimensions in mm (inch)

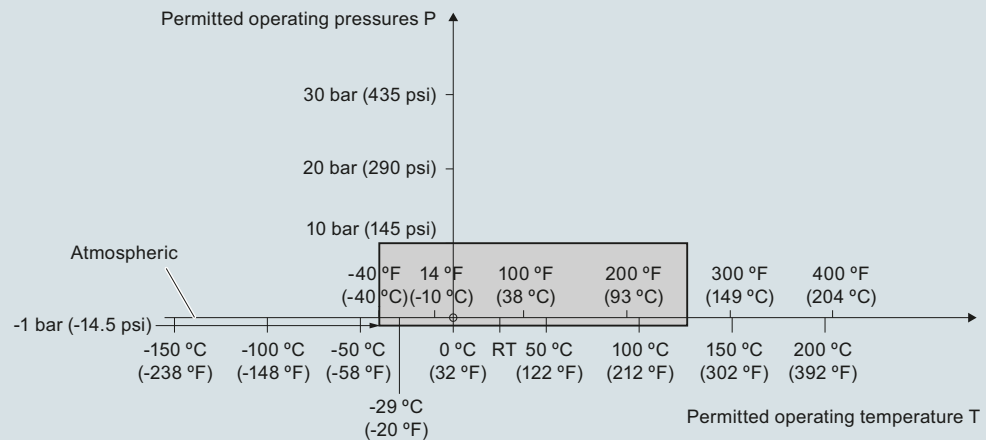
Characteristic curves

Pressure/temperature curve
CLS200 sliding coupling
threaded process connections
(7ML5633 and 7ML5643)



Pointek CLS200 process pressure/temperature derating curves (7ML5633 and 7ML5643)

Pressure/temperature curve
CLS200 cable
Threaded process connections
(7ML5631 and 7ML5641)



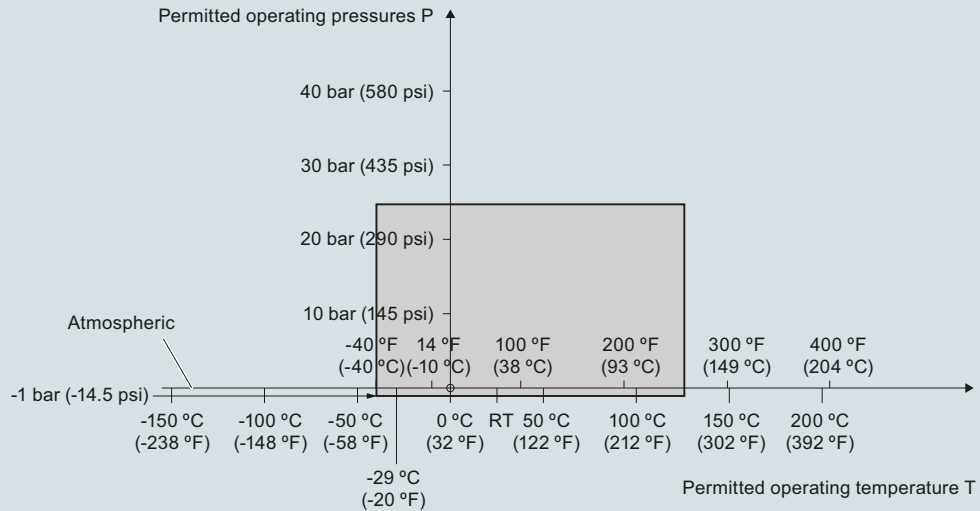
Pointek CLS200 process pressure/temperature derating curves (7ML5631 and 7ML5641)

Level Measurement

Point level measurement
RF Capacitance switches

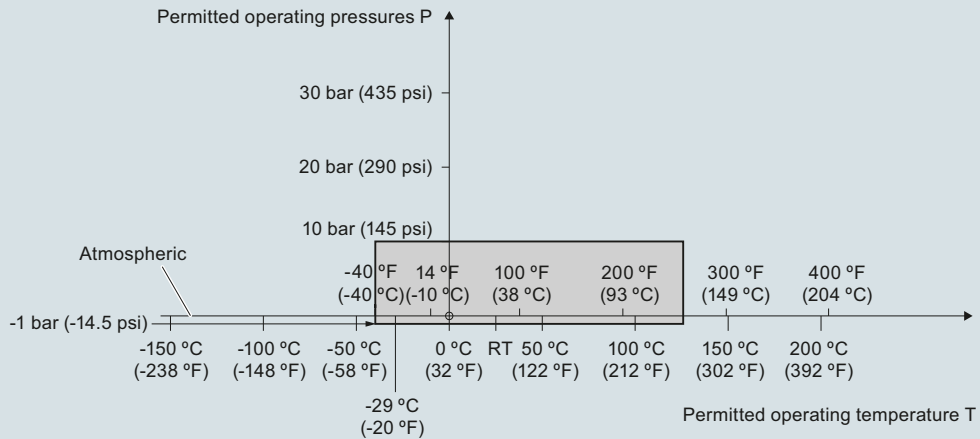
Pointek CLS200 - Standard and Digital

Pressure/temperature curve
CLS200 compact and extended rod
Threaded process connections
(7ML5630 and 7ML5640)



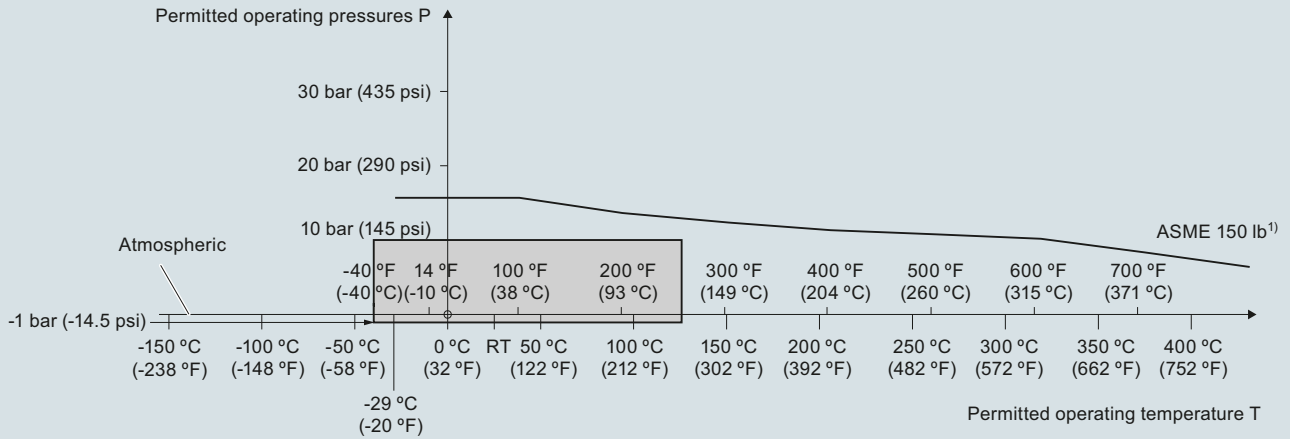
Pointek CLS200 process pressure/temperature derating curves (7ML5630 or 7ML5640)

Pressure/temperature curve
CLS200 compact and extended sanitary type
Sanitary process connections
(7ML5632 and 7ML5642)



Pointek CLS200 process pressure/temperature derating curves (7ML5632 and 7ML5642)

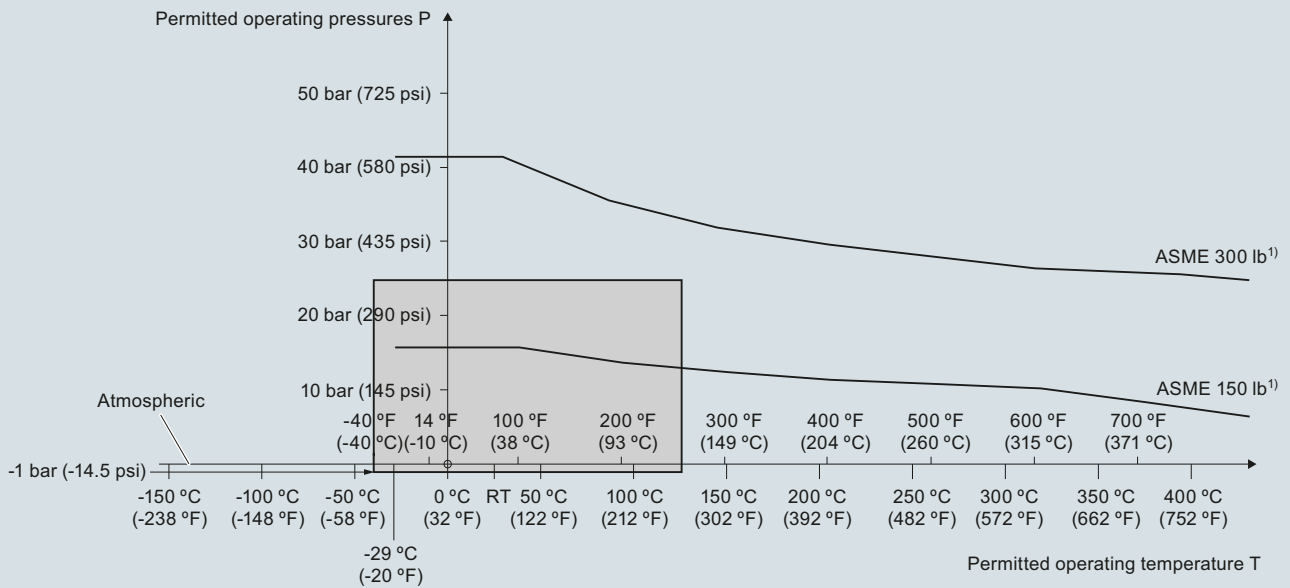
Pressure/temperature curve
CLS200, cable
ASME flanged process connections
(7ML5631 and 7ML5641)



¹⁾ The curve denotes the minimum allowable flange class for the shaded area below.

Pointek CLS200 process pressure/temperature derating curves (7ML5631 and 7ML5641)

Pressure/temperature curve
CLS200 compact and extended rod
ASME flanged process connections
(7ML5630 and 7ML5640)



¹⁾ The curve denotes the minimum allowable flange class for the shaded area below.

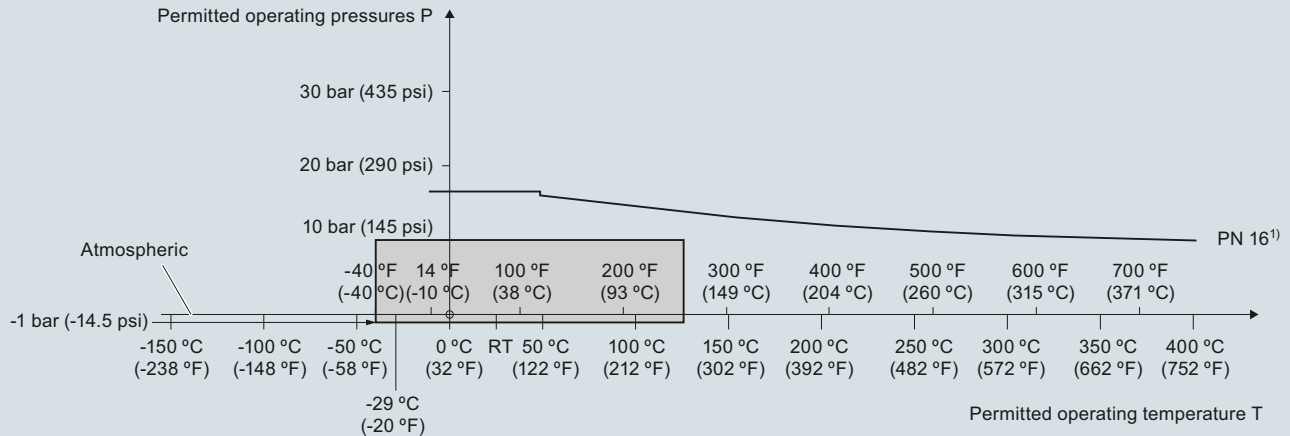
Pointek CLS200 process pressure/temperature derating curves (7ML5630 and 7ML5640)

Level Measurement

Point level measurement
RF Capacitance switches

Pointek CLS200 - Standard and Digital

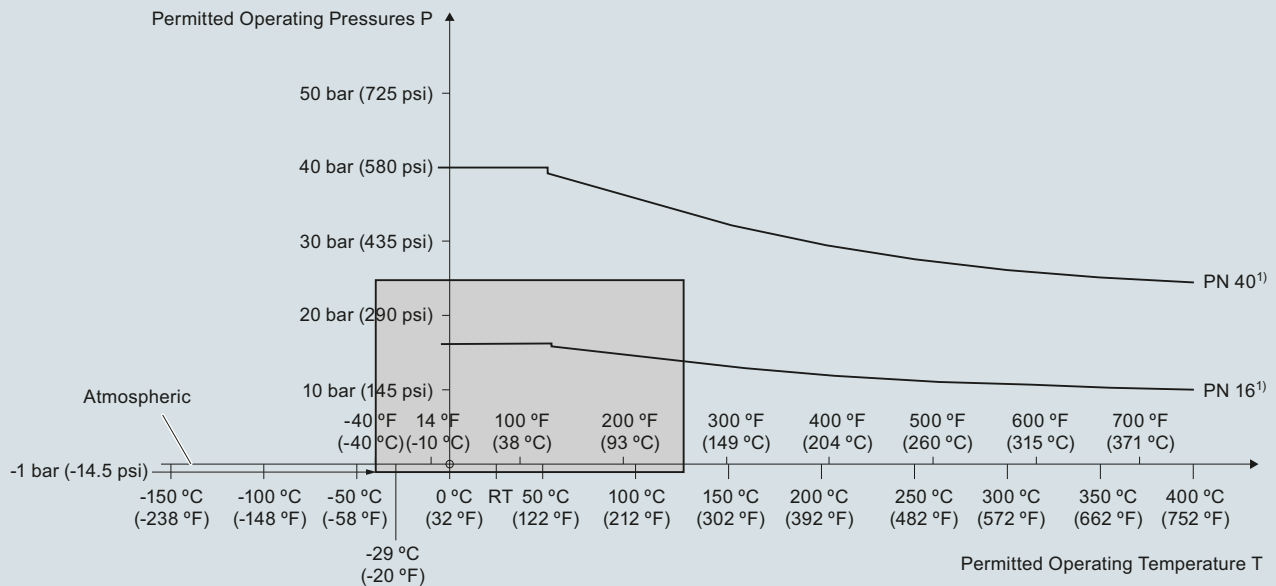
Pressure/temperature curve
CLS200 cable
EN flanged process connections
(7ML5631 and 7ML5641)



¹⁾ The curve denotes the minimum allowable flange class for the shaded area below.

Pointek CLS200 process pressure/temperature derating curves (7ML5631 and 7ML5641)

Pressure/Temperature Curve
CLS200 Compact and Extended Rod
EN Flanged Process Connections
(7ML5630 and 7ML5640)

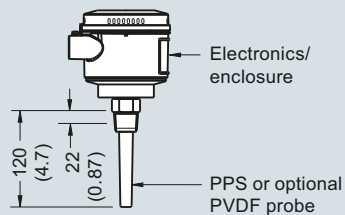


¹⁾ The curve denotes the minimum allowable flange class for the shaded area below.

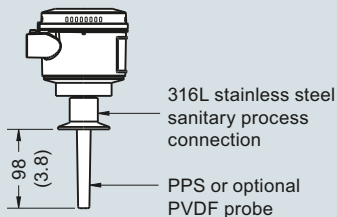
Pointek CLS200 process pressure/temperature derating curves (7ML5630 and 7ML5640)

Dimensional drawings

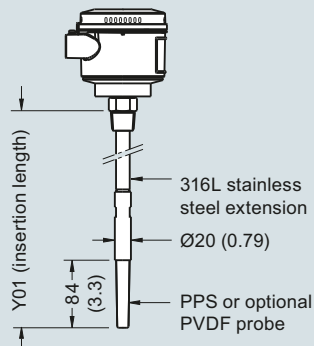
Compact version
Threaded
(7ML5630 and 7ML5640)



Sanitary compact version
Sanitary fitting
(7ML5632 and 7ML5642)

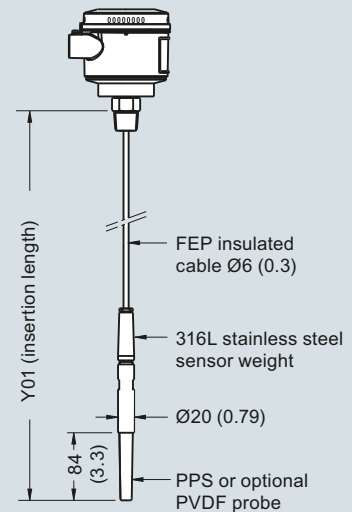


Extended rod version
Threaded
(7ML5630 and 7ML5640)

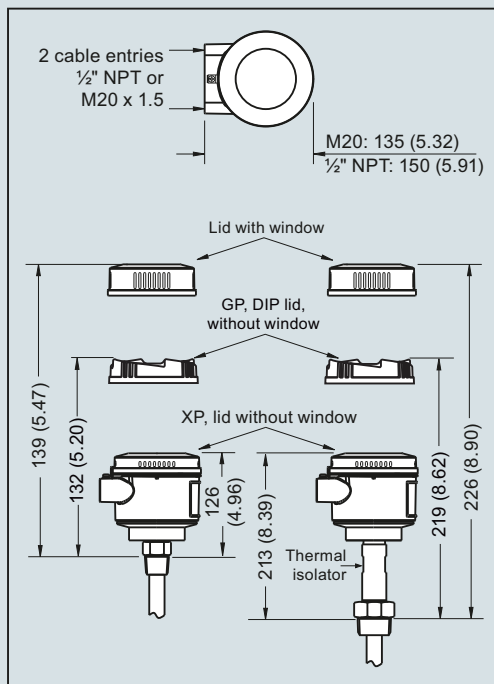


Min. insertion length = 200 (7.87)
Max. insertion length = 5 500 (216)

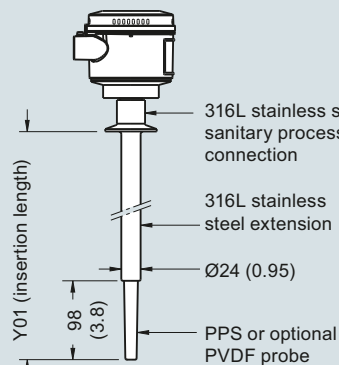
Extended cable version
Threaded
(7ML5631 and 7ML5641)



Min. insertion length = 500 (19.69)
Max. insertion length = 30 000 (1 181)
Applicable for liquids and solids applications. Cable can be shortened on site.

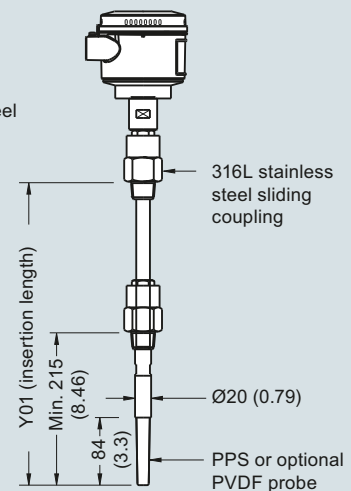


Sanitary extended version
Sanitary fitting
(7ML5632 and 7ML5642)



Min. insertion length = 110 (4.3)
Max. insertion length = 5 500 (216)

Sliding coupling version
Threaded
(7ML5633 and 7ML5643)



Min. insertion length = 350 (13.82)
Max. insertion length = 5 500 (216)

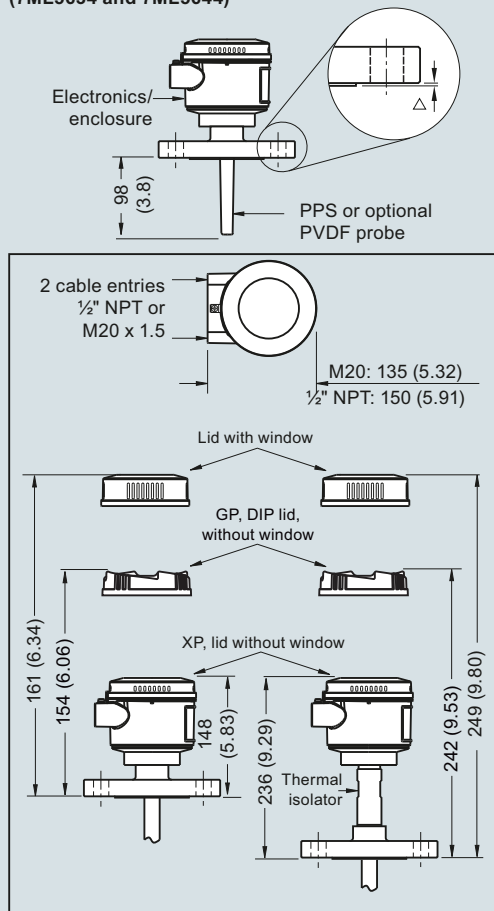
Pointek CLS200 threaded/sanitary process connections, dimensions in mm (inch)

Level Measurement

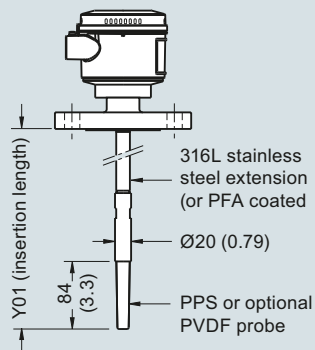
Point level measurement
RF Capacitance switches

Pointek CLS200 - Standard and Digital

Compact version
Welded Flange (7ML5630 and 7ML5640)
Welded Flange, PFA coated
(7ML5634 and 7ML5644)

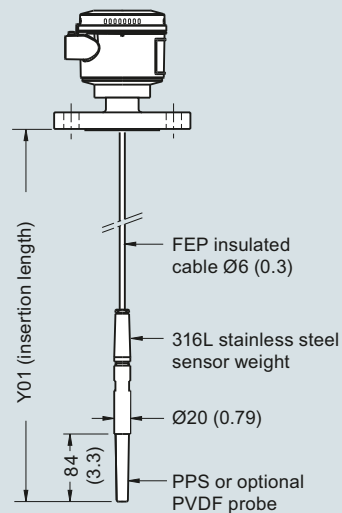


Extended rod version
Welded Flange (7ML5630 and 7ML5640)
Welded Flange, PFA coated
(7ML5634 and 7ML5644)



Min. insertion length = 200 (7.87)
Max. insertion length = 5 500 (216)

Extended cable version
Welded Flange
(7ML5631 and 7ML5641)



Min. insertion length = 500 (19.69)
Max. insertion length = 30 000 (1 181)
Applicable for liquids and solids applications. Cable can be shortened on site.

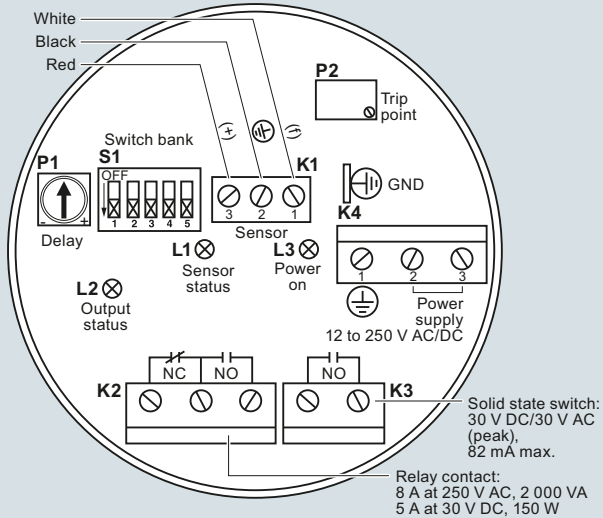
Flange Facing (raised face)	
Flange Class	Facing thickness
△ ASME 150/300	2 (0.08)
△ ASME 600/900	7 (0.28)
△ PN16/40	2 (0.08)

Insertion length does not include any raised face/gasket face dimension
(see Flange Facing Table above)

Pointek CLS200 flanged process connections, dimensions in mm (inch)

Circuit diagrams

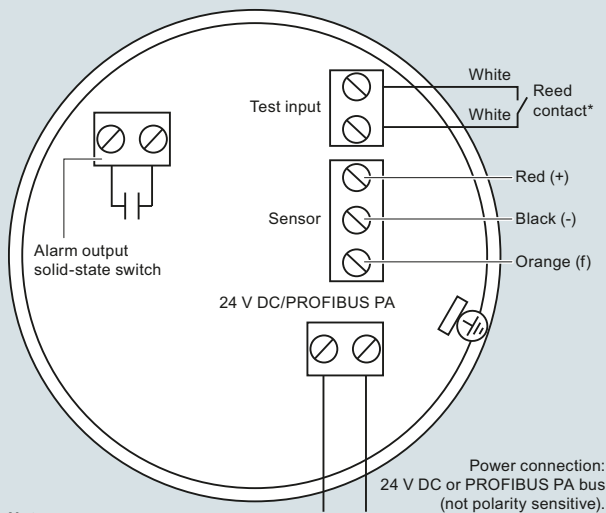
Wiring: Pointek CLS200 standard



Notes:

- Identification label is on underside of lid. Switch and potentiometer settings are for illustration purposes only (refer to operation/setup in manual).
- All field wiring must have insulation suitable for at least 250 V.
- Relay contact terminals are for use with equipment having no accessible live parts and wiring having insulation suitable for at least 250 V.
- Maximum working voltage between adjacent relay contacts shall be 250 V.
- Refer to the Instruction Manual or contact Siemens representative for detailed wiring information.

Wiring: Pointek CLS200 Digital



Notes:

Refer to the instruction manual or contact a Siemens representative for detailed wiring information.

*Magnet activated sensor Test

A magnet can be used to test the sensor without opening the lid of the Pointek CLS200 Digital version. Bring the magnet close to the test area indicated on the enclosure. The sensor test starts and finishes automatically after 10 seconds.



Level Measurement

Point level measurement
RF Capacitance switches

Pointek CLS300 - Standard

Overview



Pointek CLS300 (standard version) is an inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. CLS300 is ideal for detecting liquids, solids, slurries, foam, and interfaces in demanding conditions where high pressure and temperatures are present and has the ability to tune out buildup on the probe.

Benefits

- Active-Shield technology so measurement is unaffected by material buildup or nozzle interference in active shield section
- Performs in extremely abrasive conditions because of solid rod construction
- Three LED indicators for adjustment control, output status, and power
- High-temperature version up to 400 °C (752 °F)

Application

Pointek CLS300 standard version has three LED indicators with basic relay and solid-state switch alarms.

The robust design of CLS300 makes it specifically applicable for heavy solids applications where abrasive materials occur as in the mining industry. The fully potted electronics are unaffected by condensation, dust or vibration.

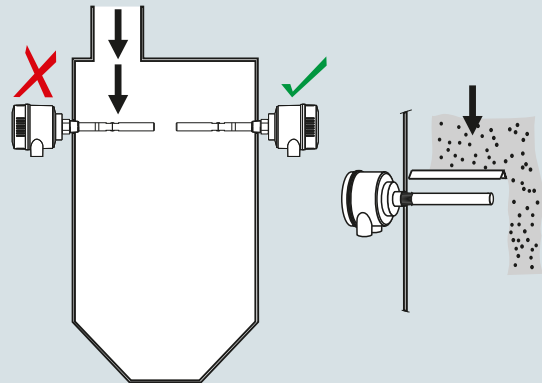
Wetted parts are made of stainless steel with a PFA shield for high chemical resistance, and of ceramic and stainless steel for high temperature version. Materials with low or high dielectric constants can be accurately detected. The unique Active Shield suppresses interference from material buildup or long installation nozzles.

The unique modular design of the Pointek CLS300 provides a wide range of configurations, process connections, extensions and approvals to meet the temperature and pressure requirements of specific applications. The modular design makes ordering easier and reduces stocking requirements. A wide range of probe configurations are available, including rod and cable versions.

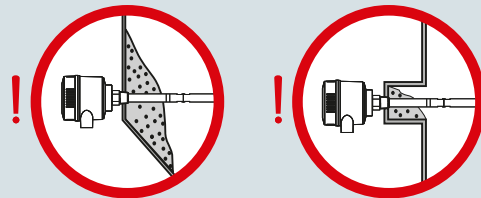
- Key Applications: liquids, slurries, bulk solids, relatively high pressure and temperature, hazardous areas, milling and mining applications

Configuration

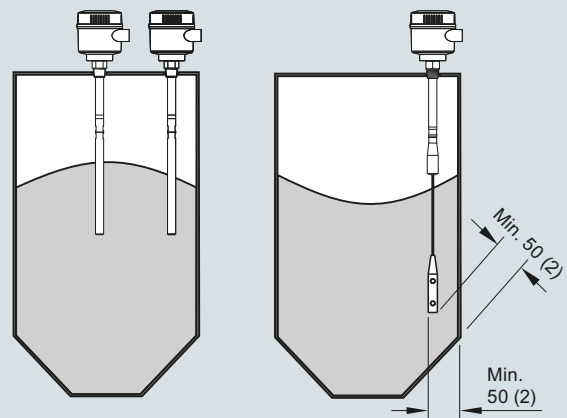
Installation



Keep unit out of path of falling material, or protect probe from falling material.



Build up of material in active shield area does not affect switch operation.



Install probe at least 50 (2) from tank wall.
Note angle of repose and adjust accordingly.

Pointek CLS300 installation, dimensions in mm (inch)

Technical specifications

Mode of operation		Design	
Measuring principle	Inverse frequency shift capacitive level detection	Material (enclosure)	Powder-coated aluminum with gasket
Input		Degree of Protection	Standard: Type 4/NEMA 4/IP65 Optional: Type 4/NEMA 4/IP68
Measured variable	Change in picoFarad (pF)	Cable inlet	2 x M20 x 1.5 thread (option: 2 x 1/2" NPT conduit entry including 1 plugged entry)
Output		Controls and displays	
Output signal		Displays	3 LEDs, for probe status, output status and power supply
• Relay output	1 SPDT Form C relay	Potentiometers	2 potentiometers for time delay and sensitivity
- Max. contact voltage	• 30 V DC • 250 V AC	Switches	5 DIP switches for delay on/off, fail-safe high/low, time delay test/adjust, high/low sensitivity, test delay settings
- Max. contact current	• 5 A (DC) • 8 A (AC)		
- Max. switching capacity	• 150 W (DC) • 2 000 VA (AC)		
- Time delay (ON and/or OFF)	1 ... 60 s		
• Solid-state output			
- Output	Galvanically isolated		
- Protection	Against reversed polarity (bipolar)		
- Max. switching voltage	• 30 V (DC) • 30 V peak (AC)		
- Max. load current	82 mA		
- Voltage drop	< 1 V, typical at 50 mA		
- Time delay (pre or post switching)	1 ... 60 s		
Accuracy		Power supply	
Resolution		Supply	12 ... 250 V AC/DC, 0 ... 60 Hz, galvanically isolated, 2 W
• Min. sensitivity (pF)	1 % change in actual capacitance	Certificates and approvals	
• Max. temperature error	0.2 % of actual capacitance value	General Purpose	CSA, FM, CE, RCM
Rated operating conditions¹⁾		Flameproof Enclosure with IS Probe	ATEX II 1/2 G EEx d[ia] IIC T6 ... T1 ATEX II 1/2 D T100 °C
Installation conditions		Dust Ignition Proof with IS Probe	ATEX II 1/2 D T100 °C CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4
• Location	Indoor/outdoor	Explosion Proof Enclosure with IS Probe	CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4
Ambient conditions		Marine	Lloyds Register of Shipping, Categories ENV1, ENV2, and ENV5
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) ²⁾	Overfill Protection	WHG (Germany) VLAREM II (Belgium)
Medium conditions		Others	Pattern Approval (China)
• Relative dielectric constant ϵ_r	Min. 1.5		
• Process temperature			
- Rod/Cable version	-40 ... +200 °C (-40 ... +392 °F) ²⁾		
- High-temperature version	-40 ... +400 °C (-40 ... +752 °F)		
• Process pressure ³⁾	-1 ... +35 bar g (-14.6 ... +511 psi g)		

Design: Probe

	Rod version	High Temperature version	Cable version
Length	Min. 250 mm (9.8 inch), max. 1 000 mm (40 inch)	Min. 250 mm (9.8 inch), max. 1 000 mm (40 inch)	Min. 1 000 mm (40 inch), max. 25 000 mm (984 inch)
Sensor wetted parts	PFA (no insulation on active probe), 316L stainless steel, PEEK isolators	Ceramic (ZrO ₂) ¹⁾ isolators (no insulation on active probe), 316L stainless steel	316 stainless steel, optional PFA, PEEK isolators
O-ring seal material	FKM (optional FFKM) ²⁾	Graphite ²⁾	FKM (optional FFKM) ²⁾
Thermal isolator	Optional	Standard	Optional
Extension	User selectable length	User selectable length	User selectable cable length

¹⁾ Zirconium Oxide

²⁾ For caustic materials, consult a local sales person for alternative O-rings.
For more information, please visit http://www.automation.siemens.com/aspa_app.

Level Measurement

Point level measurement
RF Capacitance switches

Pointek CLS300 - Standard

Selection and Ordering data	Article No.
Pointek CLS300 - Standard - Rod Version with Threaded or Flanged process connection	7ML5650-
Inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. CLS300 is ideal for detecting liquids, solids, slurries, foam, and interfaces in demanding conditions where high pressure and temperatures are present, and has the ability to tune out buildup on the probe.	
➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Process connection	
<u>Threaded, 316L stainless steel</u>	
¾" NPT [(Taper), ANSI/ASME B1.20.1]	0 A
1" NPT [(Taper), ANSI/ASME B1.20.1]	0 B
1¼" NPT [(Taper), ANSI/ASME B1.20.1]	0 C
1½" NPT [(Taper), ANSI/ASME B1.20.1]	0 D
R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 A
R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 B
R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 D
G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 A
G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 B
G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 D
<u>Welded flange, 316L stainless steel, raised face</u>	
1" ASME, 150 lb	5 A
1" ASME, 300 lb	5 B
1" ASME, 600 lb	5 C
1½" ASME, 150 lb	5 D
1½" ASME, 300 lb	5 E
1½" ASME, 600 lb	5 F
2" ASME, 150 lb	5 G
2" ASME, 300 lb	5 H
2" ASME, 600 lb	5 J
3" ASME, 150 lb	5 K
3" ASME, 300 lb	5 L
3" ASME, 600 lb	5 M
4" ASME, 150 lb	5 N
4" ASME, 300 lb	5 P
4" ASME, 600 lb	5 Q
<u>Welded flange, 316L stainless steel, Type A flat faced</u>	
DN 25, PN 16	6 A
DN 25, PN 40	6 B
DN 40, PN 16	6 C
DN 40, PN 40	6 D
DN 50, PN 16	6 E
DN 50, PN 40	6 F
DN 80, PN 16	6 G
DN 80, PN 40	6 H
DN 100, PN 16	6 J
DN 100, PN 40	6 K
(Note: flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)	
Probe length (length from flange face) (threaded lengths include process thread)	
<u>Note: No Y01 needed in Order code for standard lengths</u>	
Standard version, rod 350 mm (13.78 inch)	A
Extended rod, length 500 mm (19.69 inch)	B
Extended rod, length 750 mm (29.53 inch)	C
Extended rod, length 1 000 mm (39.37 inch)	D

Selection and Ordering data	Article No.
Pointek CLS300 - Standard - Rod Version with Threaded or Flanged process connection	7ML5650-
Inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. CLS300 is ideal for detecting liquids, solids, slurries, foam, and interfaces in demanding conditions where high pressure and temperatures are present, and has the ability to tune out buildup on the probe.	
Add Order code Y01 and plain text: "Insertion length ... mm"	
Extended rod, factory adjusted length 250 ... 499 mm (9.8 ... 19.65 inch)	E
Extended rod, factory adjusted length 500 ... 749 mm (19.69 ... 29.49 inch)	F
Extended rod, factory adjusted length 750 ... 999 mm (29.53 ... 39.3 inch)	G
Thermal isolator	
Without thermal isolator	0
With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	1
Wetted seals	
FKM	0
FFKM [for process temperatures above -20 °C (-4 °F)]	1
Probe material	
316L stainless steel with PFA lining and PEEK isolators	0
Approvals	
Dust Ignition Proof with IS Probe: CE, RCM, ATEX II 1/2 D T100 °C	C
Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T1, ATEX II 1/2 D T100 °C	D
Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T1, ATEX II 1/2 D T100 °C	E
Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4	F
Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4	G
General Purpose (CSA, FM)	H
General Purpose (CE, RCM)	J
General Purpose with WHG approval (CSA, FM, CE, RCM)	K
Enclosure and lid	
<u>Aluminum epoxy coated</u>	
2 x ½" NPT via adapter - cable inlet, IP65	A
2 x M20 x 1.5 cable inlet, IP65	B
2 x ½" NPT via adapter - cable inlet, IP68	C
2 x M20 x 1.5 cable inlet, IP68	D
Active shield length	
Standard length - (125 mm threaded, 105 mm flanged)	0
Extended shield - (250 mm threaded, 230 mm flanged) ¹⁾	1
Extended shield - (400 mm threaded, 380 mm flanged) ²⁾	2
1) Available with Probe version options B ... D, F, G only [≥ 500 mm (19.69 inch)]	
2) Available with Probe version options C, D, and G only [≥ 750 mm (29.53 inch)]	

Level Measurement

Point level measurement

RF Capacitance switches

Pointek CLS300 - Standard

Selection and Ordering data		Order code	Selection and Ordering data	Article No.
Further designs			Pointek CLS300 - Standard - Cable Version with Threaded or Flanged process connection	7ML5651-
Please add "-Z" to Article No. and specify Order code(s).			Inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. CLS300 is ideal for detecting liquids, solids, slurries, foam, and interfaces in demanding conditions where high pressure and temperatures are present, and has the ability to tune out buildup on the probe.	
Total insertion length: enter the total insertion length in plain text description		Y01	Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text		Y15	Process connection	
Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000		C11	<u>Threaded, 316L stainless steel</u>	
Material Inspection Certificate Type 3.1 per EN 10204		C12	1/4" NPT [(Taper), ANSI/ASME B1.20.1]	0 C
Operating Instructions			1 1/2" NPT [(Taper), ANSI/ASME B1.20.1]	0 D
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation			R 1 1/2" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 D
Accessories		See page 4/53	G 1 1/2" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 D
			<u>Welded flange, 316L stainless steel, raised face</u>	
			1 1/2" ASME, 150 lb	5 D
			1 1/2" ASME, 300 lb	5 E
			1 1/2" ASME, 600 lb	5 F
			2" ASME, 150 lb	5 G
			2" ASME, 300 lb	5 H
			2" ASME, 600 lb	5 J
			3" ASME, 150 lb	5 K
			3" ASME, 300 lb	5 L
			3" ASME, 600 lb	5 M
			4" ASME, 150 lb	5 N
			4" ASME, 300 lb	5 P
			4" ASME, 600 lb	5 Q
			<u>Welded flange, 316L stainless steel, Type A flat faced</u>	
			DN 40, PN 16	6 C
			DN 40, PN 40	6 D
			DN 50, PN 16	6 E
			DN 50, PN 40	6 F
			DN 80, PN 16	6 G
			DN 80, PN 40	6 H
			DN 100, PN 16	6 J
			DN 100, PN 40	6 K
			(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)	
			Probe length	
			(length from flange face)	
			(threaded lengths include process thread)	
			<u>Note: No Y01 needed in Order code for standard lengths</u>	
			Extended cable, 3 000 mm (118.11 inch), length can be shortened by customer	A
			Extended cable, 6 000 mm (236.22 inch), length can be shortened by customer	B
			<u>Add Order code Y01 and plain text: "Insertion length ... mm"</u>	
			Extended cable, 500 ... 1 000 mm (19.69 ... 39.37 inch)	E
			Extended cable, 1 001 ... 5 000 mm (39.41 ... 196.85 inch)	F
			Extended cable, 5 001 ... 10 000 mm (196.89 ... 393.70 inch)	G
			Extended cable, 10 001 ... 15 000 mm (393.74 ... 590.55 inch)	H
			Extended cable, 15 001 ... 20 000 mm (590.59 ... 787.40 inch)	J
			Extended cable, 20 001 ... 25 000 mm (787.44 ... 984.25 inch)	K

Level Measurement

Point level measurement

RF Capacitance switches

Pointek CLS300 - Standard

Selection and Ordering data

Article No.

Pointek CLS300 - Standard - Cable Version with Threaded or Flanged process connection

Inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. CLS300 is ideal for detecting liquids, solids, slurries, foam, and interfaces in demanding conditions where high pressure and temperatures are present, and has the ability to tune out buildup on the probe.

Thermal isolator

Without thermal isolator

With thermal isolator [for process connection temperatures over 85 °C (185 °F)]

Wetted seals

FKM

FFKM [for process temperatures above -20 °C (-4 °F)]

Probe material

Bare 316L stainless steel cable, PEEK isolators and 316L stainless steel cable weight

PFA coated cable, PEEK isolators and 316L stainless steel cable weight

Approvals

Dust Ignition Proof with IS Probe:
CE, RCM, ATEX II 1/2 D T100 °C

Flameproof Enclosure with IS Probe:
CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T1,
ATEX II 1/2 D T100 °C

Flameproof Enclosure with IS Probe,
with WHG approval:
CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T1,
ATEX II 1/2 D T100 °C

Dust Ignition Proof with IS Probe:
CSA/FM Class II, Div. 1, Groups E, F, G
CSA/FM Class III T4

Explosion Proof Enclosure with IS Probe:
CSA/FM Class I, Div. 1, Groups A, B, C, D
CSA/FM Class II, Div. 1, Groups E, F, G
CSA/FM Class III T4

General Purpose (CSA, FM)

General Purpose (CE, RCM)

General Purpose with WHG approval
(CSA, FM, CE, RCM)

Enclosure and lid

Aluminum epoxy coated

2 x 1/2" NPT via adapter - cable inlet, IP65

2 x M20 x 1.5 cable inlet, IP65

2 x 1/2" NPT via adapter - cable inlet, IP68

2 x M20 x 1.5 cable inlet, IP68

Active shield length

Standard length -
(125 mm threaded, 105 mm flanged)

Extended shield -
(250 mm threaded, 230 mm flanged)

Extended shield -
(400 mm threaded, 380 mm flanged)¹⁾

7ML5651-

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Selection and Ordering data

Order code

Further designs

Please add "-Z" to Article No. and specify Order code(s).

Total insertion length: enter the total insertion length in plain text description

Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]:
Measuring-point number/identification
(max. 27 characters) specify in plain text

Manufacturer's test certificate: M to DIN 55350,
Part 18 and to ISO 9000

Material Inspection Certificate Type 3.1 per
EN 10204

Operating Instructions

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Accessories

Y01

Y15

C11

C12

See page 4/53

Level Measurement

Point level measurement

RF Capacitance switches

Pointek CLS300 - Standard

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Pointek CLS300 - Standard - High Temperature Rod Version with Threaded or Flanged process connection Inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. CLS300 is ideal for detecting liquids, solids, slurries, foam, and interfaces in demanding conditions where high pressure and temperatures are present, and has the ability to tune out buildup on the probe. Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5652- 	Pointek CLS300 - Standard - High Temperature Rod Version with Threaded or Flanged process connection Inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. CLS300 is ideal for detecting liquids, solids, slurries, foam, and interfaces in demanding conditions where high pressure and temperatures are present, and has the ability to tune out buildup on the probe. Add Order code Y01 and plain text: "Insertion length ... mm" Extended rod, factory adjusted length 250 ... 499 mm (9.8 ... 19.65 inch) Extended rod, factory adjusted length 500 ... 749 mm (19.69 ... 29.49 inch) Extended rod, factory adjusted length 750 ... 999 mm (29.53 ... 39.3 inch)	7ML5652-
Process connection <u>Threaded, 316L stainless steel</u> ¾" NPT [(Taper), ANSI/ASME B1.20.1] 0 A 1" NPT [(Taper), ANSI/ASME B1.20.1] 0 B 1¼" NPT [(Taper), ANSI/ASME B1.20.1] 0 C 1½" NPT [(Taper), ANSI/ASME B1.20.1] 0 D R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] 1 A R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] 1 B R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] 1 D G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 3 A G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 3 B G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 3 D		Wetted seals Graphite 0 Probe material 316L stainless steel with ceramic (ZrO ₂) isolators 0	
<u>Welded flange, 316L stainless steel, raised face</u> 1" ASME, 150 lb 5 A 1" ASME, 300 lb 5 B 1" ASME, 600 lb 5 C 1½" ASME, 150 lb 5 D 1½" ASME, 300 lb 5 E 1½" ASME, 600 lb 5 F 2" ASME, 150 lb 5 G 2" ASME, 300 lb 5 H 2" ASME, 600 lb 5 J 3" ASME, 150 lb 5 K 3" ASME, 300 lb 5 L 3" ASME, 600 lb 5 M 4" ASME, 150 lb 5 N 4" ASME, 300 lb 5 P 4" ASME, 600 lb 5 Q		Approvals Dust Ignition Proof with IS Probe: CE, RCM, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T1, ATEXII 1/2 D T100 °C Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T1, ATEX II 1/2 D T100 °C Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) H General Purpose (CE, RCM) J General Purpose with WHG approval (CSA, FM, CE, RCM) K	
<u>Welded flange, 316L stainless steel, Type A flat faced</u> DN 25, PN 16 6 A DN 25, PN 40 6 B DN 40, PN 16 6 C DN 40, PN 40 6 D DN 50, PN 16 6 E DN 50, PN 40 6 F DN 80, PN 16 6 G DN 80, PN 40 6 H DN 100, PN 16 6 J DN 100, PN 40 6 K (Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)		Enclosure and lid <u>Aluminum epoxy coated</u> 2 x ½" NPT via adapter - cable inlet, IP65 A 2 x M20 x 1.5 cable inlet, IP65 B 2 x ½" NPT via adapter - cable inlet, IP68 C 2 x M20 x 1.5 cable inlet, IP68 D	
Probe length (length from flange face) (threaded lengths include process thread) Note: No Y01 needed in Order code for standard lengths Standard version rod, 350 mm (13.78 inch) A Extended rod, length 500 mm (19.69 inch) B Extended rod, length 750 mm (29.53 inch) C Extended rod, length 1 000 mm (39.37 inch) D		Active shield length Standard length - (125 mm threaded, 105 mm flanged) 0 Extended shield - (250 mm threaded, 230 mm flanged) ¹⁾ 1 Extended shield - (400 mm threaded, 380 mm flanged) ²⁾ 2 1) Available with Probe version options B ... D, F, G only [≥ 500 mm (19.69 inch)] 2) Available with Probe version options C, D, and G only [≥ 750 mm (29.53 inch)]	

Level Measurement

Point level measurement
RF Capacitance switches

Pointek CLS300 - Standard

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Article No. and specify Order code(s).	
Total insertion length: enter the total insertion length in plain text description ¹⁾	Y01
Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y15
Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000	C11
Material Inspection Certificate Type 3.1 per EN 10204	C12
Operating Instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/ processinstrumentation/documentation	
Accessories	See page 4/53

¹⁾ Not available with Probe length option B.

Overview



Pointek CLS300 (digital version) is an inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. It is ideal for detecting liquids, solids, slurries, foam, and interfaces in demanding conditions where high pressure and temperatures are present and has the ability to tune out buildup on the probe. The digital version includes PROFIBUS PA, an LCD display, and advanced diagnostic features.

Benefits

- Active-Shield technology so measurement is unaffected by material buildup or nozzle interference in active shield section
- Performs in extremely abrasive conditions because of solid rod construction
- Push-button calibration, full-function diagnostics
- High sensitivity allows installation in a wide range of liquids, solids or slurry applications
- Integral LCD display allows for easy menu-driven setup
- PROFIBUS PA communication (SIMATIC PDM compatible)

Application

Pointek CLS300 digital version provides an integral LCD display for stand-alone use, with PROFIBUS PA communication (Profile version 3.0, Class B) when required. Solid-state switch alarm is standard.

The robust design of CLS300 makes it specifically applicable for heavy solids applications where abrasive materials occur as in the mining industry.

The fully potted electronics are unaffected by condensation, dust or vibration.

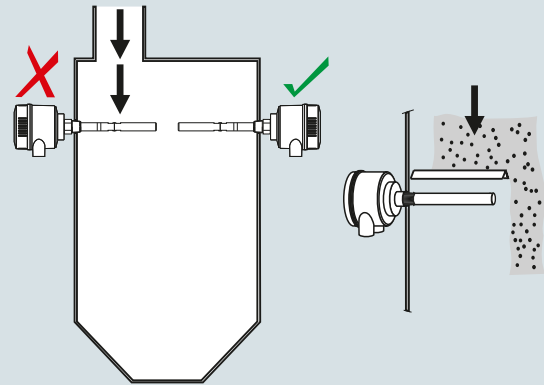
Wetted parts are made of stainless steel with a PFA shield for high chemical resistance, and of ceramic and stainless steel for high temperature version. Materials with low or high dielectric constants can be accurately detected. The unique Active Shield suppresses interference from material buildup or long installation nozzles.

The unique modular design of the Pointek CLS300 provides a wide range of configurations, process connections, extensions and approvals to meet the temperature and pressure requirements of specific applications. The modular design makes ordering easier and reduces stocking requirements. A wide range of probe configurations are available, including rod and cable versions.

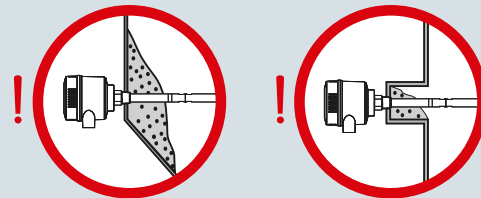
- Key Applications: liquids, slurries, bulk solids, relatively high pressure and temperature, hazardous areas, milling and mining applications

Configuration

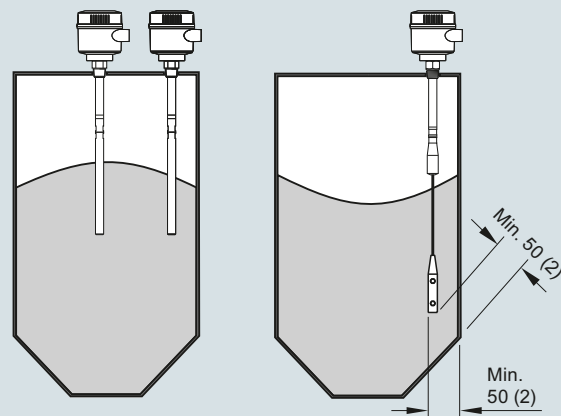
Installation



Keep unit out of path of falling material, or protect probe from falling material.



Build up of material in active shield area does not affect switch operation.



Install probe at least 50 (2) from tank wall.
Note angle of repose and adjust accordingly.

Pointek CLS300 installation, dimensions in mm (inch)

Level Measurement

Point level measurement

RF Capacitance switches

Pointek CLS300 - Digital

Technical specifications

Mode of operation		Power supply	
Measuring principle	Inverse frequency shift capacitive level detection	Bus voltage (at process connection)	<ul style="list-style-type: none"> Standard: 12 ... 30 V DC Intrinsically Safe: 12 ... 24 V DC
Input		Current consumption	12.5 mA
Measured variable	Change in picoFarad (pF)	Certificates and approvals	
Output		General Purpose	CSA, FM, CE, RCM
Solid-state output		Dust Ignition Proof	ATEX II 1/2 D, 2 D IP6X T100 °C
<ul style="list-style-type: none"> Output Protection Max. switching voltage 	Galvanically isolated Against reversed polarity (bipolar) <ul style="list-style-type: none"> 30 V (DC) 30 V peak (AC) 	Flameproof Enclosure With IS Probe	ATEX II 1/2 G EEx d[ia] IIC T6 ... T4 ATEX II 1/2 D T100 °C
<ul style="list-style-type: none"> Max. load current Voltage drop Time delay (pre or post switching) 	82 mA < 1 V, typical at 50 mA Programmable by user (0 ... 100 s)	Dust Ignition Proof With IS Probe	CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4
Fail-safe mode	Min. or max.	Intrinsically Safe ⁴⁾	ATEX II 1 G EEx ia IIC T6 ... T4 ATEX II 1/2 D, 2 D IP6X T100 °C CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4
Connection	Removable terminal block	Non-incendive	CSA/FM Class I, Div. 2, Groups A, B, C, D CSA/FM Class II, Div. 2, Groups F, G CSA/FM Class III T4 or T6
Accuracy		Explosion Proof with IS Probe	CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4
Resolution		Marine	Lloyds Register of Shipping, Categories ENV1, ENV2, and ENV5
<ul style="list-style-type: none"> Min. sensitivity (pF) Max. temperature error 	1 % change in actual capacitance 0.2 % of actual capacitance value	Others	Pattern Approval (China)
Rated operating conditions¹⁾		Communication	
Installation conditions			PROFIBUS PA (IEC 61158 CPF3 CP3/2)
<ul style="list-style-type: none"> Location 	Indoor/outdoor		Bus physical layer: IEC 61158-2 MBP-(IS)
Ambient conditions			Device profile: PROFIBUS PA profile for Process Control Devices Version 3.0, Class B
<ul style="list-style-type: none"> Ambient temperature 	-40 ... +85 °C (-40 ... +185 °F) ²⁾		FISCO field device
Medium conditions			
<ul style="list-style-type: none"> Relative dielectric constant ϵ_r Process temperature - Rod/Cable version - High Temperature version Process pressure³⁾ 	Liquids, bulk solids, slurries, interfaces, and applications with viscous materials Min. 1.5 -40 ... +200 °C (-40 ... +392 °F) ²⁾ -40 ... +400 °C (-40 ... +752 °F) -1 ... +35 bar g (-14.6 ... +511 psi g)		
Design			
Material (enclosure)	Powder-coated aluminum with gasket		
Degree of protection	Standard: Type 4/NEMA 4/IP65 Optional: Type 4/NEMA 4/IP68		
Cable inlet	2 x M20 x 1.5 thread (option: 2 x 1/2" NPT conduit entry including 1 plugged entry)		
Controls and displays			
Local display	LCD		
Configuration	<ul style="list-style-type: none"> Locally, using 3 button keypad (for standalone operation) Remotely, using SIMATIC PDM (for installation on a network) 		

- ¹⁾ When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves starting on page 4/54.
- ²⁾ Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F)
- ³⁾ Pressure rating of process seal is temperature dependent. See Pressure/Temperature curves starting on page 4/54.
- ⁴⁾ Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection

Design: Probe

	Rod version	High Temperature version	Cable version
Length	Min. 250 mm (9.8 inch), max. 1 000 mm (40 inch)	Min. 250 mm (9.8 inch), max. 1 000 mm (40 inch)	Min. 1 000 mm (40 inch), max. 25 000 mm (984 inch)
Sensor wetted parts	PFA (no insulation on active probe), 316L stainless steel, PEEK isolators	Ceramic (ZrO ₂ ¹⁾) isolators (no insulation on active probe), 316L stainless steel	316 stainless steel, optional PFA, PEEK isolators
O-ring seal material	FKM (optional FFKM) ²⁾	Graphite ²⁾	FKM (optional FFKM) ²⁾
Thermal isolator	Optional	Standard	Optional
Extension	User selectable length	User selectable length	User selectable cable length

¹⁾ Zirconium Oxide

²⁾ For caustic materials, consult a local sales person for alternative O-rings. For more information, please visit http://www.automation.siemens.com/aspa_app.

Level Measurement

Point level measurement

RF Capacitance switches

Pointek CLS300 - Digital

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Pointek CLS300 - Digital - Rod with Threaded or Flanged process connection Inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. It is ideal for detecting liquids, solids, slurries, foam, and interfaces in demanding conditions where high pressure and temperatures are present and has the ability to tune out buildup on the probe. Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5660- 	Pointek CLS300 - Digital - Rod with Threaded or Flanged process connection Inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. It is ideal for detecting liquids, solids, slurries, foam, and interfaces in demanding conditions where high pressure and temperatures are present and has the ability to tune out buildup on the probe. Add Order code Y01 and plain text: "Insertion length ... mm" Extended rod, factory adjusted length 250 ... 499 mm (9.8 ... 19.65 inch) Extended rod, factory adjusted length 500 ... 749 mm (19.69 ... 29.49 inch) Extended rod, factory adjusted length 750 ... 999 mm (29.53 ... 39.3 inch)	7ML5660-
Process connection <u>Threaded, 316L stainless steel</u> ¾" NPT [(Taper), ANSI/ASME B1.20.1] 0 A 1" NPT [(Taper), ANSI/ASME B1.20.1] 0 B 1¼" NPT [(Taper), ANSI/ASME B1.20.1] 0 C 1½" NPT [(Taper), ANSI/ASME B1.20.1] 0 D R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] 1 A R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] 1 B R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] 1 D G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 3 A G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 3 B G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 3 D		Thermal isolator Without thermal isolator 0 With thermal isolator [for process connection temperatures over 85 °C (185 °F)] 1	
<u>Welded flange, 316L stainless steel, raised face</u> 1" ASME, 150 lb 5 A 1" ASME, 300 lb 5 B 1" ASME, 600 lb 5 C 1½" ASME, 150 lb 5 D 1½" ASME, 300 lb 5 E 1½" ASME, 600 lb 5 F 2" ASME, 150 lb 5 G 2" ASME, 300 lb 5 H 2" ASME, 600 lb 5 J 3" ASME, 150 lb 5 K 3" ASME, 300 lb 5 L 3" ASME, 600 lb 5 M 4" ASME, 150 lb 5 N 4" ASME, 300 lb 5 P 4" ASME, 600 lb 5 Q		Wetted seals FKM 0 FFKM [for process temperatures above -20 °C (-4 °F)] 1	
<u>Welded flange, 316L stainless steel, Type A flat faced</u> DN 25, PN 16 6 A DN 25, PN 40 6 B DN 40, PN 16 6 C DN 40, PN 40 6 D DN 50, PN 16 6 E DN 50, PN 40 6 F DN 80, PN 16 6 G DN 80, PN 40 6 H DN 100, PN 16 6 J DN 100, PN 40 6 K		Probe material 316L stainless steel with PFA lining and PEEK isolators 0	
(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)		Approvals Dust Ignition Proof: CE, RCM, ATEX II 1/2 D, 2 D IP6X T100 °C Intrinsically Safe ¹⁾ CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II 1/2 D, 2 D IP6X T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Intrinsically Safe ¹⁾ CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) H General Purpose (CSA, FM, CE, RCM) J	
Probe length (length from flange face) (threaded lengths include process thread) Note: No Y01 needed in Order code for standard lengths Standard version, rod 350 mm (13.78 inch) A Extended rod, length 500 mm (19.69 inch) B Extended rod, length 750 mm (29.53 inch) C Extended rod, length 1 000 mm (39.37 inch) D			

Level Measurement

Point level measurement

RF Capacitance switches

Pointek CLS300 - Digital

Selection and Ordering data	Article No.
Pointek CLS300 - Digital - Rod with Threaded or Flanged process connection Inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. It is ideal for detecting liquids, solids, slurries, foam, and interfaces in demanding conditions where high pressure and temperatures are present and has the ability to tune out buildup on the probe.	7ML5660-
Enclosure and Lid <u>Aluminum epoxy coated</u> 2 x 1/2" NPT via adapter - cable inlet, IP65 2 x M20 x 1.5 cable inlet, IP65 2 x 1/2" NPT via adapter - cable inlet, IP68 2 x M20 x 1.5 cable inlet, IP68	A B C D
Active shield length Standard length - (125 mm threaded, 105 mm flanged) Extended shield - (250 mm threaded, 230 mm flanged) ²⁾ Extended shield - (400 mm threaded, 380 mm flanged) ³⁾	0 1 2
1) Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection 2) Available with Probe version options B ... D, F, G only [≥ 500 mm (19.69 inch)] 3) Available with Probe version options C, D, and G only [≥ 750 mm (29.53 inch)]	

Selection and Ordering data	Order code
Further designs Please add "-Z" to Article No. and specify Order code(s).	
Total insertion length: enter the total insertion length in plain text description	Y01
Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y15
Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000	C11
Material inspection Certificate Type 3.1 per EN 10204	C12
Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories	See page 4/53

Selection and Ordering data	Article No.
Pointek CLS300 - Digital - Cable with Threaded or Flanged process connection Inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. It is ideal for detecting liquids, solids, slurries, foam, and interfaces in demanding conditions where high pressure and temperatures are present and has the ability to tune out buildup on the probe.	7ML5661-
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Process connection <u>Threaded, 316L stainless steel</u> 1/4" NPT [(Taper), ANSI/ASME B1.20.1] 1/2" NPT [(Taper), ANSI/ASME B1.20.1] R 1 1/2" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] G 1 1/2" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	0 C 0 D 1 D 3 D
<u>Welded flange, 316L stainless steel, raised face</u> 1 1/2" ASME, 150 lb 1 1/2" ASME, 300 lb 1 1/2" ASME, 600 lb 2" ASME, 150 lb 2" ASME, 300 lb 2" ASME, 600 lb 3" ASME, 150 lb 3" ASME, 300 lb 3" ASME, 600 lb 4" ASME, 150 lb 4" ASME, 300 lb 4" ASME, 600 lb	5 D 5 E 5 F 5 G 5 H 5 J 5 K 5 L 5 M 5 N 5 P 5 Q
<u>Welded flange, 316L stainless steel, Type A flat faced</u> DN 40, PN 16 DN 40, PN 40 DN 50, PN 16 DN 50, PN 40 DN 80, PN 16 DN 80, PN 40 DN 100, PN 16 DN 100, PN 40 (Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)	6 C 6 D 6 E 6 F 6 G 6 H 6 J 6 K
Probe length (length from flange face) (threaded lengths include process thread) Note: No Y01 needed in Order code for <u>standard lengths</u> Extended cable, 3 000 mm (118.11 inch), length can be shortened by customer Extended cable, 6 000 mm (236.22 inch), length can be shortened by customer Add Order code Y01 and plain text: <u>"Insertion length ... mm"</u> Extended cable, 500 ... 1 000 mm (19.69 ... 39.37 inch) Extended cable, 1 001 ... 5 000 mm (39.41 ... 196.85 inch) Extended cable, 5 001 ... 10 000 mm (196.89 ... 393.70 inch) Extended cable, 10 001 ... 15 000 mm (393.74 ... 590.55 inch) Extended cable, 15 001 ... 20 000 mm (590.59 ... 787.40 inch) Extended cable, 20 001 ... 25 000 mm (787.44 ... 984.25 inch)	A B E F G H J K

- 1) Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection.
- 2) Available with Probe version options A, B, F ... K, only [$\geq 1\,000\text{ mm}$ (39.7 inch)].

Level Measurement

Point level measurement

RF Capacitance switches

Pointek CLS300 - Digital

Selection and Ordering data

Article No.

Pointek CLS300 - Digital - High Temperature Rod version with Threaded or Flanged process connection

7ML5662-

Inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. It is ideal for detecting liquids, solids, slurries, foam, and interfaces in demanding conditions where high pressure and temperatures are present and has the ability to tune out buildup on the probe.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Process connection

Threaded, 316L stainless steel

¾" NPT [(Taper), ANSI/ASME B1.20.1]

1" NPT [(Taper), ANSI/ASME B1.20.1]

1¼" NPT [(Taper), ANSI/ASME B1.20.1]

1½" NPT [(Taper), ANSI/ASME B1.20.1]

R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]

R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]

R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]

G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]

G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]

G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]

Welded flange, 316L stainless steel, raised face

1" ASME, 150 lb

1" ASME, 300 lb

1" ASME, 600 lb

1½" ASME, 150 lb

1½" ASME, 300 lb

1½" ASME, 600 lb

2" ASME, 150 lb

2" ASME, 300 lb

2" ASME, 600 lb

3" ASME, 150 lb

3" ASME, 300 lb

3" ASME, 600 lb

4" ASME, 150 lb

4" ASME, 300 lb

4" ASME, 600 lb

Welded flange, 316L stainless steel, Type A flat faced

DN 25, PN 16

DN 25, PN 40

DN 40, PN 16

DN 40, PN 40

DN 50, PN 16

DN 50, PN 40

DN 80, PN 16

DN 80, PN 40

DN 100, PN 16

DN 100, PN 40

(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)

Probe length

(length from flange face)

(threaded lengths include process thread)

Note: No Y01 needed in Order code for standard lengths

Standard version rod, 350 mm (13.78 inch)

Extended rod, length 500 mm (19.69 inch)

Extended rod, length 750 mm (29.53 inch)

Extended rod, length 1 000 mm (39.37 inch)

0 A

0 B

0 C

0 D

1 A

1 B

1 D

3 A

3 B

3 D

5 A

5 B

5 C

5 D

5 E

5 F

5 G

5 H

5 J

5 K

5 L

5 M

5 N

5 P

5 Q

6 A

6 B

6 C

6 D

6 E

6 F

6 G

6 H

6 J

6 K

A

B

C

D

Selection and Ordering data

Article No.

Pointek CLS300 - Digital - High Temperature Rod version with Threaded or Flanged process connection

7ML5662-

Inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. It is ideal for detecting liquids, solids, slurries, foam, and interfaces in demanding conditions where high pressure and temperatures are present and has the ability to tune out buildup on the probe.

Add Order code Y01 and plain text:

"Insertion length ... mm"

Extended rod, factory adjusted length

250 ... 499 mm (9.8 ... 19.65 inch)

Extended rod, factory adjusted length

500 ... 749 mm (19.69 ... 29.49 inch)

Extended rod, factory adjusted length

750 ... 999 mm (29.53 ... 39.3 inch)

Wetted seals

Graphite

Probe material

316L stainless steel with ceramic (ZrO₂) isolators

Approvals

Dust Ignition Proof:

CE, RCM, ATEX II 1/2 D, 2 D IP6X T100 °C

Intrinsically Safe¹⁾

CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4,

ATEX II 1/2 D, 2 D IP6X T100 °C

Flameproof Enclosure with IS Probe:

CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4,

ATEX II 1/2 D T100 °C

Intrinsically Safe¹⁾

CSA/FM Class I, Div. 1, Groups A, B, C, D

CSA/FM Class II, Div. 1, Groups E, F, G

CSA/FM Class III T4

Explosion Proof Enclosure with IS Probe:

CSA/FM Class I, Div. 1, Groups A, B, C, D

CSA/FM Class II, Div. 1, Groups E, F, G

CSA/FM Class III T4

General Purpose (CSA, FM)

General Purpose (CSA, FM, CE, RCM)

Enclosure and Lid

Aluminum epoxy coated

2 x ½" NPT via adapter - cable inlet, IP65

2 x M20 x 1.5 cable inlet, IP65

2 x ½" NPT via adapter - cable inlet, IP68

2 x M20 x 1.5 cable inlet, IP68

Active shield length

Standard length -
(125 mm threaded, 105 mm flanged)

Extended shield -
(250 mm threaded, 230 mm flanged)²⁾

Extended shield -
(400 mm threaded, 380 mm flanged)³⁾

¹⁾ Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection

²⁾ Available with Probe version options B ... D, F, G only
[≥ 500 mm (19.69 inch)]

³⁾ Available with Probe version options C, D, and G only
[≥ 750 mm (29.53 inch)]

E

F

G

0

0

B

C

D

F

G

H

J

A

B

C

D

0

1

2

Level Measurement

Point level measurement

RF Capacitance switches

Pointek CLS300 - Standard and Digital

Selection and Ordering data		Order code	Selection and Ordering data		Article No.
Further designs			Accessories		
Please add "-Z" to Article No. and specify Order code(s).			One metallic cable gland M20 x 1.5, -40 ... +80 °C (-40 ... +176 °F) with integrated shield connection (available for PROFIBUS PA)		7ML1930-1AQ
Total insertion length: enter the total insertion length in plain text description		Y01	<u>General Purpose</u>		
Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text		Y15	1/2" NPT General Purpose Cable Entry IP68/IP69K NEMA6, -40 ... +100 °C (-40 ... +212 °F), cable size 6 ... 12 mm (0.236 ... 0.472 inch)		7ML1830-1JA
Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000		C11	M20 x 1.5 General Purpose Cable Entry IP68/IP69K NEMA6, -40 ... +100 °C (-40 ... +212 °F), cable size 7 ... 12 mm (0.275 ... 0.472 inch)		7ML1830-1JC
Material Inspection Certificate Type 3.1 per EN 10204		C12	<u>Hazardous Locations</u>		
Operating Instructions			1/2" NPT EMC rated Cable Gland: Dust Ignition Proof, Flameproof Exd, and Increased Safety ATEX II 2 GD ExtD A21 (Zone 1, Zone 2, Zone 21, Zone 22, and in Gas Groups IIA, IIB and IIC) -60 ... +80 °C IP66, IP67, IP68, NEMA4X, cable sizes 5.5 ... 12 mm (0.216 ... 0.472 inch)		7ML1830-1JB
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation			M20 EMC rated Cable Gland: Dust Ignition Proof, Flameproof Exd, and Increased Safety ATEX II 2 GD ExtD A21 (Zone 1, Zone 2, Zone 21, Zone 22, and in Gas Groups IIA, IIB and IIC) -60 ... +80 °C IP66, IP67, IP68, NEMA4X, cable sizes 5.5 ... 12 mm (0.216 ... 0.472 inch)		7ML1830-1JD
Accessories		See page 4/53	Blind threaded flanges are available. Customers interested in a custom designed device should consult a local sales person. For more information, please visit http://www.automation.siemens.com/aspa_app .		
			Pointek Specials		See page 4/60

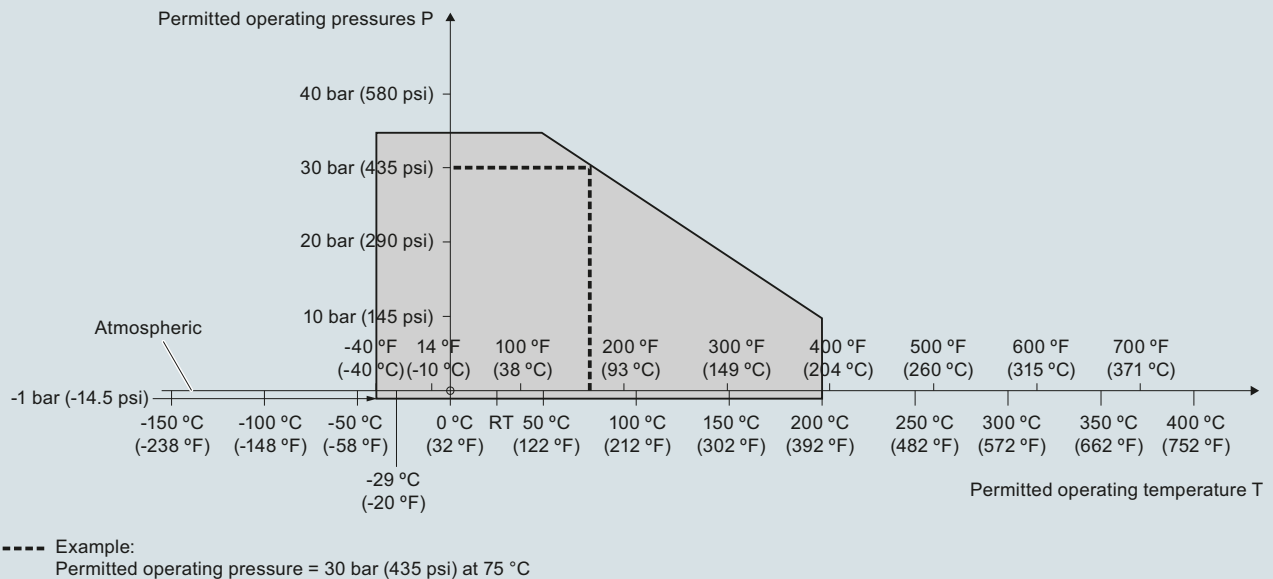
Level Measurement

Point level measurement
RF Capacitance switches

Pointek CLS300 - Standard and Digital

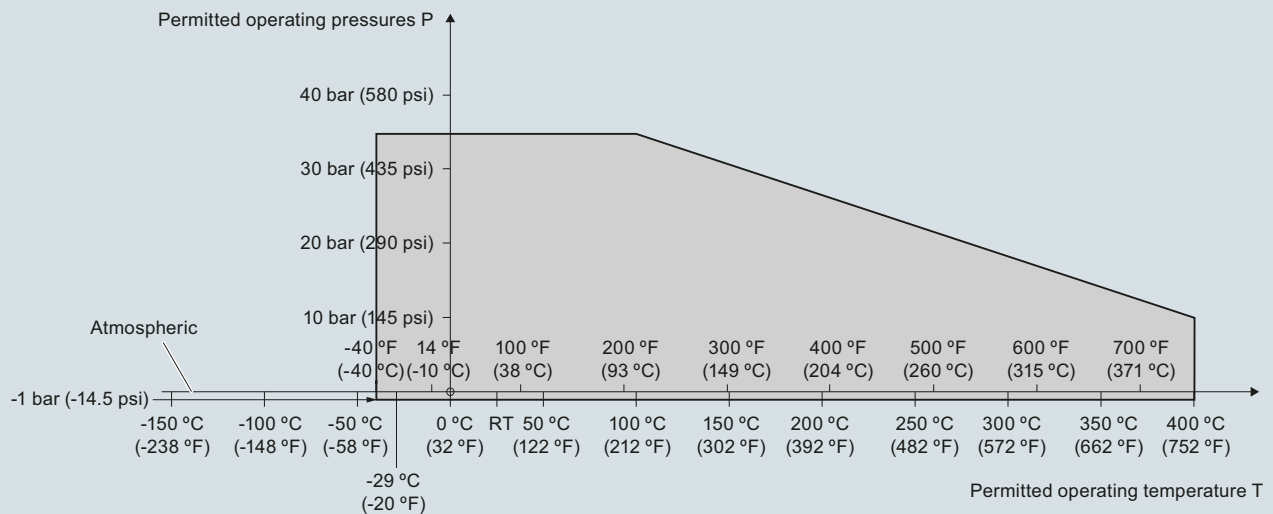
Characteristic curves

Pressure/temperature curve
CLS300 extended rod and cable probes
Threaded process connections
(7ML5650, 7ML5651, 7ML5660 and 7ML5661)



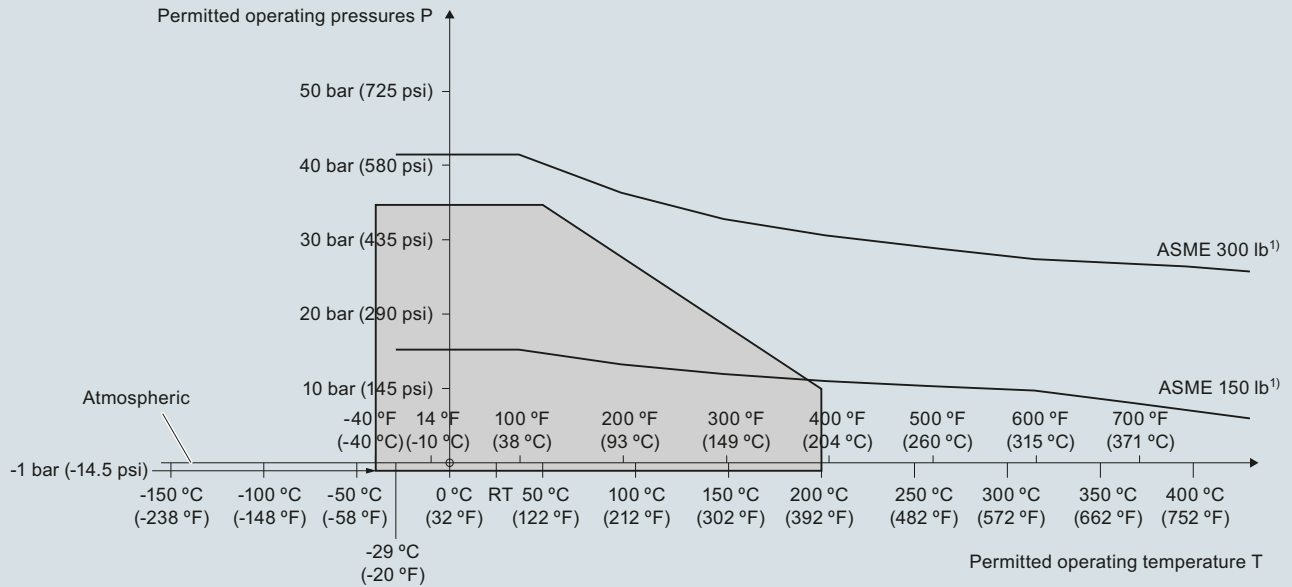
Pointek CLS300 process pressure/temperature derating curves (7ML5650, 7ML5651, 7ML5660 and 7ML5661)

Pressure/temperature curve
CLS300 high temperature rod probes
Threaded process connections
(7ML5652 and 7ML5662)



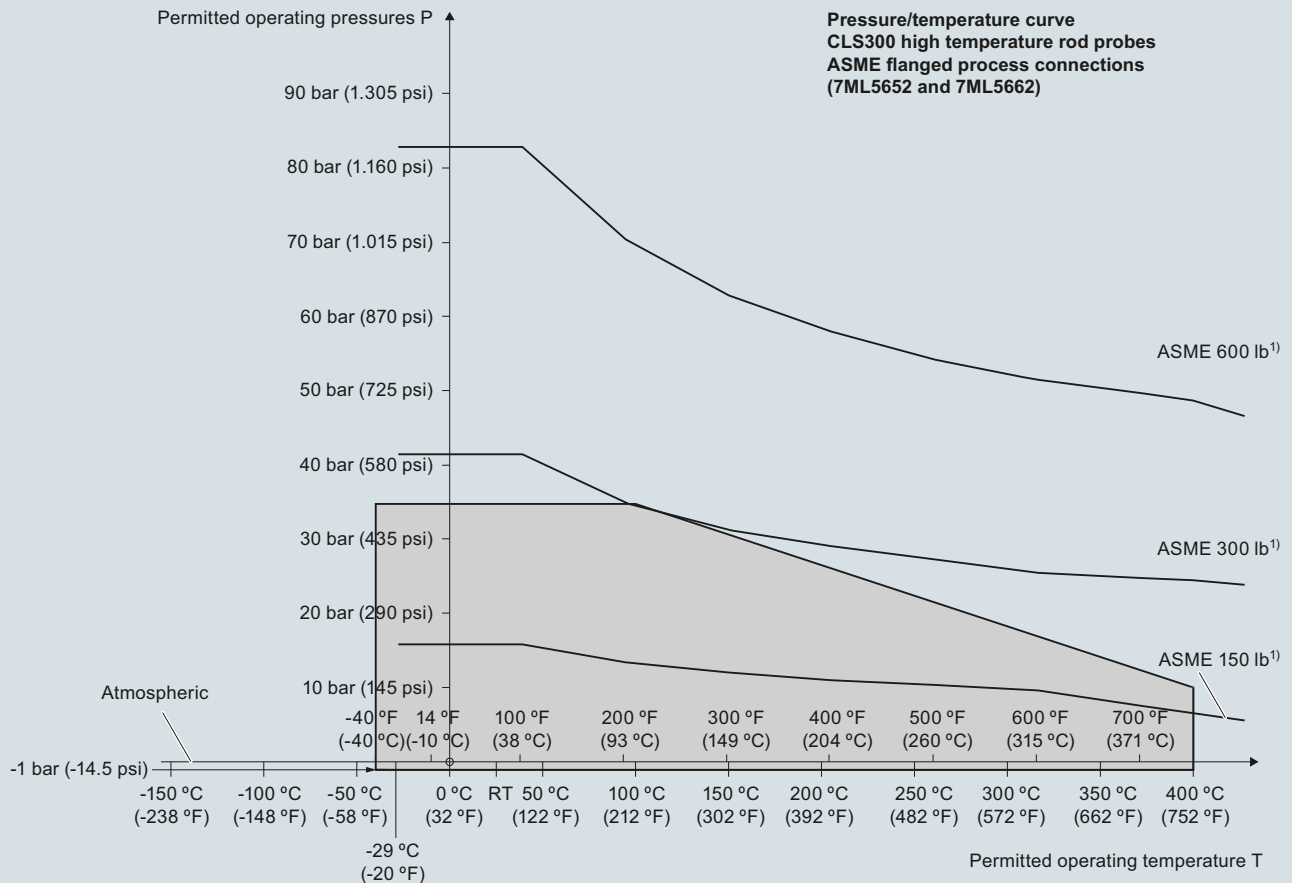
Pointek CLS300 process pressure/temperature derating curves (7ML5652 and 7ML5662)

Pressure/temperature curve
CLS300 extended rod and cable probes
ASME flanged process connections
(7ML5650, 7ML5651, 7ML5660 and 7ML5661)



¹⁾ The curve denotes the minimum allowable flange class for the shaded area below.

Pointek CLS300 process pressure/temperature derating curves (7ML5650, 7ML5651, 7ML5660, and 7ML5661)



¹⁾ The curve denotes the minimum allowable flange class for the shaded area below.

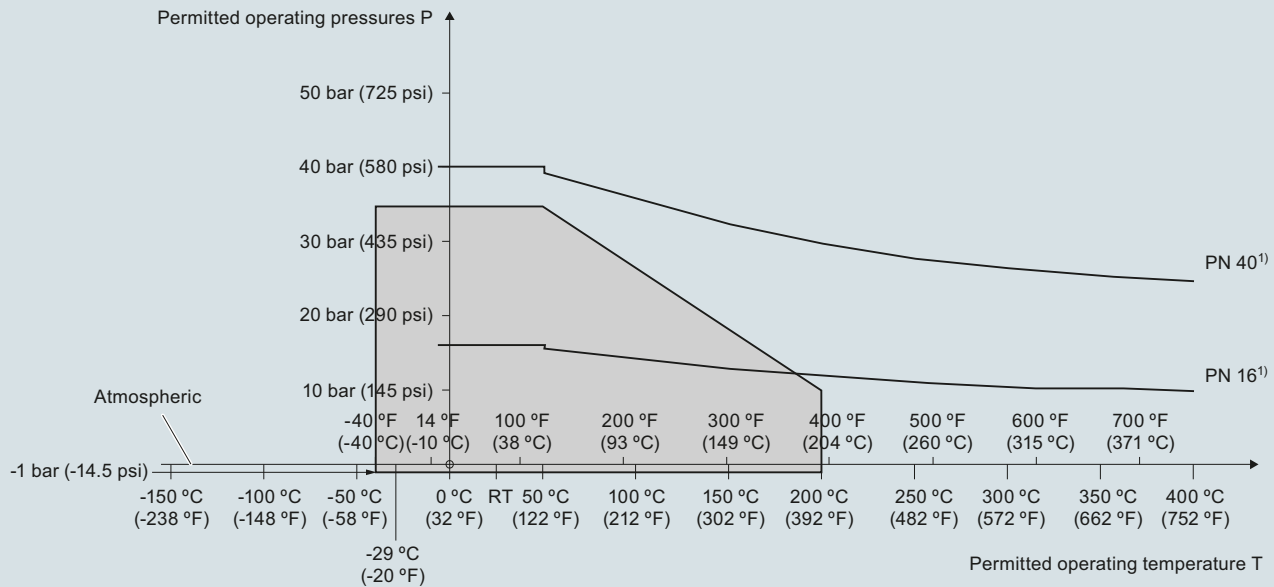
Pointek CLS300 process pressure/temperature derating curves (7ML5652 and 7ML5662)

Level Measurement

Point level measurement
RF Capacitance switches

Pointek CLS300 - Standard and Digital

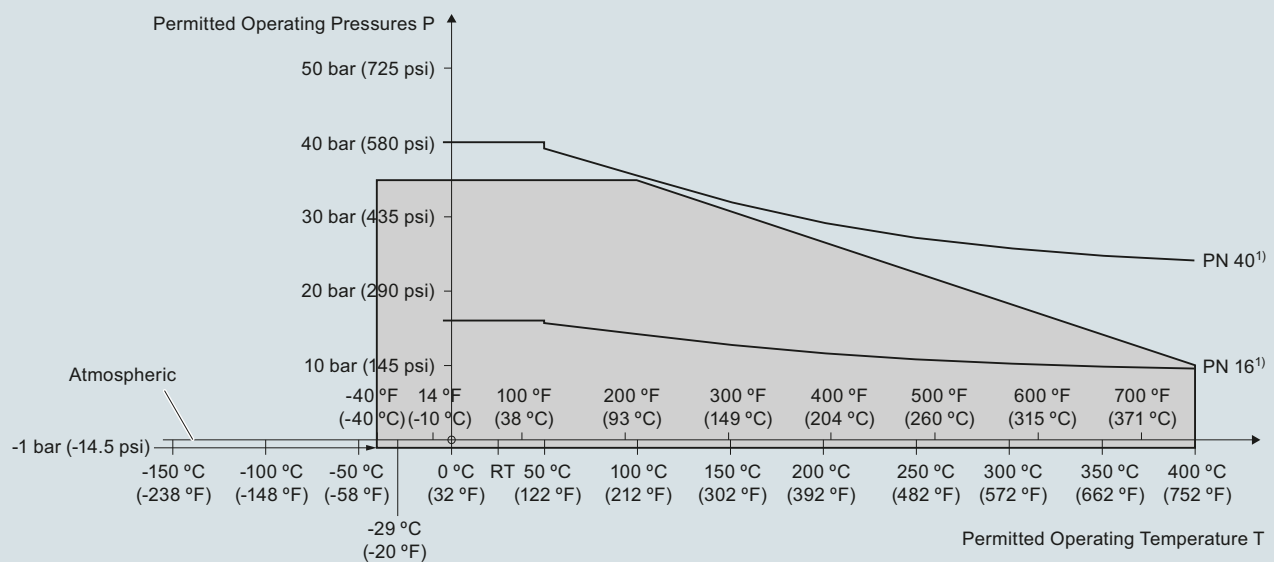
Pressure/temperature curve
CLS300 extended rod and cable probes
EN flanged process connections
(7ML5650, 7ML5651, 7ML5660 and 7ML5661)



¹) The curve denotes the minimum allowable flange class for the shaded area below.

Pointek CLS300 process pressure/temperature derating curves (7ML5650, 7ML5651, 7ML5660 and 7ML5661)

Pressure/Temperature Curve
CLS300 High Temperature Rod Probes
EN Flanged Process Connections (7ML5652 and 7ML5662)

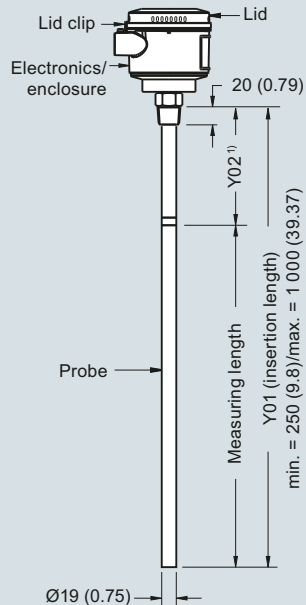


¹) The curve denotes the minimum allowable flange class for the shaded area below.

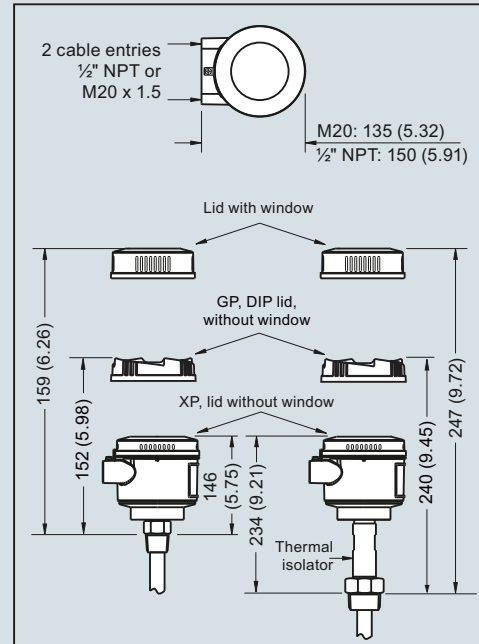
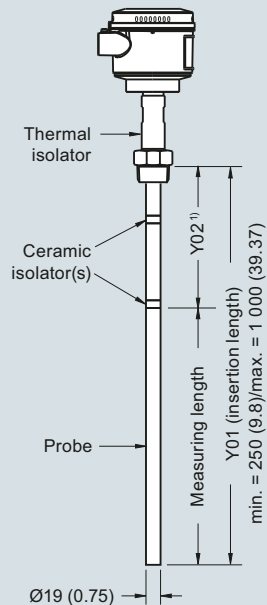
Pointek CLS300 process pressure/temperature derating curves (7ML5652 and 7ML5662)

Dimensional drawings

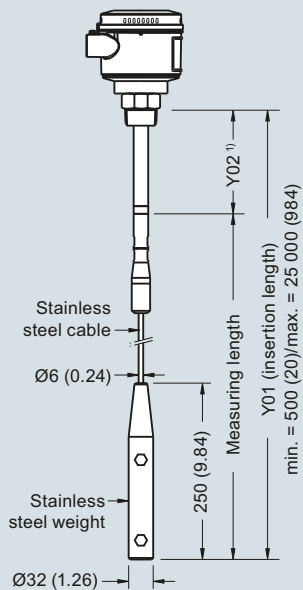
Rod version
Threaded (7ML5650 and 7ML5660)



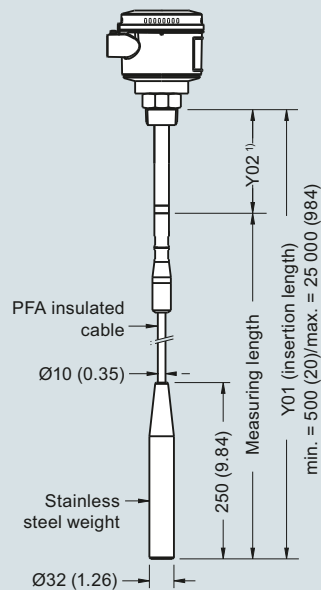
High temperature rod version
Threaded (7ML5652 and 7ML5662)



Cable version, non-insulated
Threaded (7ML5651 and 7ML5661)



Cable version, insulated
Threaded (7ML5651 and 7ML5661)



Note:

¹⁾ Extended Active Shield (Y02): standard length 125 (4.92). Optional active shield lengths: 250 (9.84) or 400 (15.75).

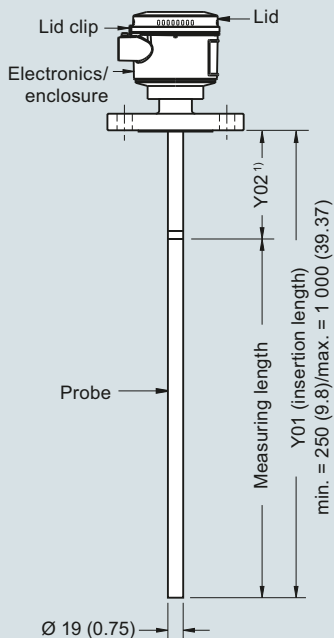
Pointek CLS300 threaded process connections, dimensions in mm (inch)

Level Measurement

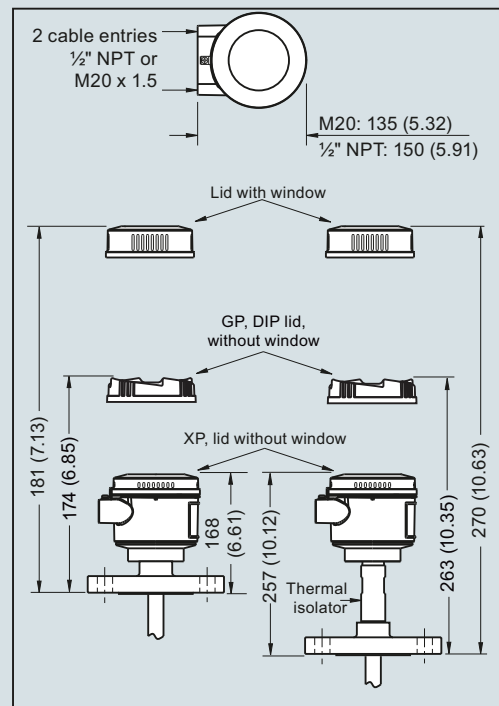
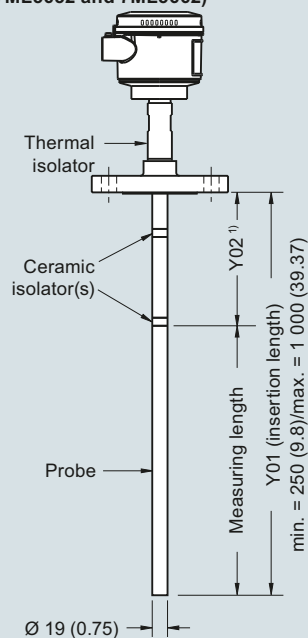
Point level measurement
RF Capacitance switches

Pointek CLS300 - Standard and Digital

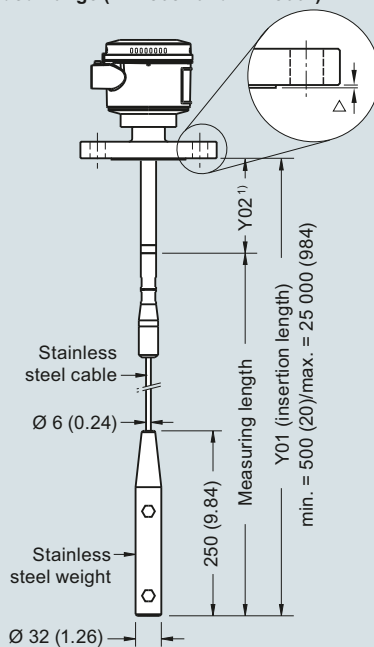
Rod version Welded flange (7ML5650 and 7ML5660)



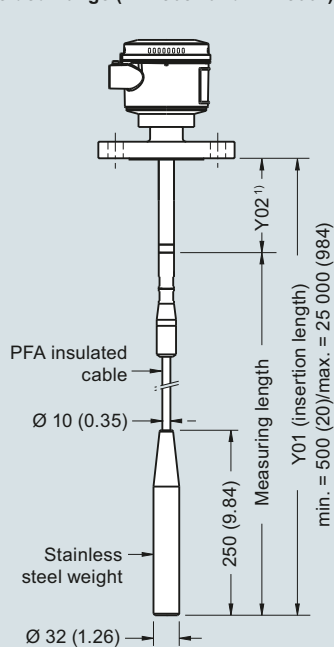
High temperature rod version Welded flange (7ML5652 and 7ML5662)



Cable version, non-insulated Welded flange (7ML5651 and 7ML5661)



Cable version, insulated Welded flange (7ML5651 and 7ML5661)



Flange Facing (raised face)	
Flange Class	Facing thickness
△ ASME 150/300	2 (0.08)
△ ASME 600/900	7 (0.28)
△ PN16/40	2 (0.08)

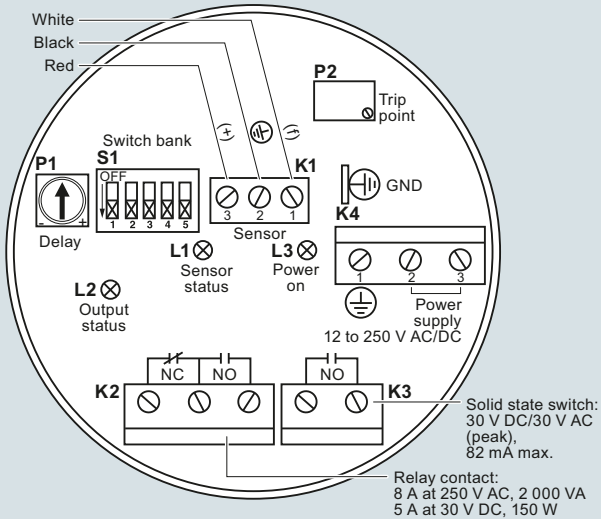
Note:

¹⁾ Extended Active Shield (Y02): standard length 105 (4.13). Optional active shield lengths: 230 (9.06) or 380 (14.96). Insertion length does not include any raised face/gasket face dimension (see Flange Facing Table above)

Pointek CLS300 flanged process connections, dimensions in mm (inch)

Circuit diagrams

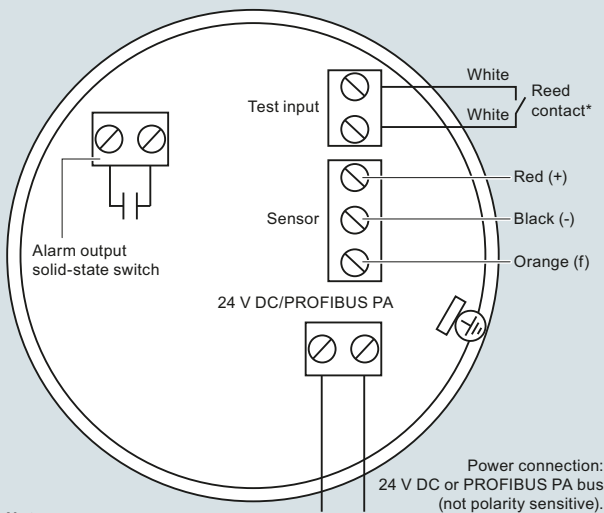
Wiring: Pointek CLS300 standard



Notes:

- Identification label is on underside of lid. Switch and potentiometer settings are for illustration purposes only (refer to operation/setup in manual).
- All field wiring must have insulation suitable for at least 250 V.
- Relay contact terminals are for use with equipment having no accessible live parts and wiring having insulation suitable for at least 250 V.
- Maximum working voltage between adjacent relay contacts shall be 250 V.
- Refer to the Instruction manual or contact Siemens representative for detailed wiring information.

Wiring: Pointek CLS300 digital



Notes:

Refer to the instruction manual or contact a Siemens representative for detailed wiring information.

*Magnet activated sensor test

A magnet can be used to test the sensor without opening the lid of the Pointek CLS300 digital version. Bring the magnet close to the test area indicated on the enclosure. The sensor test starts and finishes automatically after 10 seconds.



Pointek CLS300 connections

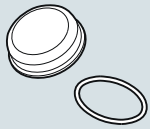

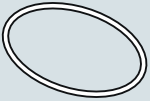
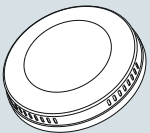
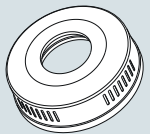

Level Measurement

Point level measurement
RF Capacitance switches

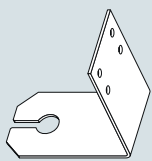


Pointek CLS Specials

Selection and ordering data



Pointek Specials¹⁾

	Article No.
CLS100 Polycarbonate Lid and Gasket, FKM	
	
Kit, Lid and gasket, CLS100 enclosure version	A5E01163671
CLS100 Miscellaneous Parts	
Custom length of cable is available only for 7ML5501-xxx1x and 7ML5501-xxx5x ²⁾	
CLS200 Gasket (IP65), Synprene	
	
Spare gasket, enclosure version (IP65 versions only)	A5E01163672
CLS200 Gasket (IP68), Silicone	
	
Spare gasket, enclosure version (IP68 versions)	A5E01163673
CLS200 Blind Lid	
	
Spare aluminum blind lid (for standard versions only)	A5E01163674
CLS200 Lid with window	
	
Spare aluminum lid with window	A5E01163676
CLS200 Sensor Kit for cable units	
	
Kit, sensor for cable units, PPS, Standard, FKM	A5E01163677

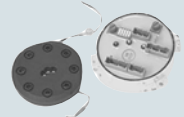

Pointek Specials¹⁾

	Article No.
Kit, sensor for cable units, PPS, digital, FKM	A5E01163678
Kit, sensor for cable units, PPS, standard, FFKM	A5E01163679
Kit, sensor for cable units, PPS, digital, FFKM	A5E01163680
Kit, sensor for cable units, PVDF, standard, FKM	A5E01163681
Kit, sensor for cable units, PVDF, digital, FKM	A5E01163682
Kit, sensor for cable units, PVDF, standard, FFKM	A5E01163683
Kit, sensor for cable units, PVDF, digital, FFKM	A5E01163684
CLS200 Mounting Bracket, 316L stainless steel	
	
Spare mounting bracket	A5E01163685
CLS200 PROFIBUS Connector (IP65)	
	
Spare, PROFIBUS connector (IP65 versions only)	A5E01163686
CLS200 Miscellaneous Parts	
CLS200 with FFKM O-rings (any version) ²⁾	
CLS200 Electronics	
Test magnet, digital version	7ML1830-1JE
Amplifier/power supply kit, standard version	A5E03251681
Amplifier/power supply, digital version	7ML1830-1JF
LCD display, digital version	7ML1830-1JK
CLS300 Cable Extensions, 316L stainless steel	
	
Kit, stainless steel cable extension, 1 m, adjustable by customer	A5E01163688
Kit, stainless steel cable extension, 3 m, adjustable by customer	A5E01163689
Kit, stainless steel cable extension, 5 m, adjustable by customer	A5E01163690
Kit, stainless steel cable extension, 10 m, adjustable by customer	A5E01163691
Kit, stainless steel cable extension, 15 m, adjustable by customer	A5E01163693
Kit, stainless steel cable extension, 20 m, adjustable by customer	A5E01163695

Pointek Specials¹⁾

	Article No.
CLS300 Cable Extensions, 316 stainless steel with PFA coating	
	
Kit, PFA cable extension, 1 m, adjustable by customer	A5E01163697
Kit, PFA cable extension, 3 m, adjustable by customer	A5E01163698
Kit, PFA cable extension, 5 m, adjustable by customer	A5E01163699
Kit, PFA cable extension, 10 m, adjustable by customer	A5E01163700
Kit, PFA cable extension, 15 m, adjustable by customer	A5E01163701
Kit, PFA cable extension, 20 m, adjustable by customer	A5E01163702
CLS300 Rod Kits, 316L stainless steel	
	
Kit, stainless steel rod 180 mm (7.09 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 350 mm (13.78 inch).	A5E01163719
Kit, stainless steel rod 330 mm (12.99 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 500 mm (19.69 inch).	A5E01163720
Kit, stainless steel rod 580 mm (22.83 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 750 mm (29.53 inch).	A5E01163721
Kit, stainless steel rod 830 mm (32.68 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 1 000 mm (39.37 inch).	A5E01163722
Kit, stainless steel rod 1 330 mm (52.36 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 1 500 mm (59.06 inch). ²⁾	
Kit, stainless steel rod 1 830 mm (72.05 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 2 000 mm (78.74 inch). ²⁾	
Kit, stainless steel rod customized length up to 1 m ²⁾	
Kit, stainless steel rod customized length up to 2 m ²⁾	

Pointek Specials¹⁾

	Article No.
CLS300 Electronics Kits with drivers (for rod or cable versions)	
Kit, electronics with driver, standard CLS300. To be used in rod or cable versions with length less than 5 m. ³⁾⁴⁾	A5E01163723
Kit, electronics with driver, digital CLS300. To be used in rod or cable versions with length less than 5 m. ³⁾⁴⁾	A5E01163725
CLS300 Electronics Kits with drivers (for cable versions)	
	
Kit, electronics with driver, standard CLS300. To be used in cable versions with length greater than 5 m. ³⁾⁴⁾	A5E01163724
Kit, electronics with driver, digital CLS300. To be used in cable versions with length greater than 5 m. ³⁾⁴⁾	A5E01163726
CLS300 Electronics	
Test magnet, digital version	7ML1830-1JE
Amplifier/power supply kit, standard version	A5E03251683
Amplifier/power supply, digital version	7ML1830-1JF
LCD display, digital version	7ML1830-1JK
CLS300 Weight Kit, 316L stainless steel	
	
Kit, spare stainless steel weight. To be used in any cable version of CLS300.	A5E01163727

¹⁾ Special flange sizes and facings are available. Please consult a local sales person for details.

²⁾ Please consult a local sales person for part number and pricing

³⁾ For General Purpose approvals only

⁴⁾ To maintain approvals, qualified trained Siemens personnel required for part replacement

Customers interested in a custom designed device should consult a local sales person. For more information, please visit http://www.automation.siemens.com/aspa_app.

Level Measurement

Point level measurement

Vibrating switches

SITRANS LVL100

Overview



SITRANS LVL100 is a compact vibrating level switch for material detection in liquid and slurry applications such as overflow, high, low and demand applications, as well as pump protection. It is ideal for use in confined spaces.

Benefits

- Proven vibrating level switch technology for liquids
- Compact insertion length of 40 mm (1.57 inch) for confined space applications
- Available starting at 1/2" threaded process connections
- Fault monitoring for corrosion, loss of vibration, or line break to the piezo drive
- Integrated test function to confirm correct operation

Application

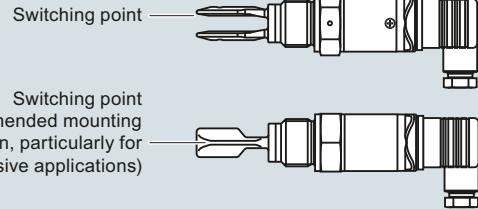
SITRANS LVL100 is a compact level switch designed for industrial use in all areas of process technology and can be used for material detection with liquids and slurries. With an insertion length of only 40 mm (1.57 inch), SITRANS LVL100 can be mounted in small pipes and confined space applications. It is virtually unaffected by the chemical and physical properties of the liquid. The LVL100 can be used in difficult conditions including turbulence, air bubbles, foam generation, buildup, or external vibration.

The tuning fork is piezoelectrically energized and vibrates at a mechanical resonance frequency of approximately 1 200 Hz. The vibration frequency changes when the tuning fork is covered by the medium. This change is detected by the integrated oscillator and converted into a switching command. The integrated electronics evaluate the level signal and output a switching signal to connected devices.

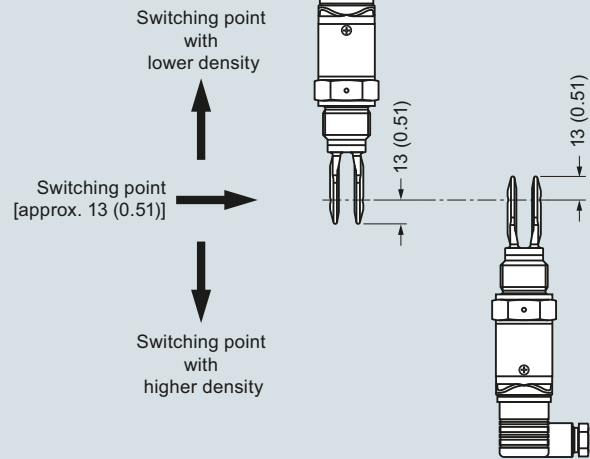
- Key Applications: for use in liquids and slurries, for level measurement, overflow, and dry run protection

Configuration

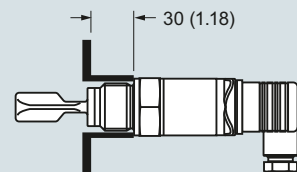
Horizontal mounting



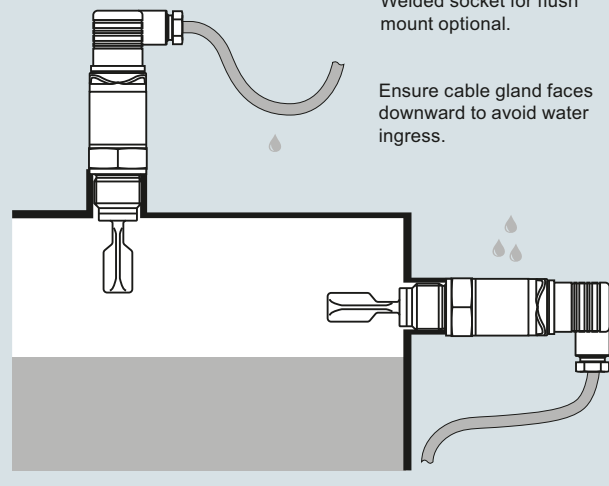
Vertical mounting



Horizontal mounting in viscous or adhesive applications



Moisture protection



SITRANS LVL100 installation, dimensions in mm (inch)

Technical specifications

Mode of operation	
Measuring principle	Vibrating point level switch
Input	
Measured variable	High and low and demand
Output	
Output options	<ul style="list-style-type: none"> • Contactless electronic switch • Transistor output PNP
Measuring accuracy	
Hysteresis	Approx. 2 mm (0.08 inch) with vertical installation
Switching delay	Approx. 500 ms (on/off)
Frequency	Approx. 1 100 Hz
Rated operating conditions	
Installation conditions	
• Location	Indoor/outdoor
Ambient conditions	
• Ambient temperature	-40 ... +70 °C (-40 ... +158 °F)
• Installation category	III
• Pollution degree	2
Medium conditions	
• Temperature	
- Standard	-40 ... +100 °C (-40 ... +212 °F)
- High temperature option	-40 ... +150 °C (-40 ... +302 °F)
• Pressure (vessel)	-1 ... 64 bar g (-14.5 ... 928 psi g)
• Density	0.7 ... 2.5 g/cm ³ (0.025 ... 0.09 lb/in ³)
Design	
Material	
• Enclosure	316L and Plastic PEI
• Tuning fork	316L (1.4404 or 1.4435)
• Process connection (threaded)	316L (1.4404 or 1.4435)
• Process seal	Klingsil C-4400
Process connection	
• Pipe thread, cylindrical (ISO 228 T1)	G ½" A, G ¾" A, or G 1" A
• Pipe thread, tapered	½" NPT, ¾" NPT, or 1" NPT
• Hygienic fittings	Bolting DN 40 PN 40
	Tri-clamp 1", 1½", 2" PN 10
Degree of protection	IP65/Type 4/NEMA 4 (with DIN 43650 valve plug), IP66/67 or IP68 (with M12 connector)
Conduit entry	1 x M12 [IP66/IP67 or IP68 (0.2 bar)]
Weight (housing)	250 g (9 oz)
Power supply	
Supply voltage	20 ... 253 V AC, 50/60 Hz 20 ... 253 V DC
Power consumption	Max. 0.5 W
Certificates and approvals	
	<ul style="list-style-type: none"> • Overfill protection (WHG) • Shipping approvals

Level Measurement

Point level measurement

Vibrating switches

SITRANS LVL100

Selection and Ordering data

Article No.

SITRANS LVL100

Compact vibrating level switch for use in liquid and slurry applications such as overflow, high, low, and demand applications, as well as pump protection. Ideal for use in confined spaces.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Approvals

Without approvals
Shipping approvals⁵⁾
Overfill protection (WHG)¹⁾
Canada/US for Ex-free area (including Ordinary Location Approval)⁷⁾

Process temperature

Standard -40 ... +100 °C (-40 ... +212 °F)²⁾
Extended -40 ... +150 °C (-40 ... +302 °F)²⁾⁶⁾
Hygienic applications -40 ... +150 °C (-40 ... +302 °F)³⁾

Process connection

Thread G $\frac{3}{4}$ " A PN 64/316L A 0
Thread G $\frac{3}{4}$ " A PN 64/316L Ra < 0.8 µm A 1
Thread $\frac{3}{4}$ " NPT PN 64/316L A 2
Thread $\frac{3}{4}$ " NPT PN 64/316L Ra < 0.8 µm A 3
Thread G1" A PN 64/316L A 4
Thread G1" A PN 64/316L Ra < 0.8 µm A 5
Thread 1" NPT PN 64/316L A 6
Thread 1" NPT PN 64/316L Ra < 0.8 µm A 7
Tri-Clamp 1" PN 16 DIN 32676/316L Ra < 0.8 µm A 8
Tri-Clamp 1½" PN 16 DIN 32676/316L Ra < 0.8 µm B 0
Tri-Clamp 2" PN 16 DIN 32676/316L Ra < 0.8 µm B 1
Bolting DN 25 PN 40 DIN 11851/316L Ra < 0.8 µm B 2
Bolting DN 40 PN 40 DIN 11851/316L Ra < 0.8 µm B 3
Bolting DN 50 PN 25 DIN 11851/316L Ra < 0.8 µm B 4
SMS DN 38 PN 6 316L Ra < 0.8 µm B 5
Hygienic fitting with compression nut F40 B 6
PN 25/316L Ra < 0.8 µm
Thread G½" (DIN 3852-A) PN 64 / 316L C 0
Thread G½" (DIN 3852-A) PN 64 / 316L Ra < 0.8 µm C 1
Thread ½" NPT (ASME B1.20.1) PN 64/316L C 2
Thread ½" NPT (ASME B1.20.1) PN 64/316L Ra < 0.8 µm C 3
Thread R¾" PN 64, EN 10226-1/316L D 0
R1 Thread R1 PN 64, EN 10226-1/316L D 1
RF Thread R1 PN 64, EN 10226-1/316L (Ra < 0.8 µm) D 2

Electronics

Contactless electronic switch 20 ... 250 V AC/DC⁴⁾ 1
Transistor output PNP 10 ... 35 V DC 2

Housing

316L 1

Electrical connection/Protection

M12 x 1/IP67 A
According to ISO4400 including plug/ IP65 B
According to DIN 43650 incl. plug with QuickOn connection/IP65 C
M12 x 1 incl. 5 m cable/IP68 (0.2 bar) D

¹⁾ Available only with Electronics option 2

²⁾ Available only with process connection A0, A2, A4, A6, C0, C2, D0 and D1

³⁾ Available only with process connection A1, A3, A5, and A7 ... B6, C1, C3 and D2

⁴⁾ Available only with Electrical connection/Protection option B and C

⁵⁾ Available only with Process Temperature options A and B

⁶⁾ Available only with shipping approvals DNV and GL

⁷⁾ Available only with Electrical connection/Protection option B

Selection and Ordering data

Order code

Further designs

Please add "-Z" to Article No. and specify Order code(s).

Cleaning including certificate (oil, grease and silicone free)

W01

Identification Label, foil laser marking

Y16

Acceptance test Certificate 2.2 for material EN 10204

C15

3.1-Inspection Certificate for instrument with test data (EN 10204)

C25

Operating Instructions

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Spare Parts

LVL100 Threaded Welded Socket

Article No.

G¾" A/316L with FKM Seal

7ML1930-1EE

G1" A/316L with FKM Seal

7ML1930-1EF

M27 x 1.5/316L with FKM Seal

7ML1930-1EG

G¾" A/316L with EPDM Seal

7ML1930-1EH

G1" A/316L with EPDM Seal

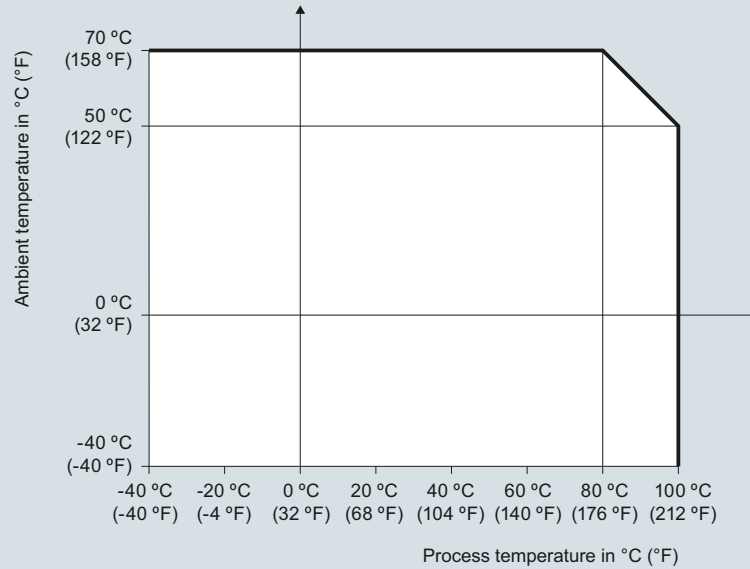
7ML1930-1EJ

M27 x 1.5/316L with EPDM Seal

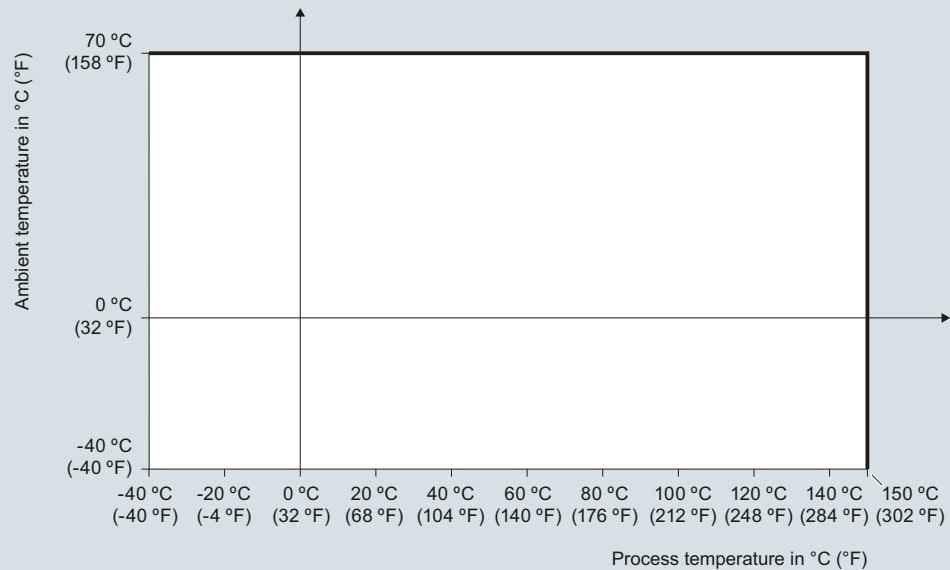
7ML1930-1EK

Characteristic curves

**Ambient temperature to process temperature dependency
 (standard version)**



**Ambient temperature to process temperature dependency
 (high temperature version)**



SITRANS LVL100 ambient temperature/process temperature derating curves

Level Measurement

Point level measurement

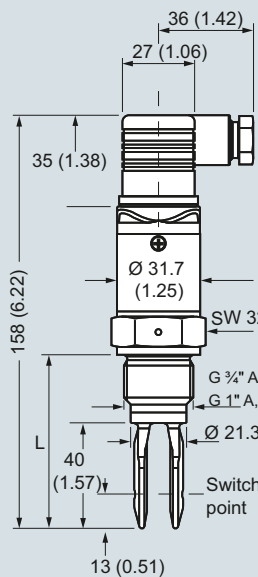
Vibrating switches

SITRANS LVL100

Dimensional drawings

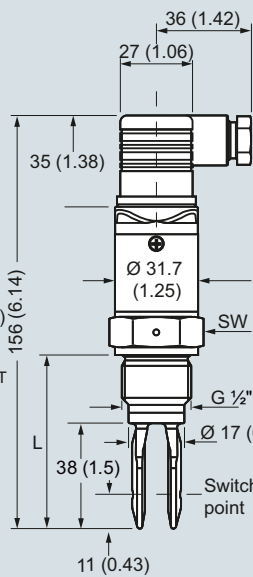
SITRANS LVL100 (standard)

Thread G $\frac{3}{4}$ " A, G 1" A
(DIN ISO 228/1),
 $\frac{3}{4}$ " NPT or 1" NPT
(valve plug ISO 4400)



L =
Length with G $\frac{3}{4}$ " A, $\frac{3}{4}$ " NPT: 66 (2.6)
Length with G 1" A, 1" NPT: 69 (2.7)

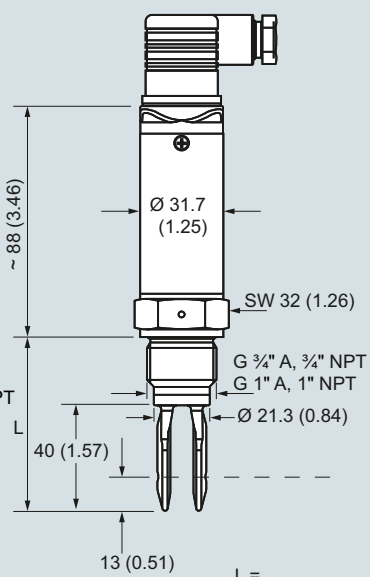
Thread G $\frac{1}{2}$ " A
(DIN ISO 228/1),
 $\frac{1}{2}$ " NPT
(valve plug ISO 4400)



L =
Length with G $\frac{1}{2}$ " A, $\frac{1}{2}$ " NPT: 62 (2.4)

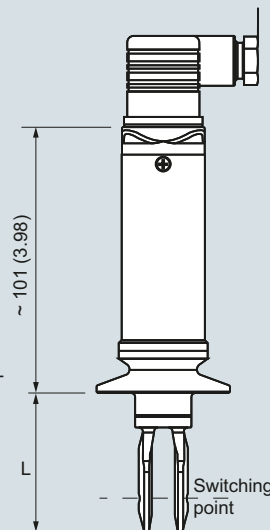
SITRANS LVL100 (extended high temperature)

Thread G $\frac{3}{4}$ " A, G 1" A
(DIN ISO 228/1),
 $\frac{3}{4}$ " NPT or 1" NPT
(valve plug DIN 43650)

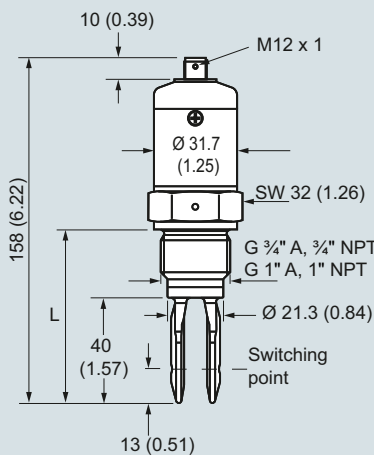


L =
Length with G $\frac{3}{4}$ " A, $\frac{3}{4}$ " NPT: 66 (2.6)
Length with G 1" A, 1" NPT: 69 (2.7)
Length with Tri-clamp: 53 (2.1)

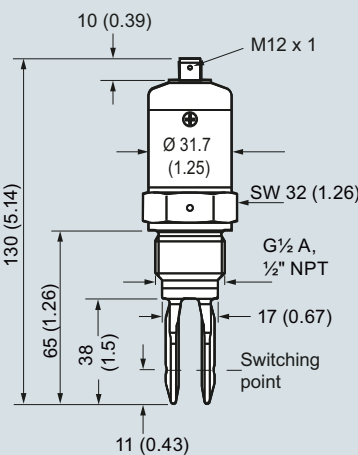
Tri-clamp (valve plug DIN 43650)



SITRANS LVL100 (standard with M12 connector)



L =
Length with G $\frac{3}{4}$ " A, $\frac{3}{4}$ " NPT: 66 (2.6)
Length with G 1" A, 1" NPT: 69 (2.7)

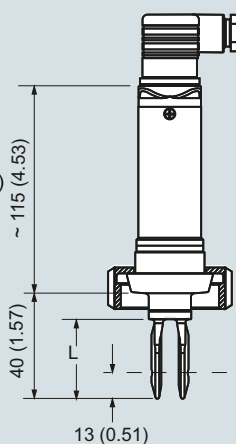


L =
Length with G $\frac{1}{2}$ " A, $\frac{1}{2}$ " NPT: 62 (2.4)

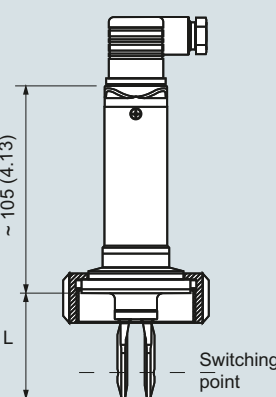
SITRANS LVL100 (extended, high temperature)

Bolting DIN 11851
(valve plug DIN 43650)

SMS 1145
(valve plug DIN 43650)



L =
Length with bolting: 53 (2.1)
Length with SMS 1145: 53 (2)

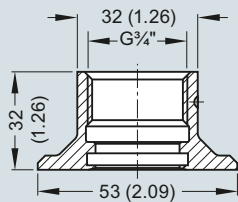


SITRANS LVL100, dimensions in mm (inch)

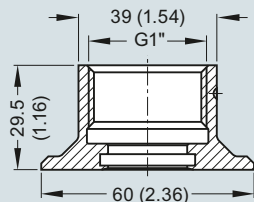
Options

LVL100 threaded welded socket

G $\frac{3}{4}$ " A/316L



G1" A/316L



SITRANS LVL100 welded socket, dimensions in mm (inch)

Level Measurement

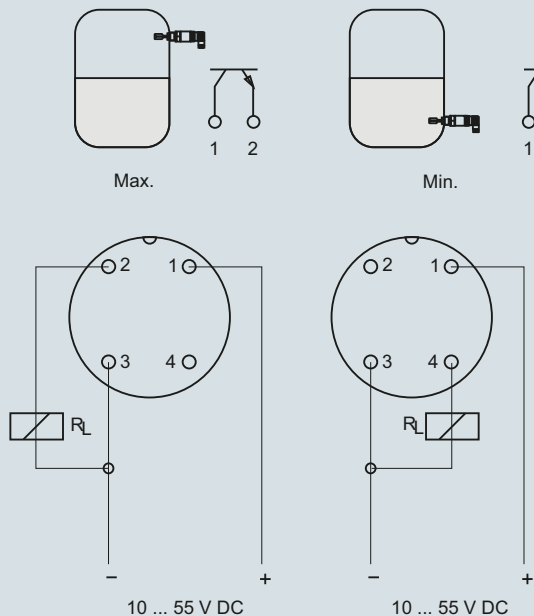
Point level measurement

Vibrating switches

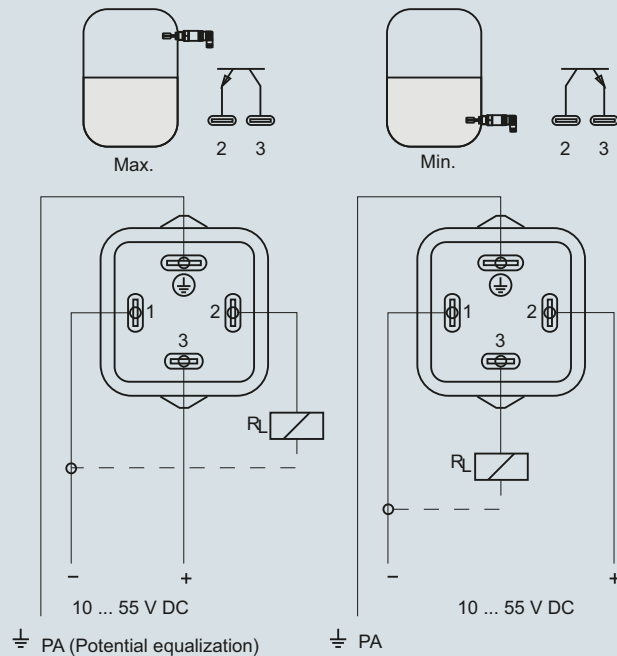
SITRANS LVL100

Circuit diagrams

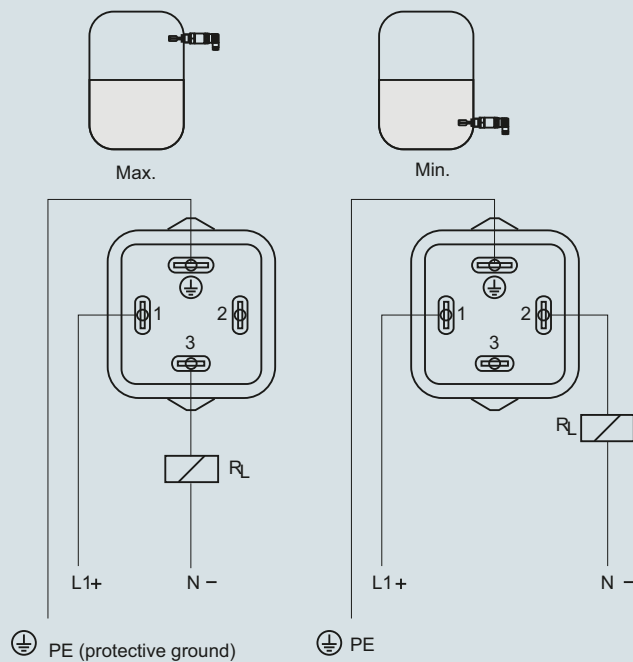
Transistor PNP (M12 x 1 plug connection)



Transistor PNP (with valve plug DIN 43650)



Contactless electronic switch (valve plug DIN 43650)



SITRANS LVL100 connections

Overview



SITRANS LVL200 is a standard vibrating level switch for material detection in liquid and slurry applications such as overflow, high, low, and demand applications, as well as pump protection. For use in SIL-2 applications.

Benefits

- Proven vibrating level switch technology for liquids
- Compact insertion length of 40 mm (1.57 inch) for confined space applications
- Fault monitoring for corrosion, loss of vibration or line break to the piezo drive
- Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511
- Hygienic process connections
- Suitable for API 2350
- Optional remote test signal conditioner

Application

SITRANS LVL200 is a level switch designed for industrial use in all areas of process technology and can be used with liquids and slurries. With a tuning fork insertion length of only 40 mm (1.57 inch), SITRANS LVL200 can be mounted in small pipes and applications with confined space. The LVL200 can be used to measure products with a minimum density of $> 0.5 \text{ g/cm}^3$ (0.018 lb/in^3). The LVL200 can be used in difficult conditions including turbulence, air bubbles, foam generation, buildup, or external vibration.

SITRANS LVL200 continuously monitors faults via frequency evaluation, providing early detection of strong corrosion or damage on the tuning fork, loss of vibration, or a line break to the piezo drive.

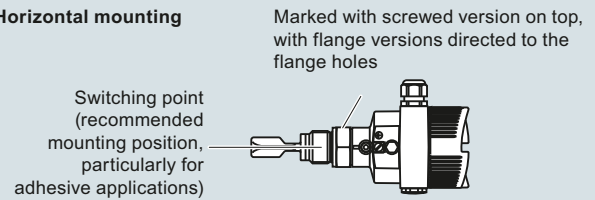
The tuning fork is piezoelectrically energized and vibrates at its mechanical resonance frequency of approximately 1 200 Hz. The vibration frequency changes when the tuning fork is covered by the medium. This change is detected by the integrated oscillator and converted into a switching command. The integrated electronics evaluate the level signal and output a switching signal, directly operating connected devices.

The optional signal conditioner provides a remote test feature to ensure continuous product reliability.

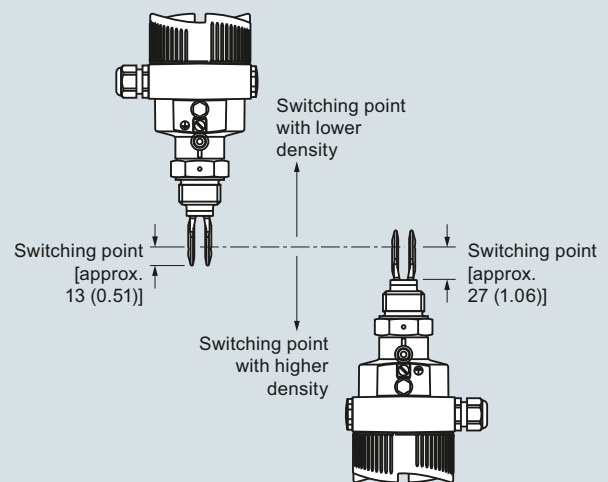
- Key Applications: for use in liquids and slurries, for level measurement, overflow, and dry run protection

Configuration

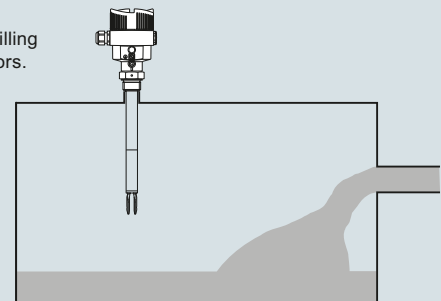
Horizontal mounting



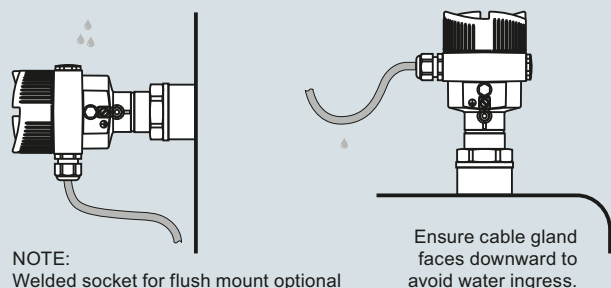
Vertical mounting



Mount away from filling openings or agitators.



Moisture protection



SITRANS LVL200 installation, dimensions in mm (inch)

Level Measurement

Point level measurement

Vibrating switches

SITRANS LVL200

Technical specifications

Mode of operation		Design	
Measuring principle	Vibrating point level switch	Material	<ul style="list-style-type: none"> Aluminum die-cast AlSi10Mg, powder-coated, basis: Polyester Stainless steel housing, electropolished 316L Stainless steel housing, precision casting 316L Plastic housing, plastic PBT (Polyester)
Input		• Enclosure	
Measured variable	High and low and demand (via mode switch)		
Output			
Output options	<ul style="list-style-type: none"> Relay output (DPDT), 2 floating SPDTs Contactless electronic switch 2-wire NAMUR signal output Transistor (NPN/PNP) 10 ... 55 V DC 8/16 mA 	<ul style="list-style-type: none"> Tuning fork Extension tube [ø 21.3 mm (0.839 inch)] Process connection: threaded 	316L (1.4404 or 1.4435), Alloy C22 316L (1.4404 or 1.4435), Alloy C22
Measuring accuracy		<ul style="list-style-type: none"> Process connection: flange Process seal 	<ul style="list-style-type: none"> Standard, Extended: 316L (1.4404 or 1.4435), Alloy C22 High temperature: Inconel 718 316L (1.4404 or 1.4435), 316L with Alloy C22, ECTFE, or PFA coating Klingsil C-4400
Repeatability	0.1 mm (0.004 inch)	Process connection	G ¾" A, G 1" A ¾" NPT, 1" NPT, 1½" NPT DIN from DN 25, ASME from 1" Bolting DN 40 PN 40, 1, 1½, 2, 2½" Tri-Clamp PN 10, conus DN 25 PN 40, Tuchenhausen Varivent DN 50 PN 10, SMS
Hysteresis	Approx. 2 mm (0.08 inch) with vertical installation	<ul style="list-style-type: none"> Pipe thread, cylindrical (ISO 228 T1) Pipe thread, tapered Flanges Hygienic fittings 	
Switching delay	<ul style="list-style-type: none"> Standard, Extended: approx. 500 ms (on/off) High temperature: approx. 1 s (optionally adjustable at factory) 		
Frequency	<ul style="list-style-type: none"> Standard, Extended: Approx. 1 200 Hz High temperature: 1400 Hz 		
Rated operating conditions		Degree of protection	Type 4X/NEMA 4X/IP66/IP67
Installation conditions		Conduit entry	<ul style="list-style-type: none"> 1 x M20 x 1.5 (cable: ø 5 ... 9 mm), 1 x blind stopper M20 x 1.5; attached 1 x M20 x 1.5 cable entry 1 x ½" NPT cable entry, 1 x blind stopper ½" NPT, 1 x ½" NPT cable entry 1 x M12 x 1; 1 x blind stopper M20 x 1.5
• Location	Indoor/outdoor		
Ambient conditions		Weight	
• Ambient temperature	-40 ... +70 °C (-40 ... +158 °F)	• Device weight (dependent on process fitting)	Approx. 0.8 ... 4 kg (0.18 ... 8.82 lb)
• Installation category	III	• Tube extension (extended version)	Approx. 920 g/m (10 oz/ft)
• Pollution degree	2		
Medium conditions			
• Temperature			
- LVL200S Standard	-50 ... +150 °C (-58 ... +302 °F)		
- LVL200S High temperature option	-50 ... +250 °C (-58 ... +482 °F)		
- LVL200E Standard: with 316L/Alloy C22	-50 ... +150 °C (-58 ... +302 °F)		
- LVL200E High temperature option with 316L/Alloy C22	-50 ... +250 °C (-58 ... +482 °F)		
- LVL200H, High temperature	-196 ... +450 °C (-321 ... +842 °F)		
Pressure (vessel)	<ul style="list-style-type: none"> Standard, Extended: -1 ... 64 bar g (-14.5 ... 928 psi g) High temperature: instrument version up to 160 bar (2 320 psi g): -1 ... 160 bar/-100 ... 16 000 kPa (-14.5 ... 2 320 psi g) Note: The process pressure is dependent on configuration, including process fitting, e.g. flange		
Density	0.7 ... 2.5 g/cm³ (0.025 ... 0.09 lb/in³); 0.5 ... 2.5 g/cm³ (0.018 ... 0.09 lb/in³) by switching over Density optionally starts at 0.47 cm³ (0.017 lb/in³)		
		Power supply	
		Supply voltage	20 ... 253 V AC, 50/60 Hz, 20 ... 72 V DC [at U > 60 V DC]
		• Relay DPDT	20 ... 253 V AC, 50/60 Hz, 20 ... 253 V DC
		• Contactless	
		• 2-wire NAMUR	
		Operating voltage (characteristics according to standard) for connection to an amplifier according to NAMUR	IEC 60947-5-6, approx. 8.2 V Off-load voltage U _o approx. 8.2 V Short-circuit current I _U approx. 8.2 mA
		Operating voltage 8/16 mA (via the signal conditioning instrument)	
		• Non-Ex instrument	12 ... 36 V DC
		• Ex-d instrument (ATEX, FM, CSA)	12 ... 36 V DC
		• Ex-ia instrument (ATEX)	12 ... 29 V DC
		• Ex-ia instrument (FM, CSA)	12 ... 31 V DC

Power consumption	<ul style="list-style-type: none"> • Standard, Extended: 1 ... 8 VA (AC), approx. 1.3 W (DC) • High temperature: 3 VA (AC), 1 W (DC)
<ul style="list-style-type: none"> • Relay DPDT • Contactless 	1 ... 8 VA (AC), approx. 1.3 W (DC) Domestic current requirement approx. 3 mA (via load circuit) Load current <ul style="list-style-type: none"> • Min. 10 mA • Max. 400 mA [with $I > 300$ mA the ambient temperature can be max. 60 °C (140 °F)] • Max. 4 A up to 40 ms (not WHG specified)
<ul style="list-style-type: none"> • 8/16 mA, two-wire output 	Output signal <ul style="list-style-type: none"> • Empty (uncovered) <ul style="list-style-type: none"> - 8 mA • Full (covered) <ul style="list-style-type: none"> - 16 mA • Fault message <ul style="list-style-type: none"> - < 1.8 mA Possible signal conditioning instruments: SITRANS SCSC, SITRANS TCSC
<ul style="list-style-type: none"> • 2-wire Namur 	Current consumption <ul style="list-style-type: none"> • Falling characteristics ≥ 2.6 mA uncovered/≤ 0.6 mA covered • ≤ 0.6 mA uncovered/≥ 2.6 mA covered • Failure message ≤ 0.6 mA
<ul style="list-style-type: none"> • Transistor (NPN/PNP) 10 ... 55 V DC 	Output <ul style="list-style-type: none"> • Floating transistor output, permanently shortcircuit-proof Load current <ul style="list-style-type: none"> • < 400 mA Voltage loss <ul style="list-style-type: none"> • < 1 V Switching voltage <ul style="list-style-type: none"> • < 55 V DC Blocking current <ul style="list-style-type: none"> • < 10 μA
Certificates and approvals	<ul style="list-style-type: none"> • CE, CSA • Overfill Protection WHG and VLAREM II • FM (Non-Incendive) Class I, Div. 2, Groups A, B, C, D • FM (Explosion-Proof) Class I, Div. 1, Groups A, B, C, D; (Dust Ignition-Proof) Class II, III, Div. 1, Groups E, F, G1 • IECEx d IIC T6 ... T2 Ga/Gb EHEDG • ATEX II 1/2G, 2G EEx d IIC T6 • ATEX II 1G, 1/2G, 2G EEx ia IIC T6 • Shipping approvals • BR-Ex d IIC T6 ... T2 • FDA, 3A, EHEDG • SIL/IEC61508 Declaration of Conformity [SIL-2 (min/max detection)] Please see configuration section below for full list of approvals.

Level Measurement

Point level measurement

Vibrating switches

SITRANS LVL200

Selection and Ordering data

Article No.

SITRANS LVL200, Standard

Compact vibrating level switch for material detection in liquid and slurry applications such as overflow, high, low, and demand applications, as well as pump protection. For use in SIL-2 and hazardous applications.

➔ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Electronics

Contactless electronic switch
20 ... 250 V AC/DC¹⁾⁹⁾²⁴⁾
Double relay (DPDT) 20 ... 72 V DC/
20 ... 250 V AC²⁴⁾
NAMUR signal⁹⁾
Transistor (NPN/PNP) 10 ... 55 V DC¹⁾²⁵⁾
Two-wire (8/16 mA) 12 ... 36 V DC

Approvals

Without approvals
Overfill protection (WHG)⁹⁾
ATEX II 1G, 1/2G, 2G Ex ia IIC T6 + WHG⁶⁾⁹⁾
ATEX II 1/2G, 2G Ex d IIC T6 + WHG⁵⁾¹⁵⁾
ATEX II 1G, 1/2G, 2G Ex ia IIC T6 + shipping approvals⁶⁾¹⁶⁾
ATEX II 1/2G, 2G Ex d IIC T6 + shipping approvals⁵⁾¹⁵⁾
ATEX II 1G, 1/2G, 2G Ex ia IIC T6 + ATEX II 1/2 D IP6X T⁶⁾¹⁷⁾¹⁷⁾
IECEx Ex ia IIC T6⁶⁾¹⁸⁾
Shipping approvals¹⁶⁾
ATEX II 3G Ex nA II T5 ... T1 X¹⁴⁾¹⁹⁾
FM (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G⁶⁾²⁰⁾
FM (XP) Class I, Div. 1, Groups A, B, C, D; (DIP) Class II, III, Div. 1, Groups E, F, G²⁵⁾¹⁰⁾
FM (NI) Class I, Div. 2, Groups A, B, C, D²¹⁾
IECEx d IIC T6 ... T2 Ga/Gb⁵⁾¹⁵⁾
CSA (XP) Class I, II, III Div. 1, Groups A, B, C, D, E, F, G³⁾¹⁵⁾
CSA(NI) Class I, II, III, Div. 2, Groups A, B, C, D, E, F, G²²⁾
BR-Ex d IIC T6 ... T2⁵⁾²³⁾
CSA (IS) Class I, II, III Div. 1, Groups A, B, C, D, E, F, G⁶⁾⁹⁾
ATEX II 1G, 1/2G, 2G Ex ia IIC T6⁶⁾

Process connection

Thread G $\frac{3}{4}$ " A, PN 64/316L A 0 0
Thread G $\frac{3}{4}$ " A, PN 64/316L Ra < 0.8 µm A 0 1
Thread $\frac{3}{4}$ " NPT, PN 64/316L A 0 2
Thread $\frac{3}{4}$ " NPT, PN 64/316L Ra < 0.8 µm A 0 3
Thread $\frac{3}{4}$ " NPT, PN 64/Alloy 400 (2.4360) A 0 4
Thread G $\frac{3}{4}$ " A, PN 64/Alloy C22 (2.4602) A 0 5
Thread $\frac{3}{4}$ " NPT, PN 64/Alloy C22 (2.4602) A 0 6
Thread G1" A, PN 64/316L A 0 7
Thread G1" A, PN 64/316L ECTFE coated MB1982⁴⁾ A 0 8
Thread G1" A, PN 64/ 316L PFA coated⁴⁾ A 1 0
Thread G1" A, PN 64/ Alloy 400 (2.4360) A 1 1
Thread G1" A, PN 64/ 316L Ra < 0.8 µm A 1 2
Thread 1" NPT, PN 64/ 316L A 1 3
Thread 1" NPT, PN 64/ 316L ECTFE coated MB1982⁴⁾ A 1 4
Thread 1" NPT, PN 64 / 316L PFA-coated⁴⁾ A 1 5
Thread 1" NPT, PN 64 / Alloy 400 (2.4360) A 1 6
Thread 1" NPT, PN 64 / 316L Ra < 0.8 µm A 1 7
Thread G1" A, PN 64 / Alloy C22 (2.4602) A 1 8
Thread G1" A, PN 64/Alloy C22 (2.4602) Ra < 0.3 µm A 2 0
Thread G1 $\frac{1}{2}$ " A, PN 64/316L A 2 1
Thread G1 $\frac{1}{2}$ " A, PN 64/316L Ra < 0.8 µm A 2 2
Thread G1 $\frac{1}{2}$ " A, PN 64/Alloy C22 (2.4602) A 2 3

Selection and Ordering data

Article No.

SITRANS LVL200, Standard

Compact vibrating level switch for material detection in liquid and slurry applications such as overflow, high, low, and demand applications, as well as pump protection. For use in SIL-2 and hazardous applications.



Thread 1" NPT, PN 64/Alloy C22 (2.4602) A 2 4
Thread 1 $\frac{1}{2}$ " NPT, PN 64/316L A 2 5
Thread 1 $\frac{1}{2}$ " NPT, PN 64/316L Ra < 0.8 µm A 2 6
Thread 1 $\frac{1}{2}$ " NPT, PN 64/Alloy C22 (2.4602) A 2 7
Thread G2" A, PN 64/316L A 2 8
Thread M27 x 1.5, PN 64/316L A 3 0
Conus DN 25, PN 40/316L Ra < 0.3 µm A 3 1
Conus DN 25, PN 40/316L Ra < 0.8 µm A 3 2
Conus DN 25, PN 40/ECTFE (ZB3033)⁴⁾ A 3 3
Conus M52, PN 40/316L A 3 4
Conus M52, PN 40/316L Ra < 0.3 µm A 3 5
Conus M52, PN 40/316L Ra < 0.8 µm A 3 6
Tri-Clamp 1", PN 16/316L Ra < 0.3 µm A 3 7
Tri-Clamp 1", PN 16/Alloy C22 (2.4602) A 3 8
Tri-Clamp 1", PN 16/316L Ra < 0.8 µm A 4 0
Tri-Clamp 1 $\frac{1}{2}$ ", PN 16/316L Ra < 0.3 µm A 4 1
Tri-Clamp 1 $\frac{1}{2}$ ", PN 16/Alloy C22 (2.4602) A 4 2
Tri-Clamp 1 $\frac{1}{2}$ ", PN 16/316L Ra < 0.8 µm A 4 3
Tri-Clamp 2", PN 16/316L Ra < 0.3 µm A 4 4
Tri-Clamp 2", PN 16/Alloy C22 (2.4602) A 4 5
Tri-Clamp 2", PN 16/316L Ra < 0.8 µm A 4 6
Tri-Clamp 2 $\frac{1}{2}$ ", PN 10/316L Ra < 0.3 µm A 4 7
Tri-Clamp 2 $\frac{1}{2}$ ", PN 10/316L Ra < 0.8 µm A 4 8
Tri-Clamp 3", PN 10/316L Ra < 0.3 µm A 5 0
Tri-Clamp 3", PN 10/316L Ra < 0.8 µm A 5 1
Bolting DN 32, PN 40 DIN11851/316L Ra < 0.3 µm A 5 2
Bolting DN 32, PN 40 DIN11851/316L Ra < 0.8 µm A 5 3
Bolting DN 25, PN 40 DIN11851/316L Ra < 0.3 µm A 5 4
Bolting DN 25, PN 40 DIN11851/316L Ra < 0.8 µm A 5 5
Bolting DN 40, PN 40 DIN11851/316L Ra < 0.3 µm A 5 6
Bolting DN 40, PN 40 DIN11851/316L Ra < 0.8 µm A 5 7
Bolting DN 40, PN 40 DIN11864-1 A/316L Ra < 0.8 µm ZB3052 A 5 8
Bolting DN 50, PN 25 DIN11851/316L Ra < 0.3 µm A 6 0
Bolting DN 50, PN 25 DIN11851/316L Ra < 0.8 µm A 6 1
Bolting DN 50, PN 25 DIN11864-1 A/316L Ra < 0.8 µm ZB3052 A 6 2
Hygienic w. compr. nut F40, PN 25/316L A 6 3
Hygienic w. compr. nut F40, PN 25/316L Ra < 0.3 µm A 6 4
Hygienic w. compr. nut F40, PN 25/316L Ra < 0.8 µm A 6 5
Varivent N50-40/316L Ra < 0.3 µm A 6 6
Varivent N50-40/316L Ra < 0.8 µm A 6 7
Varivent N125/100/316L Ra < 0.8 µm A 6 8
DRD flange, PN 40/316L ZB3007 A 7 0
SMS DN 38/316L Ra < 0.8 µm⁴⁾ A 7 1
SMS DN 51, PN 6/316L Ra < 0.8 µm⁴⁾ A 7 2
Swagelok VCR screwing ZG2579, PN 64/316L A 7 3
Neumo biocontrol size 25, PN 16/316L Ra < 0.8 µm A 7 4
Neumo biocontrol size 50, PN 16/316L Ra < 0.8 µm⁴⁾ A 7 5
Neumo biocontrol size 65, PN 16/316L Ra < 0.8 µm A 7 6
Neumo biocontrol size 80, PN 16/316L Ra < 0.8 µm A 7 7
SÜDMO DN 50, PN 10/316L Ra < 0.8 µm A 7 8
Small flange DN 25, PN 1.5 DIN 28403/316L pol. Ra < 0.8 µm A 8 0
Small flange DN 40, PN 1.5 DIN 28403/316L pol. Ra < 0.8 µm A 8 1
Ingold connection, PN16 / 316 L Ra < 0.8 µm (acc. to MB2523) A 8 2

Level Measurement

Point level measurement

Vibrating switches

SITRANS LVL200

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
SITRANS LVL200, Standard Compact vibrating level switch for material detection in liquid and slurry applications such as overflow, high, low, and demand applications, as well as pump protection. For use in SIL-2 and hazardous applications.	7ML5746-  A 0	SITRANS LVL200, Standard Compact vibrating level switch for material detection in liquid and slurry applications such as overflow, high, low, and demand applications, as well as pump protection. For use in SIL-2 and hazardous applications.	7ML5746-  A 0
Ingold connection, PN 16/Alloy C22 (2.4602) Ra < 0.8 µm (acc. to MB6017)	A 8 3	Flange DN 65, PN 40 Form C, DIN 2501/ Alloy C22 (2.4602)	B 4 7
Terminal DN 33.7 PN 40 DIN11864-3-A-/316L BN2 Ra < 0.8 µm ⁽⁴⁾	A 8 4	Flange DN 65, PN 40 Form C, DIN 2501/ECTFE ⁽⁴⁾	B 4 8
Hygienic fl. DN 50 PN 16 DIN11864-2-A-/316L Ra < 0.8 µm	A 8 5	Flange DN 65, PN 40 Form C, DIN 2501/PFA ⁽⁴⁾	B 5 0
Flange DN 25, PN 6 Form C, DIN 2501/316L	A 8 6	Flange DN 65, PN 40 Form F, DIN 2501/316L	B 5 1
Flange DN 25, PN 6 Form C, DIN 2501/PFA ⁽⁴⁾	A 8 7	Flange DN 65, PN 64 Form E, DIN 2501/316L	B 5 2
Flange DN 25, PN 40 Form C, DIN 2501/316L	A 8 8	Flange DN 80, PN 40 Form C, DIN 2501/316L	B 5 3
Flange DN 25, PN 40 Form C, DIN 2501/ Alloy C22 (2.4602)	B 0 0	Flange DN 80, PN 40 Form C, DIN 2501/ Alloy C22 (2.4602)	B 5 4
Flange DN 25, PN 40 Form C, DIN 2501/ECTFE ⁽⁴⁾	B 0 1	Flange DN 80, PN 40 Form C, DIN 2501/ECTFE ⁽⁴⁾	B 5 5
Flange DN 25, PN 40 Form C, DIN 2501/PFA ⁽⁴⁾	B 0 2	Flange DN 80, PN 40 Form C, DIN 2501/PFA ⁽⁴⁾	B 5 6
Flange DN 25, PN 40 Form C, DIN 2501/Enamelled ⁽³⁾	B 0 3	Flange DN 80, PN 40 Form C, DIN 2501/ Enamelled ⁽³⁾	B 5 7
Flange DN 25, PN 40 Form D, DIN 2501/316L	B 0 4	Flange DN 80, PN 40 Form F, DIN 2501/316L	B 5 8
Flange DN 25, PN 40 Form F, DIN 2501/316L	B 0 5	Flange DN 80, PN 40 Form N, DIN 2501/316L	B 6 0
Flange DN 25, PN 40 Form N, DIN 2501/316L	B 0 6	Flange DN 100, PN 16 Form C, DIN 2501/316L	B 6 2
Flange DN 25, PN 40 Form N, DIN 2501/ Alloy C22 (2.4602)	B 0 7	Flange DN 100, PN 16 Form C, DIN 2501/ Alloy C22 (2.4602)	B 6 3
Flange DN 25, PN 40 Form N, DIN 2501/ Alloy 400 (2.4360) solid	B 0 8	Flange DN 100, PN 16 Form C, DIN 2501/ECTFE ⁽⁴⁾	B 6 4
Flange DN 25, PN 40 V13, DIN 2501/316L	B 1 0	Flange DN 100, PN 16 Form C, DIN 2501/PFA ⁽⁴⁾	B 6 5
Flange DN 32, PN 40 Form C, DIN 2501/316L	B 1 1	Flange DN 100, PN 16 Form C, DIN 2501/ Enamelled ⁽³⁾	B 6 6
Flange DN 32, PN 40 Form C, DIN 2501/ECTFE ⁽⁴⁾	B 1 2	Flange DN 100, PN 16 Form D, DIN 2501/316L	B 6 7
Flange DN 40, PN 6 Form C, DIN 2501/316L	B 1 3	Flange DN 100, PN 16 Form F, DIN 2501/316L	B 6 8
Flange DN 40, PN 6 Form C, DIN 2501/ECTFE ⁽⁴⁾	B 1 4	Flange DN 100, PN 16 Form N, DIN 2501/316L	B 7 0
Flange DN 40, PN 40 Form C, DIN 2501/316L	B 1 5	Flange DN 100, PN 40 Form C, DIN 2501/316L	B 7 1
Flange DN 40, PN 40 Form C, DIN 2501/ Alloy C22 (2.4602)	B 1 6	Flange DN 100, PN 40 Form C, DIN 2501/ECTFE ⁽⁴⁾	B 7 2
Flange DN 40, PN 40 Form C, DIN 2501/ECTFE ⁽⁴⁾	B 1 7	Flange DN 100, PN 40 Form C, DIN 2501/PFA ⁽⁴⁾	B 7 3
Flange DN 40, PN 40 Form C, DIN 2501/PFA ⁽⁴⁾	B 1 8	Flange DN 100, PN 40 Form C, DIN 2501/ Enamelled ⁽³⁾	B 7 4
Flange DN 40, PN 40 Form C, DIN 2501/ Enamelled ⁽³⁾	B 2 0	Flange DN 100, PN 40 Form F, DIN 2501/316L	B 7 5
Flange DN 40, PN 40 Form F, DIN 2501/316L	B 2 1	Flange DN 100, PN 40 Form N, DIN 2501/316L	B 7 6
Flange DN 40, PN 40 Form N, DIN 2501/316L	B 2 2	Flange DN 100, PN 40 V13, DIN 2501/316L	B 7 7
Flange DN 40, PN 40 Form E, DIN 2501/316L	B 2 3	Flange DN 100, PN 64 Form E, DIN 2501/316L	B 7 8
Flange DN 40, PN 40 V13, DIN 2501/316L	B 2 4	Flange DN 100, PN 100 Form E, DIN 2501/316L	B 8 0
Flange DN 50, PN 40 Form C, DIN 2501/316L	B 2 5	Flange DN 100, PN 100 Form L, DIN 2501/316L	B 8 1
Flange DN 50, PN 40 Form C, DIN 2501/ Alloy C22 (2.4602)	B 2 6	Flange DN 125, PN 16 Form F, DIN 2501/316L	B 8 2
Flange DN 50, PN 40 Form C, DIN 2501/ECTFE ⁽⁴⁾	B 2 7	Flange DN 125, PN 40 Form C, DIN 2501/316L	B 8 3
Flange DN 50, PN 40 Form C, DIN 2501/ ECTFE (ZB3108) ⁽⁴⁾	B 2 8	Flange DN 125, PN 40 Form N, DIN 2512/ 316L	B 8 4
Flange DN 50, PN 40 Form C, DIN 2501/PFA ⁽⁴⁾	B 3 0	Flange DN 150, PN 16 Form C, DIN 2501/316L	B 8 5
Flange DN 50, PN 40 Form D, DIN 2501/316L	B 3 1	Flange DN 150, PN 16 Form C, DIN 2501/ Alloy C22 (2.4602)	B 8 6
Flange DN 50, PN 40 Form D, DIN 2501/ Alloy C22 (2.4602)	B 3 2	Flange DN 150, PN 16 Form C, DIN 2501/ECTFE ⁽⁴⁾	B 8 7
Flange DN 50, PN 40 Form F, DIN 2501/316L	B 3 3	Flange DN 150, PN 16 Form C, DIN 2501/PFA ⁽⁴⁾	B 8 8
Flange DN 50, PN 40 Form N, DIN 2501/316L	B 3 4	Flange DN 150, PN 16 Form D, DIN 2501/316L	C 0 0
Flange DN 50, PN 40 Form N, DIN 2501/ Alloy C22 (2.4602)	B 3 5	Flange DN 150, PN 40 Form C, DIN 2501/316L	C 0 1
Flange DN 50, PN 40 Form E, DIN 2501/316L	B 3 6	Flange DN 150, PN 40 Form C, DIN 2501/ Alloy C22 (2.4602)	C 0 2
Flange DN 50, PN 40 V13, DIN 2501/316L	B 3 7	Flange DN 150, PN 40 Form F, DIN 2501/316L	C 0 3
Flange DN 50, PN 40 R13, DIN 2501/316L	B 3 8	Flange DN 150, PN 40 Form N, DIN 2512/316L	C 0 4
Flange DN 50, PN 64 Form F, DIN 2501/316L	B 4 0	Flange DN 200, PN 10 Form C, DIN 2501/ECTFE ⁽⁴⁾	C 0 5
Flange DN 50, PN 64 Form N, DIN 2501/ Alloy C22 (2.4602)	B 4 1	Flange DN 200, PN 16 Form C, DIN 2501/316L	C 0 6
Flange DN 50, PN 64 Form C, DIN 2501/316L	B 4 2	Flange DN 25, PN 40 Form B1, EN 1092-1/316L	C 0 7
Flange DN 50, PN 64 Form L, DIN 2501/316L	B 4 3	Flange DN 25, PN 40 Form B1, EN 1092-1/ Alloy C22 (2.4602)	C 0 8
Flange DN 50, PN 100 Form E, DIN 2501/316L	B 4 4	Flange DN 25, PN 40 Form B1, EN/ 316L/ PFA ⁽⁴⁾	C 1 0
Flange DN 50, PN 100 Form L, DIN 2501/316L	B 4 5	Flange DN 25, PN 40 Form B1, EN 1092-1/ Enamelled ⁽³⁾	C 1 1
Flange DN 65, PN 40 Form C, DIN 2501/316L	B 4 6	Flange DN 25, PN 40 Form B2, EN 1092-1/316L	C 1 2
		Flange DN 25, PN 40 Form F, EN 1092-1/316L	C 1 3
		Flange DN 25, PN 63 Form B1, EN 1092-1/316L	C 1 4

Level Measurement

Point level measurement

Vibrating switches

SITRANS LVL200

Selection and Ordering data

Article No.

SITRANS LVL200, Standard

Compact vibrating level switch for material detection in liquid and slurry applications such as overflow, high, low, and demand applications, as well as pump protection. For use in SIL-2 and hazardous applications.

7ML5746-

 A 0

Flange DN 25, PN 100 Form B2, EN 1092-1/316L	C 15
Flange DN 40, PN 40 Form B1, EN/ 316L	C 16
Flange DN 40, PN 40 Form B1, EN 1092-1/PFA ⁴⁾	C 17
Flange DN 40, PN 40 Form B2, EN/316L	C 18
Flange DN 50, PN 40 Form B1, EN/316L	C 20
Flange DN 50, PN 40 Form B1, EN 1092-1/ Alloy C22 (2.4602)	C 21
Flange DN 50, PN 40 Form B1, EN 1092-1/ Alloy 400 (2.4360) ZB2977	C 22
Flange DN 50, PN 40 Form B1, EN 1092-1/ECTFE ⁴⁾	C 23
Flange DN 50, PN 40 Form B1, EN/ 316L/PFA ⁴⁾	C 24
Flange DN 50, PN 40 Form B1, EN 1092-1/ Enamelled ³⁾	C 25
Flange DN 50, PN 40 Form C, EN 1092-1/316L	C 26
Flange DN 50, PN 40 Form D, EN/316L	C 27
Flange DN 50, PN 40 Form D, EN 1092-1/ Alloy C22 (2.4602)	C 28
Flange DN 50, PN 40 Form B2, EN 1092-1/316L	C 30
Flange DN 50, PN 40 Form E, EN 1092-1/316L	C 31
Flange DN 80, PN 40 Form B1, EN 1092-1/316L	C 32
Flange DN 80, PN 40 Form B1, EN 1092-1/ Alloy C22 (2.4602)	C 33
Flange DN 80, PN 40 Form B1, EN 1092-1/ECTFE ⁴⁾	C 34
Flange DN 80, PN 40 Form B1, EN 1092-1/ Enamelled ³⁾	C 35
Flange DN 80, PN 40 Form B2, EN 1092-1/316L	C 36
Flange DN 100, PN 16 Form B1, EN 1092-1/316L	C 37
Flange DN 100, PN 16 Form B1, EN 1092-1/ Alloy C22 (2.4602)	C 38
Flange DN 100, PN 16 Form B1, EN 1092-1/ Enamelled ³⁾	C 40
Flange DN 100, PN 40 Form B1, EN 1092-1/316L	C 41
Flange DN 100, PN 40 Form B1, EN 1092-1/ Enamelled ³⁾	C 42
Flange DN 100, PN 40 Form C, EN 1092-1/316L	C 43
Flange DN 100, PN 63 Form B2, EN 1092-1/316L	C 44
Flange DN 150, PN 16 Form B1, EN 1092-1/316L	C 45
Flange DN 150, PN 16 Form B1, EN 1092-1/PFA ⁴⁾	C 46
Flange DN 150, PN 40 Form B1, EN 1092-1/316L	C 47
Flange DN 150, PN 40 Form B1, EN 1092-1/ECTFE ⁴⁾	C 48
Flange DN 150, PN 40 Form B2, EN 1092-1/316L	C 50
Flange 1" 150 lb ASME B16.5/316L	C 51
Flange 1" 150 lb RF, ASME B16.5/Alloy C22 (2.4602)	C 52
Flange 1" 150 lb RF, ASME B16.5/Alloy 400 (2.4360) ZB2977	C 53
Flange 1" 150 lb RF, ASME B16.5/ECTFE ⁴⁾	C 54
Flange 1" 150 lb RF, ASME B16.5/PFA ⁴⁾	C 55
Flange 1" 150 lb RF, ASME B16.5/Enamelled ³⁾	C 56
Flange 1" 300 lb RF, ASME B16.5/316L	C 57
Flange 1" 300 lb RF, ASME B16.5/ECTFE ⁴⁾	C 58
Flange 1" 600 lb RF, ASME B16.5/316L	C 60
Flange 1½" 150 lb RF, ASME B16.5/316L	C 61
Flange 1½" 150 lb RF, ASME B16.5/ Alloy C22 (2.4602)	C 62
Flange 1½" 150 lb RF, ASME B16.5/ECTFE ⁴⁾	C 63
Flange 1½" 150 lb RF, ASME B16.5/PFA ⁴⁾	C 64
Flange 1½" 150 lb RF, ASME B16.5 Enamelled ³⁾	C 65
Flange 1½" 150 lb FF, ASME B16.5/ECTFE ⁴⁾	C 66
Flange 1½" 300 lb RF, ASME B16.5/316L	C 67

Selection and Ordering data

Article No.


SITRANS LVL200, Standard

Compact vibrating level switch for material detection in liquid and slurry applications such as overflow, high, low, and demand applications, as well as pump protection. For use in SIL-2 and hazardous applications.

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 A 0

Flange 1½" 300 lb RF, ASME B16.5/ Alloy 400 (2.4360) ZB2977	C 68
Flange 1½" 300 lb RF, ASME B16.5/ECTFE ³⁾	C 70
Flange 1½" 600 lb RF, ASME B16.5/316L	C 71
Flange 2" 150 lb RF, ASME B16.5/316L	C 72
Flange 2" 150 lb RF, ASME B16.5/Alloy C22 (2.4602)	C 73
Flange 2" 150 lb RF, ASME B16.5/Alloy 400 (2.4360) ZB2977	C 74
Flange 2" 150 lb RF, ASME B16.5/ECTFE ⁴⁾	C 75
Flange 2" 150 lb RF, ASME B16.5/PFA ⁴⁾	C 76
Flange 2" 150 lb RF, ASME B16.5/Enamelled ³⁾	C 77
Flange 2" 150 lb FF, ASME B16.5/316L	C 78
Flange 2" 150 lb FF, ASME B16.5/ECTFE ⁴⁾	C 80
Flange 2" 150 lb SG (small groove), ASME B16.5/316L	C 81
Flange 2" 300 lb RF, ASME B16.5/316L	C 82
Flange 2" 300 lb RF, ASME B16.5/Alloy C22 (2.4602)	C 83
Flange 2" 300 lb RF, ASME B16.5/ECTFE ⁴⁾	C 85
Flange 2" 300 lb RF, ASME B16.5/PFA ⁴⁾	C 86
Flange 2" 300 lb RF, ASME B16.5 Enamelled ³⁾	C 87
Flange 2" 300 lb RJF, ASME B16.5/316L	C 88
Flange 2" 300 lb ST, ASME B16.5/316L	D 00
Flange 2" 300 lb LG (large groove), ASME B16.5/316L	D 01
Flange 2" 300 lb LT, ASME B16.5/316L	D 02
Flange 2" 600 lb RF, ASME B16.5/316L	D 03
Flange 2" 600 lb RF, ASME B16.5/Alloy 400 (2.4360) ZB2977	D 04
Flange 2" 600 lb RF, ASME B16.5/ECTFE ⁴⁾	D 05
Flange 2" 600 lb RJF, ASME B16.5/316L	D 06
Flange 2" 600 lb LG, ASME B16.5/316L	D 07
Flange 2" 900 lb RJF, ASME B16.5/316L	D 08
Flange 2½" 150 lb RF, ASME B16.5/316L	D 10
Flange 2½" 300 lb RF, ASME B16.5/316L	D 11
Flange 3" 150 lb RF, ASME B16.5/316L	D 12
Flange 3" 150 lb RF, ASME B16.5/Alloy C22 (2.4602)	D 13
Flange 3" 150 lb RF, ASME B16.5/ECTFE ⁴⁾	D 14
Flange 3" 150 lb RF, ASME B16.5/PFA ⁴⁾	D 15
Flange 3" 150 lb RF, ASME B16.5/Enamelled ³⁾	D 16
Flange 3" 150 lb FF, ASME B16.5/316L	D 17
Flange 3" 150 lb FF, ASME B16.5/ECTFE ⁴⁾	D 18
Flange 3" 150 lb FF, ASME B16.5/PFA ⁴⁾	D 20
Flange 3" 300 lb RF, ASME B16.5/316L	D 21
Flange 3" 300 lb RF, ASME B16.5/Alloy C22 (2.4602)	D 22
Flange 3" 300 lb RF, ASME B16.5/ECTFE ⁴⁾	D 23
Flange 3" 300 lb RF, ASME B16.5/PFA ⁴⁾	D 24
Flange 3" 300 lb RF, ASME B16.5/Enamelled ³⁾	D 25
Flange 3" 600 lb RF, ASME B16.5/316L	D 26
Flange 3½" 150 lb RF, ASME B16.5/316L	D 27
Flange 3½" 150 lb RF, ASME B16.5/ECTFE ⁴⁾	D 28
Flange 4" 150 lb RF, ASME B16.5/316L	D 30
Flange 4" 150 lb RF, ASME B16.5/Alloy C22 (2.4602)	D 31
Flange 4" 150 lb RF, ASME B16.5/ECTFE ⁴⁾	D 32
Flange 4" 150 lb RF, ASME B16.5/PFA ⁴⁾	D 33
Flange 4" 150 lb RF, ASME B16.5/Enamelled ³⁾	D 34

Selection and Ordering data	Article No.
SITRANS LVL200, Standard	7ML5746-
Compact vibrating level switch for material detection in liquid and slurry applications such as overflow, high, low, and demand applications, as well as pump protection. For use in SIL-2 and hazardous applications.	
Flange 4" 150 lb LT, ASME B16.5/316L	D 3 5
Flange 4" 300 lb RF, ASME B16.5/316L	D 3 6
Flange 4" 300 lb RF, ASME B16.5/Alloy C22 (2.4602)	D 3 7
Flange 4" 300 lb RF, ASME B16.5/ECTFE ⁴⁾	D 3 8
Flange 4" 300 lb RJF, ASME B16.5/316L	D 4 0
Flange 4" 300 lb LG, ASME B16.5/316L	D 4 1
Flange 4" 300 lb LT, ASME B16.5/316L	D 4 2
Flange 4" 600 lb RF, ASME B16.5/316L	D 4 3
Flange 4" 600 lb RJF, ASME B16.5/316L	D 4 4
Flange 6" 150 lb RF, ASME B16.5/316L	D 4 5
Flange 6" 150 lb RF, ASME B16.5/Alloy C22 (2.4602)	D 4 6
Flange 6" 150 lb RF, ASME B16.5/ECTFE ⁴⁾	D 4 7
Flange 6" 150 lb RF, ASME B16.5/PFA ⁴⁾	D 4 8
Flange 6" 150 lb RJF, ASME B16.5/316L	D 5 0
Flange 6" 300 lb RF, ASME B16.5/316L	D 5 1
Flange 8" 150 lb RF, ASME B16.5/316L	D 5 2
Flange 8" 150 lb RF, ASME B16.5/ECTFE ⁴⁾	D 5 3
Flange 1" BS.10 Table E/316L	D 5 4
Flange 1" BS.10 Table E/PFA ⁴⁾	D 5 5
Flange 1½" BS.10 Table E/316L	D 5 6
Flange 3½" BS.10 Table E/316L	D 5 7
Flange 4" BS.10 Table E/ECTFE ⁴⁾	D 5 8
Flange DN 40 10K, JIS/316L	D 6 0
Flange DN 50 10K, JIS/316L	D 6 1
Flange DN 80 10K, JIS/316L	D 6 2
Flange DN 100 10K, JIS/316L	D 6 3
Thread R1 PN 64, EN 10226-1/316L	D 6 5
Flange 2" 900 lb RF, ASME B16.5/316L	D 7 0
Adapter/Process temperature	
Without adapter/-50 ... +150 °C (-58 ... +302 °F)	1
With adapter/-50 ... +200 °C (-58 ... +392 °F) ¹³⁾	2
With adapter/-50 ... +250 °C (-58 ... +482 °F)	3
With gas-tight leadthrough/-50 ... +150 °C (-58 ... +302 °F)	4
With gas-tight leadthrough/-50 ... +250 °C (-58 ... +482 °F)	5
Housing/Cable entry	
Aluminum IP66/IP67/M20 x 1.5	A
Aluminum IP66/IP67/½" NPT	B
316L stainless steel (electropolished) IP66/IP67/M20 x 1.5	C
316L stainless steel (electropolished) IP66/IP67/½" NPT	D
Plastic single chamber IP66/IP67/M20 x 1.5	E
Plastic single chamber IP66/IP67/½" NPT	F
Stainless steel chamber (precision casting) IP66/ IP67/M20 x 1.5	G
Stainless steel chamber (precision casting) IP66/ IP67/½" NPT	H
Aluminum IP66/IP67/M20 x 1.5 Special HARTING plug (bent) according to Tier One (ZB7555) ¹¹⁾	V

Level Measurement

Point level measurement

Vibrating switches

SITRANS LVL200

Selection and Ordering data

Further designs

Please add "-Z" to Article No. and specify Order code(s).

Switching status indication with colors red-green¹²⁾

Cleaning including Certificate
(oil, grease, and silicone free)

Identification label (measurement loop) stainless steel: max. 40 characters, add in plain text.
To add more than one line, use a comma "," for line break.

Identification Label (measurement loop) foil:
max. 40 characters add in plain text.
To add more than one line, use a comma "," for line break.

NACE0175 to 3.1 Material Certificate for material (EN10204 NACE MR 0175)⁸⁾
Note: not available with Process Connection and Rigid extension coatings PFA, ECTFE, and Enamel.
NACE not available with Hygienic process connections.

Material Inspection certificate 3.1 of EN 10204⁸⁾

2.2-Factory certificate for material (EN 10204)⁸⁾

Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511⁸⁾

Dye penetration test, results confirmed via a 3.1 certificate/instrument (EN10204)⁸⁾

X-ray test + 3.1 certificate/instrument⁸⁾

Positive material identification test
+ 3.1 certificate/instrument⁸⁾

Roughness test + 3.1 certificate/instrument⁸⁾

3.1-Inspection Certificate for instrument with test data (EN 10204)

Quality and test plan

Pressure test + 3.1 certificate/instrument⁸⁾

Helium leak test + 3.1 certificate/instrument⁸⁾

Ferrite measuring accuracy to DIN32514-1
+ 3.1 certificate/instrument⁸⁾

Pressure test according to Norsok
+ 3.1 certificate/instrument⁸⁾

Operating Instructions

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Spare Parts and Accessories

Electronics module SITRANS LVL200 Relay

Electronics module SITRANS LVL200 Contactless

NAMUR spare electronics module

SITRANS SCSC single channel signal conditioner and remote test

SITRANS TCSC two channel signal conditioner and remote test

LVL200 Threaded Welded Socket

• G¾" A/316L with FKM Seal

• G1" A/316L with FKM Seal

• M27 x 1.5/316L with FKM Seal

• G¾" A/316L with EPDM Seal

• G1" A/316L with EPDM Seal

• M27 x 1.5/316L with EPDM Seal

Order code

A21

W01

Y17

Y18

D07

C05

C15

C20

C13

C14

C16

C18

C25

C26

C31

C32

C60

C61

Article No.

7ML1830-1NC

7ML1930-6AA

A5E35817107

7ML5760

7ML5761

7ML1930-1EE

7ML1930-1EF

7ML1930-1EG

7ML1930-1EH

7ML1930-1EJ

7ML1930-1EK

4) Not available with Adapter/Process Temperature options 2, 3, and 5.

5) Not available with Adapter/Process Temperature options 2, 4, and 5.

6) Available only with Electronics options 4 and 6.

7) Not available with ECTFE coated probe options.

8) Listed Certificates are not available with all configurations please contact factory for more information.

9) Not available with Housing/Protection/Cable Option V.

10) Not available with PFA and ECTFE coating options.

11) Available only with Approval option A.

12) Available only with Relay Electronic options and Non-hazardous Approval options.

13) Available only with Enamelled Process connection options.

14) Available only with Electronic options 4, 5, and 6.

15) Available only with Aluminum Housing/Protection/Cable options.

16) Not available with Stainless Steel (electropolished) Housing/Protection/Cable options and certain glands.

17) Not available with Plastic and Stainless Steel (electropolished) Housing/Protection/Cable options and certain glands.

18) Not available with Housing/Protection/Cable options D, and V.

19) Not available with Plastic Housing/Protection/Cable options and certain glands.

20) Not available with Housing/Protection/Cable options A, E, G, and V.

21) Available only with Housing/Protection/Cable options B, D, F, and H.

22) Not available with Housing/Protection/Cable options C and V.

23) Available only with Housing/Protection/Cable options A, B, and H.



24) Not available with Approval options C, E, G, H, L, N, V, and W.

25) Not available with Approval options C, E, G, H, N, V, and W.

1) Available only with Adapter/Process temperature options 1, 3, 4, and 5.

2) Available only with Housing/Protection/Cable option B.

3) Available only with Adapter/Process Temperature options 1, 2, and 4.

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
SITRANS LVL200, Rigid extension Compact vibrating level switch for material detection in liquid applications such as overflow, high, low, and demand applications, as well as pump protection. For use in SIL-2 and hazardous applications.	7ML5747- 	SITRANS LVL200, Rigid extension Compact vibrating level switch for material detection in liquid applications such as overflow, high, low, and demand applications, as well as pump protection. For use in SIL-2 and hazardous applications.	7ML5747- 
➔ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			
Electronics Contactless electronic switch 20 ... 250 V AC/DC ¹⁹⁾¹⁴⁾ Double relay (DPDT) 20 ... 72 V DC/20 ... 250 V AC ¹⁴⁾ NAMUR signal ⁹⁾ Transistor (NPN/PNP) 10 ... 55 V DC ¹⁾¹⁵⁾ Two-wire (8/16 mA) 12 ... 36 V DC	1 2 4 5 6	Thread G1½" A, PN 64/316L Thread G1½" A, PN 64/316L Ra < 0.8 µm Thread G1½" A, PN 64/Alloy C22 (2.4602) Thread 1" NPT, PN 64/Alloy C22 (2.4602) Thread 1½" NPT, PN 64/316L Thread 1½" NPT, PN 64/316L Ra < 0.8 µm Thread 1½" NPT, PN 64/Alloy C22 (2.4602) Thread G2" A, PN 64/316L Thread M27 x 1.5 PN 64/316L Cyl. socket/316Ti/1.4581 ECTFE coated ZB2984 ⁴⁾ Conus DN 25 PN 40/316L Ra < 0.3 µm Conus DN 25 PN 40/316L Ra < 0.8 µm Conus DN 25 PN 40/ECTFE (ZB3033) ⁴⁾ Conus M52 PN 40/316L Conus M52 PN 40/316L Ra < 0.3 µm Conus M52 PN 40/316L Ra < 0.8 µm Tri-Clamp 1" PN 16/316L Ra < 0.3 µm Tri-Clamp 1" PN 16/Alloy C22 (2.4602) Tri-Clamp 1" PN 16/316L Ra < 0.8 µm Tri-Clamp 1½" PN 16/316L Ra < 0.3 µm Tri-Clamp 1½" PN 16/Alloy C22 (2.4602) Tri-Clamp 1½" PN 16/316L Ra < 0.8 µm Tri-Clamp 2" PN 16/316L Ra < 0.3 µm Tri-Clamp 2" PN 16/Alloy C22 (2.4602) Tri-Clamp 2" PN 16/316L Ra < 0.8 µm Tri-Clamp 2½" PN 10/316L Ra < 0.3 µm Tri-Clamp 2½" PN 10/316L Ra < 0.8 µm Tri-Clamp 3" PN 10/316L Ra < 0.3 µm Tri-Clamp 3" PN 10/316L Ra < 0.8 µm Bolting DN 32 PN 40 DIN11851/316L Ra < 0.3 µm Bolting DN 32 PN 40 DIN11851/316L Ra < 0.8 µm Bolting DN 25 PN 40 DIN11851/316L Ra < 0.3 µm Bolting DN 25 PN 40 DIN11851/316L Ra < 0.8 µm Bolting DN 40 PN 40 DIN11851/316L Ra < 0.3 µm Bolting DN 40 PN 40 DIN11851/316L Ra < 0.8 µm Bolting DN 40 PN 40 DIN11864-1 A/316L Ra < 0.8 µm ZB3052 Bolting DN 50 PN 25 DIN11851/316L Ra < 0.3 µm Bolting DN 50 PN 25 DIN11851/316L Ra < 0.8 µm Bolting DN 50 PN 25 DIN11864-1 A/316L Ra < 0.8 µm ZB3052 Hygienic w.compr.nut F40 PN 25/316L Hygienic w.compr.nut F40 PN 25/316L Ra < 0.3 µm Hygienic w.compr.nut F40 PN 25/316L Ra < 0.8 µm Varivent N50-40/316L Ra < 0.3 µm Varivent N50-40/316L Ra < 0.8 µm Varivent N125/100/316L Ra < 0.8 µm DRD flange PN 40/316L ZB3007 SMS DN 38/316L Ra < 0.8 µm ⁴⁾ SMS DN 51 PN 6/316L Ra < 0.8 µm ⁴⁾ Swagelok VCR screwing ZG2579 PN 64/316L Neumo biocontrol size 25 PN 16/316L Ra < 0.8 µm Neumo biocontrol size 50 PN 16/316L Ra < 0.8 µm SÜDMO DN 50 PN 10/316L Ra < 0.8 µm Small flange DN 25 PN 1.5 DIN 28403/316L pol. Ra < 0.8 µm Small flange DN 40 PN 1.5 DIN 28403/316L pol. Ra < 0.8 µm Ingot connection PN 16/316L Ra < 0.8 µm	A 21 A 22 A 23 A 24 A 25 A 26 A 27 A 28 A 30 A 31 A 32 A 33 A 34 A 35 A 36 A 37 A 38 A 40 A 41 A 42 A 43 A 44 A 45 A 46 A 47 A 48 A 50 A 51 A 52 A 53 A 54 A 55 A 56 A 57 A 58 A 60 A 61 A 62 A 63 A 64 A 65 A 66 A 67 A 68 A 70 A 71 A 72 A 73 A 74 A 75 A 76 A 80 A 81 A 82 A 83
Approvals Without approvals Overfill protection (WHG) ⁹⁾ ATEX II 1G, 1/2G, 2G Ex ia IIC T6 + WHG ⁶⁾⁹⁾ ATEX II 1/2G, 2G Ex d IIC T6 + WHG ⁵⁾⁷⁾¹⁶⁾ ATEX II 1G, 1/2G, 2G Ex ia IIC T6 + shipping approvals ⁶⁾¹⁷⁾ ATEX II 1/2G, 2G Ex d IIC T6 + shipping approvals ⁵⁾⁷⁾¹⁶⁾ ATEX II 1G, 1/2G, 2G Ex ia IIC T6 + ATEX II 1/2D IP6X T ⁶⁾⁸⁾¹⁸⁾ IECEx Ex ia IIC T6 ⁶⁾¹⁹⁾ Shipping approvals ¹⁷⁾ ATEX II 3G Ex nA II T5 ... T1 X ¹⁸⁾ FM (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G ⁶⁾²⁰⁾ FM (XP) Class I, Div. 1, Groups A, B, C, D; (DIP) Class II, III, Div. 1, Groups E, F, G ²⁾⁵⁾ FM (NI) Class I, Div. 2, Groups A, B, C, D ²¹⁾ IECEx d IIC T6 ... T2 Ga/Gb ⁵⁾⁷⁾¹⁶⁾ CSA(XP) Class I,II,III Div. 1, Groups A, B, C, D, E, F, G ²⁾⁵⁾⁷⁾ CSA(NI)Class I,II,III, Div. 2, Groups A, B, C, D, E, F, G ²²⁾ BR-Ex d IIC T6 ... T2 ⁵⁾¹⁸⁾ CSA (IS) Class I, II, III Div. 1, Groups A, B, C, D, E, F, G ⁶⁾⁹⁾ ATEX II 1G, 1/2G, 2G Ex ia IIC T6 ⁶⁾	A B C D E F G H K L N P Q R S T U V W		
NOTE: When selecting a Process connection option, process connection coating must match the extension coating and the material and surface roughness type.			
Process connection Thread G¾" A, PN 64/316L Thread G¾" A, PN 64/316L Ra < 0.8 µm Thread ¾" NPT, PN 64/316L Thread ¾" NPT, PN 64/316L Ra < 0.8 µm Thread ¾" NPT, PN 64/Alloy 400 (2.4360) Thread G¾" A, PN 64/Alloy C22 (2.4602) Thread ¾" NPT, PN 64/Alloy C22 (2.4602) Thread G1" A, PN 64/316L Thread G1" A, PN 64/316L ECTFE coated MB1982 ⁴⁾ Thread G1" A, PN 64/316L PFA coated ⁴⁾ Thread G1" A, PN 64/Alloy 400 (2.4360) Thread G1" A, PN 64/316L Ra < 0.8 µm Thread 1" NPT, PN 64/316L Thread 1" NPT, PN 64/316L ECTFE coated MB1982 ⁴⁾ Thread 1" NPT, PN 64/316L PFA coated ⁴⁾ Thread 1" NPT, PN 64/Alloy 400 (2.4360) Thread 1" NPT, PN 64/316L Ra < 0.8 µm Thread G1" A, PN 64/Alloy C22 (2.4602)	A 00 A 01 A 02 A 03 A 04 A 05 A 06 A 07 A 08 A 10 A 11 A 13 A 14 A 15 A 16 A 17 A 18 A 20		

Level Measurement

Point level measurement

Vibrating switches

SITRANS LVL200

Selection and Ordering data

Article No.

SITRANS LVL200, Rigid extension

Compact vibrating level switch for material detection in liquid applications such as overflow, high, low, and demand applications, as well as pump protection. For use in SIL-2 and hazardous applications.

Collar clamp connection DN33,7 PN40 Form A, DIN11864-3/1.4435 (BN2, Ra < 0.8 µm)

Collar flange DN50 PN16 Form A, DIN11864-2/316L (Ra < 0.8 µm)

Flange DN 25 PN 6 Form C, DIN 2501/316L

Flange DN 25 PN 6 Form C, DIN 2501/PFA⁴⁾

Flange DN 25 PN 40 Form C, DIN 2501/316L

Flange DN 25 PN 40 Form C, DIN 2501/

Alloy C22 (2.4602) plated

Flange DN 25 PN 40 Form C, DIN 2501/ECTFE⁴⁾

Flange DN 25 PN 40 Form C, DIN 2501/PFA⁴⁾

Flange DN 25 PN 40 Form D, DIN 2501/316L

Flange DN 25 PN 40 Form F, DIN 2501/316L

Flange DN 25 PN 40 Form N, DIN 2501/316L

Flange DN 25 PN 40 Form N, DIN 2501/

Alloy C22 (2.4602) plated

Flange DN 25 PN 40 Form N, DIN 2501/

Alloy 400 (2.4360) solid

Flange DN 25 PN 40 V13, DIN 2501/316L

Flange DN 32 PN 40 Form C, DIN 2501/316L

Flange DN 32 PN 40 Form C, DIN 2501/ECTFE⁴⁾

Flange DN 40 PN 6 Form C, DIN 2501/316L

Flange DN 40 PN 6 Form C, DIN 2501/ECTFE⁴⁾

Flange DN 40 PN 40 Form C, DIN 2501/316L

Flange DN 40 PN 40 Form C, DIN 2501/

Alloy C22 (2.4602) plated

Flange DN 40 PN 40 Form C, DIN 2501/ECTFE⁴⁾

Flange DN 40 PN 40 Form C, DIN 2501/PFA⁴⁾

Flange DN 40 PN 40 Form C, DIN 2501/Enamelled³⁾

Flange DN 40 PN 40 Form F, DIN 2501/316L

Flange DN 40 PN 40 Form N, DIN 2501/316L

Flange DN 40 PN 40 Form E, DIN 2501/316L

Flange DN 40 PN 40 V13, DIN 2501/316L

Flange DN 50 PN 40 Form C, DIN 2501/316L

Flange DN 50 PN 40 Form C, DIN 2501/

Alloy C22 (2.4602) plated

Flange DN 50 PN 40 Form C, DIN 2501/ECTFE⁴⁾

Flange DN 50 PN 40 Form C, DIN 2501/ECTFE (ZB3108)⁴⁾

Flange DN 50 PN 40 Form C, DIN 2501/PFA⁴⁾

Flange DN 50 PN 40 Form D, DIN 2501/316L

Flange DN 50 PN 40 Form D, DIN 2501/

Alloy C22 (2.4602)

Flange DN 50 PN 40 Form F, DIN 2501/316L

Flange DN 50 PN 40 Form N, DIN 2501/316L

Flange DN 50 PN 40 Form E, DIN 2501/316L

Flange DN 50 PN 40 V13, DIN 2501/316L

Flange DN 50 PN 40 R13, DIN 2501/316L

Flange DN 50 PN 64 Form F, DIN 2501/316L

Flange DN 50 PN 64 Form N, DIN 2501/

Alloy C22 (2.4602) plated

Flange DN 50 PN 64 Form C, DIN 2501/316L

Flange DN 50 PN 64 Form L, DIN 2501/316L

Flange DN 50 PN 100 Form E, DIN 2501/316L

Flange DN 50 PN 100 Form L, DIN 2501/316L

Flange DN 65 PN 40 Form C, DIN 2501/316L

Flange DN 65 PN 40 Form C, DIN 2501/

Alloy C22 (2.4602) plated

7ML5747-



A 8 4

A 8 5

A 8 6

A 8 7

A 8 8

B 0 0

B 0 1

B 0 2

B 0 3

B 0 4

B 0 5

B 0 6

B 0 7

B 0 8

B 1 0

B 1 1

B 1 2

B 1 3

B 1 4

B 1 5

B 1 6

B 1 7

B 1 8

B 2 0

B 2 1

B 2 2

B 2 3

B 2 4

B 2 5

B 2 6

B 2 7

B 2 8

B 3 0

B 3 1

B 3 2

B 3 3

B 3 4

B 3 5

B 3 6

B 3 7

B 3 8

B 4 0

B 4 1

B 4 2

B 4 3

B 4 4

B 4 5

B 4 6

Selection and Ordering data

Article No.

SITRANS LVL200, Rigid extension

Compact vibrating level switch for material detection in liquid applications such as overflow, high, low, and demand applications, as well as pump protection. For use in SIL-2 and hazardous applications.

Flange DN 65 PN 40 Form C, DIN 2501/ECTFE⁴⁾

Flange DN 65 PN 40 Form C, DIN 2501/PFA⁴⁾

Flange DN 65 PN 40 Form F, DIN 2501/316L

Flange DN 65 PN 64 Form E, DIN 2501/316L

Flange DN 80 PN 40 Form C, DIN 2501/316L

Flange DN 80 PN 40 Form C, DIN 2501/

Alloy C22 (2.4602) plated

Flange DN 80 PN 40 Form C, DIN 2501/ECTFE⁴⁾

Flange DN 80 PN 40 Form C, DIN 2501/PFA⁴⁾

Flange DN 80 PN 40 Form F, DIN 2501/316L

Flange DN 80 PN 40 Form N, DIN 2501/316L

Flange DN 80 PN 40 Form N, DIN 2501/

Alloy C22 (2.4602) plated

Flange DN 100 PN 16 Form C, DIN 2501/316L

Flange DN 100 PN 16 Form C, DIN 2501/

Alloy C22 (2.4602) plated

Flange DN 100 PN 16 Form C, DIN 2501/ECTFE⁴⁾

Flange DN 100 PN 16 Form C, DIN 2501/PFA⁴⁾

Flange DN 100 PN 16 Form D, DIN 2501/316L

Flange DN 100 PN 16 Form F, DIN 2501/316L

Flange DN 100 PN 16 Form N, DIN 2501/316L

Flange DN 100 PN 40 Form C, DIN 2501/316L

Flange DN 100 PN 40 Form C, DIN 2501/ECTFE⁴⁾

Flange DN 100 PN 40 Form C, DIN 2501/PFA⁴⁾

Flange DN 100 PN 40 Form C, DIN 2501/

Enamelled³⁾

Flange DN 100 PN 40 Form F, DIN 2501/316L

Flange DN 100 PN 40 Form N, DIN 2501/316L

Flange DN 100 PN 40 V13, DIN 2501/316L

Flange DN 100 PN 64 Form E, DIN 2501/316L

Flange DN 100 PN 100 Form E, DIN 2501/316L

Flange DN 100 PN 100 Form L, DIN 2501/316L

Flange DN 125 PN 16 Form F, DIN 2501/316L

Flange DN 125 PN 40 Form C, DIN 2501/316L

Flange DN 125 PN 40 Form N, DIN 2512/316L

Flange DN 150 PN 16 Form C, DIN 2501/316L

Flange DN 150 PN 16 Form C, DIN 2501/

Alloy C22 (2.4602) plated

Flange DN 150 PN 16 Form C, DIN 2501/ECTFE⁴⁾

Flange DN 150 PN 16 Form C, DIN 2501/PFA⁴⁾

Flange DN 150 PN 16 Form D, DIN 2501/316L

Flange DN 150 PN 40 Form C, DIN 2501/316L

Flange DN 150 PN 40 Form C, DIN 2501/

Alloy C22 (2.4602) plated

Flange DN 150 PN 40 Form F, DIN 2501/316L

Flange DN 150 PN 40 Form N, DIN 2512/316L

Flange DN 200 PN 10 Form C, DIN 2501/ECTFE⁴⁾

Flange DN 200 PN 16 Form C, DIN 2501/316L

Flange DN 25 PN 40 Form B1, EN 1092-1/316L

Flange DN 25 PN 40 Form B1, EN 1092-1/

Alloy C22 (2.4602) plated

Flange DN 25 PN 40 Form B1, EN/316L/PFA⁴⁾

Flange DN 25 PN 40 Form B1, EN 1092-1/

Enamelled³⁾

Flange DN 25 PN 40 Form B2, EN 1092-1/316L

Flange DN 25 PN 40 Form F, EN 1092-1/316L

Flange DN 25 PN 63 Form B1, EN 1092-1/316L

Flange DN 25 PN 100 Form B2, EN 1092-1/316L

Flange DN 40 PN 40 Form B1, EN/316L

Flange DN 40 PN 40 Form B1, EN 1092-1/PFA⁴⁾

Flange DN 40 PN 40 Form B2, EN/316L

7ML5747-



B 4 7

B 4 8

B 5 0

B 5 1

B 5 2

B 5 3

B 5 4

B 5 5

B 5 6

B 5 7

B 5 8

B 6 0

B 6 1

B 6 2

B 6 3

B 6 4

B 6 5

B 6 6

B 6 7

B 6 8

B 7 0

B 7 1

B 7 2

B 7 3

B 7 4

B 7 5

B 7 6

B 7 7

B 7 8

B 8 0

B 8 1

B 8 2

B 8 3

B 8 4

B 8 5

B 8 6

B 8 7

B 8 8

C 0 0

C 0 1

C 0 2

C 0 3

C 0 4

C 0 5

C 0 6

C 0 7

C 0 8

C 1 0



C 1 1

C 1 2

C 1 3

C 1 4

C 1 5

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
SITRANS LVL200, Rigid extension	7ML5747-	SITRANS LVL200, Rigid extension	7ML5747-
Compact vibrating level switch for material detection in liquid applications such as overflow, high, low, and demand applications, as well as pump protection. For use in SIL-2 and hazardous applications.		Compact vibrating level switch for material detection in liquid applications such as overflow, high, low, and demand applications, as well as pump protection. For use in SIL-2 and hazardous applications.	
Flange DN 50 PN 40 Form B1, EN/316L	C 16	Flange 1½" 600 lb RF, ASME B16.5/316L	C 67
Flange DN 50 PN 40 Form B1, EN 1092-1/ Alloy C22 (2.4602) plated	C 17	Flange 2" 150 lb RF, ASME B16.5/316L	C 68
Flange DN 50 PN 40 Form B1, EN 1092-1/ Alloy 400 (2.4360) ZB2977	C 18	Flange 2" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) plated	C 70
Flange DN 50 PN 40 Form B1, EN 1092-1/ECTFE ⁴⁾	C 20	Flange 2" 150 lb RF, ASME B16.5/ Alloy 400 (2.4360) ZB2977	C 71
Flange DN 50 PN 40 Form B1, EN/316L/PFA ⁴⁾	C 21	Flange 2" 150 lb RF, ASME B16.5/ECTFE ⁴⁾	C 72
Flange DN 50 PN 40 Form B1, EN 1092-1/ Enamelled ³⁾	C 22	Flange 2" 150 lb RF, ASME B16.5/PFA ⁴⁾	C 73
Flange DN 50 PN 40 Form C, EN 1092-1/316L	C 23	Flange 2" 150 lb RF, ASME B16.5/Enamelled ³⁾	C 74
Flange DN 50 PN 40 Form D, EN/316L	C 24	Flange 2" 150 lb FF, ASME B16.5/316L	C 75
Flange DN 50 PN 40 Form D, EN 1092-1/ Alloy C22 (2.4602) plated	C 25	Flange 2" 150 lb FF, ASME B16.5/ECTFE ⁴⁾	C 76
Flange DN 50 PN 40 Form B2, EN 1092-1/316L	C 26	Flange 2" 150 lb SG (small groove), ASME B16.5/316L	C 77
Flange DN 50 PN 40 Form E, EN 1092-1/316L	C 27	Flange 2" 300 lb RF, ASME B16.5/316L	C 78
Flange DN 80 PN 40 Form B1, EN 1092-1/316L	C 28	Flange 2" 300 lb RF, ASME B16.5/Alloy C22 (2.4602) plated	C 80
Flange DN 80 PN 40 Form B1, EN 1092-1/ Alloy C22 (2.4602) plated	C 30	Flange 2" 300 lb RF, ASME B16.5/ECTFE ⁴⁾	C 82
Flange DN 80 PN 40 Form B1, EN 1092-1/ECTFE ⁴⁾	C 31	Flange 2" 300 lb RF, ASME B16.5/PFA ⁴⁾	C 83
Flange DN 80 PN 40 Form B1, EN 1092-1/ Enamelled ³⁾	C 32	Flange 2" 300 lb RJF, ASME B16.5/316L	C 85
Flange DN 80 PN 40 Form B2, EN 1092-1/316L	C 33	Flange 2" 300 lb ST, ASME B16.5/316L	C 86
Flange DN 100 PN 16 Form B1, EN 1092-1/316L	C 34	Flange 2" 300 lb LG (large groove), ASME B16.5/316L	C 87
Flange DN 100 PN 16 Form B1, EN 1092-1/ Alloy C22 (2.4602) plated	C 35	Flange 2" 300 lb LT, ASME B16.5/316L	C 88
Flange DN 100 PN 16 Form B1, EN 1092-1/ Enamelled ³⁾	C 36	Flange 2" 600 lb RF, ASME B16.5/316L	D 00
Flange DN 100 PN 40 Form B1, EN 1092-1/316L	C 37	Flange 2" 600 lb RF, ASME B16.5/Alloy 400 (2.4360) ZB2977	D 01
Flange DN 100 PN 40 Form B1, EN 1092-1/ Enamelled ³⁾	C 38	Flange 2" 600 lb RF, ASME B16.5/ECTFE ⁴⁾	D 02
Flange DN 100 PN 40 Form C, EN 1092-1/316L	C 40	Flange 2" 600 lb RJF, ASME B16.5/316L	D 03
Flange DN 100 PN 63 Form B2, EN 1092-1/316L	C 41	Flange 2" 600 lb LG, ASME B16.5/316L	D 04
Flange DN 150 PN 16 Form B1, EN 1092-1/316L	C 42	Flange 2" 900 lb RJF, ASME B16.5/316L	D 05
Flange DN 150 PN 16 Form B1, EN 1092-1/PFA ⁴⁾	C 43	Flange 2½" 150 lb RF, ASME B16.5/316L	D 06
Flange DN 150 PN 40 Form B1, EN 1092-1/316L	C 44	Flange 2½" 300 lb RF, ASME B16.5/316L	D 07
Flange DN 150 PN 40 Form B1, EN 1092-1/ECTFE ⁴⁾	C 45	Flange 3" 150 lb RF, ASME B16.5/316L	D 08
Flange DN 150 PN 40 Form B2, EN 1092-1/316L	C 46	Flange 3" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) plated	D 10
Flange 1" 150 lb ASME B16.5/316L	C 47	Flange 3" 150 lb RF, ASME B16.5/Alloy 400 (2.4360) ZB2977	D 11
Flange 1" 150 lb RF, ASME B16.5/ Alloy C22 (2.4602) plated	C 48	Flange 3" 150 lb RF, ASME B16.5/ECTFE ⁴⁾	D 12
Flange 1" 150 lb RF, ASME B16.5/ Alloy 400 (2.4360) ZB2977	C 50	Flange 3" 150 lb RF, ASME B16.5/PFA ⁴⁾	D 13
Flange 1" 150 lb RF, ASME B16.5/ECTFE ⁴⁾	C 51	Flange 3" 150 lb RF, ASME B16.5/Enamelled ³⁾	D 14
Flange 1" 150 lb RF, ASME B16.5/PFA ⁴⁾	C 52	Flange 3" 150 lb FF, ASME B16.5/316L	D 15
Flange 1" 150 lb RF, ASME B16.5/Enamelled ³⁾	C 53	Flange 3" 150 lb FF, ASME B16.5/ECTFE ⁴⁾	D 16
Flange 1" 300 lb RF, ASME B16.5/316L	C 54	Flange 3" 150 lb FF, ASME B16.5/PFA ⁴⁾	D 17
Flange 1" 300 lb RF, ASME B16.5/ECTFE ⁴⁾	C 55	Flange 3" 300 lb RF, ASME B16.5/316L	D 18
Flange 1" 600 lb RF, ASME B16.5/316L	C 56	Flange 3" 300 lb RF, ASME B16.5/Alloy C22 (2.4602) plated	D 20
Flange 1½" 150 lb RF, ASME B16.5/316L	C 57	Flange 3" 300 lb RF, ASME B16.5/ECTFE ⁴⁾	D 21
Flange 1½" 150 lb RF, ASME B16.5/ Alloy C22 (2.4602) plated	C 58	Flange 3" 300 lb RF, ASME B16.5/PFA ⁴⁾	D 22
Flange 1½" 150 lb RF, ASME B16.5/ECTFE ⁴⁾	C 60	Flange 3" 300 lb RF, ASME B16.5/Enamelled ³⁾	D 23
Flange 1½" 150 lb RF, ASME B16.5/PFA ⁴⁾	C 61	Flange 3" 600 lb RF, ASME B16.5/316L	D 24
Flange 1½" 150 lb RF, ASME B16.5 Enamelled ³⁾	C 62	Flange 3½" 150 lb RF, ASME B16.5/316L	D 25
Flange 1½" 150 lb FF, ASME B16.5/ECTFE ⁴⁾	C 63	Flange 3½" 150 lb RF, ASME B16.5/ECTFE ⁴⁾	D 26
Flange 1½" 300 lb RF, ASME B16.5/316L	C 64	Flange 4" 150 lb RF, ASME B16.5/316L	D 27
Flange 1½" 300 lb RF, ASME B16.5/ Alloy 400 (2.4360) ZB2977	C 65	Flange 4" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) plated	D 28
Flange 1½" 300 lb RF, ASME B16.5/ECTFE ⁴⁾	C 66	Flange 4" 150 lb RF, ASME B16.5/ECTFE ⁴⁾	D 30
		Flange 4" 150 lb RF, ASME B16.5/PFA ⁴⁾	D 31
		Flange 4" 150 lb RF, ASME B16.5/Enamelled ³⁾	D 32
		Flange 4" 150 lb LT, ASME B16.5/316L	D 33

Level Measurement

Point level measurement

Vibrating switches

SITRANS LVL200

Selection and Ordering data

Article No.

SITRANS LVL200, Rigid extension

Compact vibrating level switch for material detection in liquid applications such as overflow, high, low, and demand applications, as well as pump protection. For use in SIL-2 and hazardous applications.

Flange 4" 300 lb RF, ASME B16.5/316L
Flange 4" 300 lb RF, ASME B16.5/Alloy C22 (2.4602) plated
Flange 4" 300 lb RF, ASME B16.5/ECTFE⁴⁾

Flange 4" 300 lb RJF, ASME B16.5/316L
Flange 4" 300 lb LG, ASME B16.5/316L
Flange 4" 300 lb LT, ASME B16.5/316L

Flange 4" 600 lb RF, ASME B16.5/316L
Flange 4" 600 lb RJF, ASME B16.5/316L
Flange 5" 150 lb RF, ASME B16.5/316L

Flange 6" 150 lb RF, ASME B16.5/316L
Flange 6" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) plated
Flange 6" 150 lb RF, ASME B16.5/ECTFE⁴⁾

Flange 6" 150 lb RF, ASME B16.5/PFA⁴⁾
Flange 6" 150 lb RJF, ASME B16.5/316L
Flange 6" 300 lb RF, ASME B16.5/316L

Flange 8" 150 lb RF, ASME B16.5/316L
Flange 8" 150 lb RF, ASME B16.5/ECTFE⁴⁾
Flange 1" BS.10 Table E/316L

Flange 1" BS.10 Table E/PFA⁴⁾
Flange 1½" BS.10 Table E/316L
Flange 3½" BS.10 Table E/316L

Flange 4" BS.10 Table E/ECTFE⁴⁾
Flange DN 40 10K, JIS/316L
Flange DN 50 10K, JIS/316L

Flange DN 80 10K, JIS/316L
Flange DN 100 10K, JIS/316L
Thread R1 PN64, EN10226-1/316L¹¹⁾

Flange 2" 900 lb RF, ASME B16.5/316L
Flange 4" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) solid

Adapter/Process temperature

Without adapter/-50 ... +150 °C
With adapter/-50 ... +200 °C¹³⁾
With adapter/-50 ... +250 °C¹⁰⁾
With gas-tight leadthrough/-50 ... +150 °C
With gas-tight leadthrough/-50 ... +250 °C¹⁰⁾

Housing/Cable entry

Aluminum IP66/IP67/M20 x 1.5
Aluminum IP66/IP67/½" NPT
316L stainless steel (electropolished)
IP66/IP67/M20 x 1.5
316L stainless steel (electropolished)
IP66/IP67/½" NPT
Plastic single chamber IP66/IP67/M20 x 1.5
Plastic single chamber IP66/IP67/½" NPT
Stainless steel chamber (precision casting) IP66/
IP67/M20 x 1.5
Stainless steel chamber (precision casting) IP66/
IP67/½" NPT
Aluminum IP66/IP67/M20 x 1.5 Special HARTING
plug (bent) according to Tier One (ZB7555)

NOTE:

When selecting a Rigid Extension option, extension coating must match the process connection coating and the material and surface roughness type.

Rigid Extension 316L

80 ... 500 mm
501 ... 1 000 mm
1 001 ... 1 500 mm

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D 3 4

D 3 5

D 3 6

D 3 7

D 3 8

D 4 0

D 4 1

D 4 2

D 4 3

D 4 4

D 4 5

D 4 6

D 4 7

D 4 8

D 5 0

D 5 1

D 5 2

D 5 3

D 5 4

D 5 5

D 5 6

D 5 7

D 5 8

D 6 0

D 6 1

D 6 2

D 6 5

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Selection and Ordering data

Article No.

SITRANS LVL200, Rigid extension

Compact vibrating level switch for material detection in liquid applications such as overflow, high, low, and demand applications, as well as pump protection. For use in SIL-2 and hazardous applications.

1 501 ... 2 000 mm

2 001 ... 2 500 mm

2 501 ... 3 000 mm

3 001 ... 3 500 mm

3 501 ... 4 000 mm

Rigid Extension ECTFE coated

80 ... 500 mm

501 ... 1 000 mm

1 001 ... 1 500 mm

1 501 ... 2 000 mm

2 001 ... 2 500 mm

2 501 ... 3 000 mm

Rigid Extension PFA coated

80 ... 500 mm

501 ... 1 000 mm

1 001 ... 1 500 mm

1 501 ... 2 000 mm

2 001 ... 2 500 mm

2 501 ... 3 000 mm

3 001 ... 3 500 mm

3 501 ... 4 000 mm

Rigid Extension 316L Ra ≤ 0.8 µm

80 ... 500 mm

501 ... 1 000 mm

1 001 ... 1 500 mm

1 501 ... 2 000 mm

2 001 ... 2 500 mm

2 501 ... 3 000 mm

3 001 ... 3 500 mm

3 501 ... 4 000 mm

Rigid Extension 316L Ra ≤ 0.3 µm

80 ... 500 mm

501 ... 1 000 mm

1 001 ... 1 500 mm

1 501 ... 2 000 mm

2 001 ... 2 500 mm

2 501 ... 3 000 mm

3 001 ... 3 500 mm

3 501 ... 4 000 mm

Rigid Extension Enamelled version

80 ... 250 mm

251 ... 500 mm

501 ... 750 mm

751 ... 1 000 mm

1 001 ... 1 250 mm

1 251 ... 1 500 mm

Rigid Extension Alloy C22 (2.4602)

80 ... 500 mm

501 ... 1 000 mm

1 001 ... 1 500 mm

1 501 ... 2 000 mm

2 001 ... 2 500 mm

2 501 ... 3 000 mm

3 001 ... 3 500 mm

3 501 ... 4 000 mm

7ML5747-



A 3

A 4

A 5

A 6

A 7

B 0

B 1

B 2

B 3

B 4

B 5

C 0

C 1

C 2

C 3

C 4

C 5

C 6

C 7

D 0

D 1

D 2

D 3

D 4

D 5

D 6

D 7

E 0

E 1

E 2

E 3

E 4

E 5

E 6

E 7

F 0

F 1

F 2

F 3

F 4

F 5

G 0

G 1

G 2

G 3

G 4

G 5

G 6

G 7

G 7

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Selection and Ordering data	Article No.
SITRANS LVL200, Rigid extension Compact vibrating level switch for material detection in liquid applications such as overflow, high, low, and demand applications, as well as pump protection. For use in SIL-2 and hazardous applications.	7ML5747- 
Rigid Extension Alloy 400 (2.4360)	
80 ... 500 mm	H 0
501 ... 1 000 mm	H 1
1 001 ... 1 500 mm	H 2
1 501 ... 2 000 mm	H 3
2 001 ... 2 500 mm	H 4
2 501 ... 3 000 mm	H 5
Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Article No. and specify Order code(s).	
Switching status indication with colors red-green ¹²⁾	A21
Cleaning including Certificate (oil, grease, and silicone free)	W01
Enter the total insertion length in plain text description, max. 4 000 mm (157.48 inch)	Y01
Identification label (measurement loop) stainless steel: max. 40 characters, add in plain text. To add more than one line, use a comma "," for line break.	Y17
Identification Label (measurement loop) foil: max. 40 characters add in plain text. To add more than one line, use a comma "," for line break.	Y18
NACE0175 to 3.1 Material Certificate for material (EN10204 NACE MR 0175) ⁸⁾ Note: not available with Process connection and Rigid extension coatings PFA, ECTFE, and Enamel. NACE not available with Hygienic process connections.	D07
Material Inspection certificate 3.1 of EN 10204 ⁸⁾	C05
2.2-Factory certificate for material (EN 10204) ⁸⁾	C15
Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511 ⁹⁾	C20
Dye penetration test, results confirmed via a 3.1 certificate/instrument (EN 10204) ⁸⁾	C13
X-ray test + 3.1 certificate/instrument ⁸⁾	C14
Positive material identification test + 3.1 certificate/instrument ⁸⁾	C16
Roughness test + 3.1 certificate/instrument ⁸⁾	C18
3.1-Inspection Certificate for instrument with test data (EN 10204)	C25
Quality and test plan	C26
Pressure test + 3.1 certificate/instrument ⁸⁾	C31
Helium leak test + 3.1 certificate/instrument ⁸⁾	C32
Ferrite measuring accuracy to DIN 32514-1 + 3.1 certificate/instrument ⁸⁾	C60
Pressure test according to Norsok + 3.1 certificate/instrument ⁸⁾	C61
Operating Instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	

Selection and Ordering data	Article No.
Spare Parts and Accessories	
Electronics module SITRANS LVL200 Relay	7ML1830-1NC
Electronics module SITRANS LVL200 Contactless	7ML1930-6AA
NAMUR spare electronics module	A5E35817107
SITRANS SCSC single channel signal conditioner and remote test	7ML5760
SITRANS TCSC two channel signal conditioner and remote test	7ML5761
Lock fitting, unpressurized, G1" A/316L	7ML1930-1DQ
Lock fitting, unpressurized, 1" NPT/316L	7ML1930-1DR
Lock fitting, unpressurized, G1 ... 1/2" A/316L	7ML1930-1DS
Lock fitting, unpressurized, 1 ... 1/2" NPT/316L	7ML1930-1DT
Lock fitting, -1 ... 16 bar, G1" A/316L	7ML1930-1DU
Lock fitting, -1 ... 16 bar, 1" NPT/316L	7ML1930-1DV
Lock fitting, -1 ... 16 bar, G1 ... 1/2" A/316L	7ML1930-1DW
Lock fitting, -1 ... 16 bar, 1 ... 1/2" NPT/316L	7ML1930-1DX
Lock fitting, -1 ... 64 bar, G1" A/316L	7ML1930-1EA
Lock fitting, -1 ... 64 bar, 1" NPT/316L	7ML1930-1EB
Lock fitting, -1 ... 64 bar, G1 ... 1/2" A/316L	7ML1930-1EC
Lock fitting, -1 ... 64 bar, 1 ... 1/2" NPT/316L	7ML1930-1ED

- 1) Available only with Adapter/Process temperature options 1, 3, 4, and 5.
- 2) Available only with Housing/Cable entry option B.
- 3) Available only with Adapter/Process temperature options 1, 2, and 4.
- 4) Not available with Adapter/Process temperature options 2, 3, and 5.
- 5) Not available with Adapter/Process temperature options 2, 4, and 5.
- 6) Available only with Electronics options 4 and 6.
- 7) Available only with rigid extension options less than 3 001 mm.
- 8) Listed Certificates are not available with all configurations please contact factory for more information.
- 9) Not available with Housing/Protection/Cable option V.
- 10) Not available with PFA, ECTFE, and enamelled coating options.
- 11) Available only with some 316L extensions.
- 12) Available only with relay electronic options and non-hazardous Approval options.
- 13) Available only with Enamelled Process connection/Material options.
- 14) Not available with Approval options C, E, G, H, L, N, V, and W.
- 15) Not available with Approval options C, E, G, H, N, and V.
- 16) Only available with Aluminum Housing/Protection/Cable options and certain glands.
- 17) Not available with Stainless Steel Electropolish Housing/Protection/Cable options and certain glands.
- 18) Not available with Plastic or Stainless Steel Electropolish Housing/Protection/Cable options and certain glands.
- 19) Not available with Housing/Protection/Cable options D and V.
- 20) Not available with Housing/Protection/Cable options A, E, G, and V.
- 21) Not available with some Housing/Protection/Cable gland options.
- 22) Not available with Housing/Protection/Cable options A, C, and V.

Level Measurement

Point level measurement

Vibrating switches

SITRANS LVL200

Selection and Ordering data

Article No.

SITRANS LVL200, High temperature

Rigid extended vibrating level switch for use in aggressive liquids and hazardous applications such as overflow, high, and low demand applications, as well as pump protection. For use in SIL-2 applications.

➔ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Version/Material

Compact version/Inconel 718 (2.4668)¹⁾²⁾

With tube extension/316L and Inconel 718 (2.4668)¹⁾³⁾

With tube extension/Alloy C22 (2.4602) and Inconel 718 (2.4668)⁴⁾

Approvals

Without approvals

Process connection

Thread G1 PN 100, DIN 3852-A/316L

Thread G1 PN 160, DIN 3852-A/
Inconel 718 (2.4668)

Thread 1" NPT PN 100, ASME B1.20.1/316L

Thread 1" NPT PN 160, ASME B1.20.1/
Inconel 718 (2.4668)

Flange DN 50 PN 40 Form C, DIN 2501/316/316
Flange DN 50 PN 40 Form C, DIN 2501/316/316L,
with Alloy C22 (2.4602) coating

Flange DN 50 PN 40 Form N, DIN 2501/316/316L
Flange DN 50 PN 40 Form V13, DIN 2501/316/316L
Flange DN 50 PN 40 Form V13, DIN 2501/Alloy
C22 (2.4602) solid

Flange DN 50 PN 40 Form V13, DIN 2501/316/
316L, with Alloy C22 (2.4602)
coating

Flange DN 50 PN 64 Form E, DIN 2501/316/316L

Flange DN 50 PN 100 Form C, DIN 2501/316/316L

Flange DN 50 PN 100 Form F, DIN 2501/316/316L

Flange DN 50 PN 100 Form V13,
DIN 2501/ 316/316L

Flange DN 50 PN 160 Form C, DIN 2501/316/316L

Flange DN 50 PN 160 Form F, DIN 2501/316/316L

Flange DN 65 PN 16 Form C, DIN 2501/316/316L

Flange DN 65 PN 40 Form C, DIN 2501/316/316L

Flange DN 65 PN 100 Form C, DIN 2501/316/316L

Flange DN 80 PN 40 Form C, DIN 2501/316/316L

Flange DN 80 PN 100 Form C, DIN 2501/316/316L

Flange DN 80 PN 160 Form F, DIN 2501/316/316L

Flange DN 80 PN 160 Form L, DIN 2501/316/316L

Flange DN 80 PN 250 Form L, DIN 2501/316/316L

Flange DN 80 PN 250 Form L, DIN 2501/
Alloy C22 (2.4602) solid

Flange DN 100 PN 16 Form C, DIN 2501/316/316L

Flange DN 100 PN 40 Form C, DIN 2501/316/316L

Flange DN 100 PN 100 Form E, DIN 2501/316/316L

Flange DN 100 PN 160 Form L, DIN 2501/316/316L

Flange DN 125 PN 16 Form C, DIN 2501/316/316L

Flange DN 125 PN 40 Form C, DIN 2501/316/316L

Flange DN 150 PN 16 Form C, DIN 2501/316/316L

Flange DN 150 PN 16 Form C, DIN 2501/316/316L,
with Alloy C22 (2.4602) coating

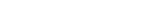
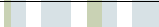
Flange DN 150 PN 40 Form C, DIN 2501/316/316L

Flange DN 150 PN 160 Form L, DIN 2501/316/316L

Flange DN 200 PN 16 Form C, DIN 2501/316/316L

Flange DN 200 PN 64 Form C, DIN 2501/316/316L

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Selection and Ordering data

Article No.

SITRANS LVL200, High temperature

Rigid extended vibrating level switch for use in aggressive liquids and hazardous applications such as overflow, high, and low demand applications, as well as pump protection. For use in SIL-2 applications.

Flange DN 250 PN 16 Form C, DIN 2501/316/316L

Flange DN 250 PN 64 Form C, DIN 2501/316/316L

Flange DN 50 PN 40 Form B1, EN 1092-1/1.4435

Flange DN 50 PN 40 Form B1, EN 1092-1/316/316L

Flange DN 50 PN 40 Form B1, EN 1092-1/
316/316L, with Alloy C22 (2.4602) coating

Flange DN 50 PN 40 Form B2, EN 1092-1/316/316L

Flange DN 50 PN 40 Form C, EN 1092-1/316/316L

Flange DN 50 PN 40 Form D, EN 1092-1/316/316L

Flange DN 50 PN 40 Form E, EN 1092-1/316/316L

Flange DN 50 PN 63 Form B2, EN 1092-1/316/316L

Flange DN 50 PN 63 Form B2, EN 1092-1/ 316/
316L, with Alloy C22 (2.4602) coating

Flange DN 50 PN 63 Form C, EN 1092-1/316/316L

Flange DN 50 PN 63 Form D, EN 1092-1/316/316L

Flange DN 50 PN 100 Form B1, EN 1092-01/ 316/
316L

Flange DN 50 PN 100 Form C, EN 1092-1/316/316L

Flange DN 50 PN 160 Form B1, EN 1092-1/ 316/
316L

Flange DN 50 PN 160 Form B2, EN 1092-1/ 316/
316L

Flange DN 50 PN 250 Form B1, EN 1092-1/ 316/
316L

Flange DN 50 PN 250 Form B2, EN 1092-1/ 316/
316L

Flange DN 65 PN 40 Form B1, EN 1092-1/ 316/
316L

Flange DN 65 PN 63 Form C, EN 1092-1/316/316L

Flange DN 80 PN 40 Form B1, EN 1092-1/316/316L

Flange DN 80 PN 40 Form B2, EN 1092-1/316/316L

Flange DN 80 PN 40 Form C, EN 1092-1/316/316L

Flange DN 80 PN 40 Form D, EN 1092-1/316/316L

Flange DN 80 PN 63 Form B2, EN 1092-1/316/316L

Flange DN 80 PN 160 Form B2, EN 1092-1/ 316/
316L

Flange DN 80 PN 250 Form B1, EN 1092-1/ 316/
316L

Flange DN 100 PN 16 Form D, EN 1092-1/316/
316L

Flange DN 100 PN 40 Form B1, EN 1092-1/316/
316L

Flange DN 100 PN 40 Form B2, EN 1092-1/ 316/
316L

Flange DN 100 PN 40 Form C, EN 1092-1/ 316/
316L

Flange DN 100 PN 40 Form D, EN 1092-1/ 316/
316L

Flange DN 100 PN 160 Form B2, EN 1092-1/ 316/
316L

Flange DN 125 PN 63 Form C, EN 1092-1/ 316/
316L

Flange DN 125 PN 160 Form B2, EN 1092-1/ 316/
316L

Flange DN 150 PN 40 Form B1, EN 1092-1/ 316/
316L

Flange DN 150 PN 40 Form C, EN 1092-1/316/316L

Flange DN 150 PN 40 Form D, EN 1092-1/316/316L

Flange DN 40 PN 100, GOST 12815-80.7/316/316L

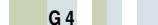
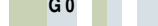
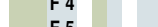
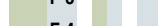
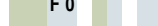
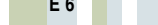
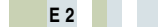
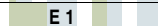
Flange DN 50 PN 100, GOST 12815-80.7/316/316L

Flange DN 80 PN 100, GOST 12815-80.7/316/316L

Flange DN 100 PN 100, GOST 12815-80.7/ 316/
316L

Flange 1½" 150 lb RJF, ASME B16.5/316/316L

7ML5748-



Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
SITRANS LVL200, High temperature Rigid extended vibrating level switch for use in aggressive liquids and hazardous applications such as overflow, high, and low demand applications, as well as pump protection. For use in SIL-2 applications.	7ML5748-	SITRANS LVL200, High temperature Rigid extended vibrating level switch for use in aggressive liquids and hazardous applications such as overflow, high, and low demand applications, as well as pump protection. For use in SIL-2 applications.	7ML5748-
Flange 1½" 300 lb RJF, ASME B16.5/316/316L	L 1	Flange 4" 600 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	T 2
Flange 1½" 1 500 lb RJF, ASME B16.5/316/316L	L 2	Flange 4" 600 lb RJF, ASME B16.5/316/316L	T 3
Flange 2" 150 lb RF, ASME B16.5/316/316L	L 3	Flange 4" 900 lb RF, ASME B16.5/316/316L	T 4
Flange 2" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	L 4	Flange 4" 900 lb RJF, ASME B16.5/316/316L	T 5
Flange 2" 300 lb RF, ASME B16.5/316/316L	L 5	Flange 4" 900 lb LT, ASME B16.5/316/316L	T 6
Flange 2" 300 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	L 6	Flange 4" 1 500 lb RF, ASME B16.5/316/316L	T 7
Flange 2" 300 lb RF, ASME B16.5/316/316L, with Alloy C22 (2.4602) coating	L 7	Flange 4" 1 500 lb RJF, ASME B16.5/316/316L	T 8
Flange 2" 300 lb ST (small tongue), ASME B16.5/316/316L	L 8	Flange 4" 1 500 lb LT, ASME B16.5/316/316L	U 1
Flange 2" 300 lb RJF, ASME B16.5/316/316L	M 1	Flange 5" 150 lb RF, ASME B16.5/316/316L	U 2
Flange 2" 300 lb LM (large male), ASME B16.5/316/316L	M 2	Flange 5" 300 lb RF, ASME B16.5/316/316L	U 3
Flange 2" 300 lb SG, ASME B16.5/316/316L	M 3	Flange 5" 600 lb RJF, ASME B16.5/316/316L	U 4
Flange 2" 300 lb LG, ASME B16.5/316/316L	M 4	Flange 6" 150 lb RF, ASME B16.5/316/316L	U 5
Flange 2" 600 lb RF, ASME B16.5/316/316L	M 5	Flange 6" 300 lb RF, ASME B16.5/316/316L	U 6
Flange 2" 600 lb RF, ASME B16.5/316/316L, with Alloy C22 (2.4602) coating	M 6	Flange 6" 300 lb LT, ASME B16.5/316/316L	U 7
Flange 2" 600 lb RJF, ASME B16.5/316/316L	M 7	Flange DN 50 30K RF, JIS/316/316L	U 8
Flange 2" 900 lb RF, ASME B16.5/316/316L	M 8	Flange DN 50 40K RF, JIS/316/316L	V 1
Flange 2" 900 lb RJF, ASME B16.5/316/316L	N 1	Flange DN 65 40 K RF, JIS/316/316L	V 2
Flange 2" 1 500 lb RF, ASME B16.5/316/16L	N 2	Mobrey flange PN 16 Form A/316/316L	V 3
Flange 2" 1 500 lb RJF, ASME B16.5/316/316L	N 3	Mobrey flange PN 16 Form E/316/316L	V 4
Flange 2" 1 500 lb LT, ASME B16.5/Alloy C22 (2.4602) solid	N 4		
Flange 2" 1 500 lb LM, ASME B16.5/316/316L	N 5	Adapter/Process temperature	
Flange 2" 2 500 lb RJF, ASME B16.5/316/316L	N 6	With adapter/-196 ... +450 °C (-321 ... +842 °F)	1
Flange 2½" 150 lb RF, ASME B16.5/316/316L	N 7	Without/-196 ... +450 °C (-321 ... +842 °F)	2
Flange 2½" 300 lb RF, ASME B16.5/316/316L	N 8	Electronics	
Flange 2½" 600 lb RF, ASME B16.5/316/316L	P 1	Relay (2 x SPDT) 20 ... 72 V DC/20 ... 253 V AC (5A)	1
Flange 2½" 900 lb RF, ASME B16.5/316/316L	P 2	Transistor (NPN/PNP) 9.6 ... 55 V DC	2
Flange 2½" 2 500 lb RJF, ASME B16.5/316/316L	P 3	Two-wire (8/16 mA) 9.6 ... 35 V DC	3
Flange 3" 150 lb RF, ASME B16.5/316/316L	P 4	Housing/Cable entry	
Flange 3" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	P 5	Plastic single chamber/IP66/IP67/M20 x 1.5	A
Flange 3" 300 lb RF, ASME B16.5/316/316L	P 6	Plastic single chamber/IP66/IP67/½" NPT	B
Flange 3" 300 lb RJF, ASME B16.5/316/316L	P 7	Aluminum IP66/IP67/M20 x 1.5	C
Flange 3" 300 lb LT, ASME B16.5/316/316L	P 8	Aluminum IP66/IP67/½" NPT	D
Flange 3" 600 lb RF, ASME B16.5/316/316L	R 1	Stainless steel single chamber (precision casting)/IP66/IP67/M20 x 1.5	E
Flange 3" 600 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	R 2	Stainless steel single chamber (precision casting)/IP66/IP67/½" NPT	F
Flange 3" 600 lb RF, ASME B16.5/316/316L	R 3	Stainless steel single chamber (electropolished)/IP66/IP67/M20 x 1.5	G
Flange 3" 900 lb RF, ASME B16.5/316/316L	R 4	Stainless steel single chamber (electropolished)/IP66/IP67/½" NPT	H
Flange 3" 900 lb RJF, ASME B16.5/316/316L	R 5	Rigid Extension 316L	
Flange 3" 900 lb RJF, ASME B16.5/316/316L	R 6	200 ... 500 mm	A 0
Flange 3" 1 500 lb RF, ASME B16.5/316/316L	R 7	501 ... 1 000 mm	A 1
Flange 3" 1500lb RJF, ASME B16.5 / 316/316L	R 8	1 001 ... 1 500 mm	A 2
Flange 3" 2 500 lb RF, ASME B16.5/316/316L	S 1	1 501 ... 2 000 mm	A 3
Flange 3" 2 500 lb RJF, ASME B16.5/316/316L	S 2	2 001 ... 2 500 mm	A 4
Flange 4" 150 lb RF, ASME B16.5/316/316L	S 3	2 501 ... 3 000 mm	A 5
Flange 4" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	S 4	Rigid Extension Alloy C22	
Flange 4" 150 lb RJF, ASME B16.5/316/316L	S 5	200 ... 500 mm	B 0
Flange 4" 300 lb RF, ASME B16.5/316/316L	S 6	501 ... 1 000 mm	B 1
Flange 4" 300 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	S 7	1 001 ... 1 500 mm	B 2
Flange 4" 300 lb LT, ASME B16.5/316/316L	S 8	1 501 ... 2 000 mm	B 3
Flange 4" 600 lb RF, ASME B16.5/316/316L	T 1	2 001 ... 2 500 mm	B 4
		2 501 ... 3 000 mm	B 5
		75 mm compact version	C 1

Level Measurement

Point level measurement

Vibrating switches

SITRANS LVL200

Selection and Ordering data

Order code

Further designs

Please add **"-Z"** to Article No. and specify Order code(s).

Enter the total insertion length in plain text description.

Y01

Cleaning including Certificate (oil, grease, and silicone free).

W01

Identification label (measurement loop) stainless steel.

Y17

Identification Label (measurement loop) foil.

Y18

Spare Parts and Accessories

SITRANS SCSC single channel signal conditioner and remote test

7ML5760

SITRANS TCSC two channel signal conditioner and remote test

7ML5761

Operating Instructions

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

¹⁾ Not available with Process Connection options A0 and A2.

²⁾ Available only with Rigid extension option C1.

³⁾ Available only with 316L Process Connection and Rigid extension options.

⁴⁾ Available only with Alloy C22 Rigid extension options.

Selection and Ordering data

Article No.

SITRANS SCSC, single channel, signal conditioner for SITRANS LVL200

7ML5760-

Single channel signal conditioning instrument for level detection with relay output for one LVL vibrating switch with electronics version two-wire 8/16 mA. Provides remote test of LVL200.

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Approvals

For Ex-free area

1 A

ATEX II (1) G/D [Ex ia Ga/Da] IIC/IIIC, I (M1) [Ex ia Ma] I

1 D

ATEX II (1) G/D (Ex ia Ga/Da) IIC/IIIC, I (M1) (Ex ia Ma) I + WHG

1 E

IEC [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I IEC (Ex ia Ga) IIC, (Ex ia Da) IIIC, (Ex ia Ma) I + WHG

1 H

1 J

SIL qualification

Without

1

With

2

Version

Single-channel (8/16 mA) for level detection

1

Single channel (8/16 mA), level detection with fail safe relay

2

Housing/cable entry

Plastic/IP20

A

Terminal block connection

Detachable 2.5 mm²/ Ex sensor: 2 x blue; output and operating voltage: 2 x black

A

Detachable 2.5 mm²/ sensor: 2 x black; output and operating voltage: 2 x black

B

Language

English

0

German

1

Selection and Ordering data

Order code

Operating Instructions

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Selection and Ordering data

Article No.

SITRANS TCSC, two channel, signal conditioner for SITRANS LVL200

7ML5761-

Two channel signal conditioning instrument for level detection with relay output for two LVL vibrating switches with electronics version two-wire 8/16 mA. Provides remote test of LVL200.

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Approvals

For Ex-free area¹⁾

1 A

ATEX II (1) G/D [Ex ia Ga/Da] IIC/IIIC, I (M1) [Ex ia Ma] I²⁾

1 D

ATEX II (1) G/D (Ex ia Ga/Da) IIC/IIIC, I (M1) (Ex ia Ma) I + WHG

1 E

IEC [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I²⁾ IEC (Ex ia Ga) IIC, (Ex ia Da) IIIC, (Ex ia Ma) I + WHG

1 H

1 J

SIL qualification

Without

1

With

2

Version

Double-channel (8/16 mA) for level detection

1

Housing/cable entry

Plastic/IP20

A

Terminal block connection

Detachable 2.5 mm²/ Ex sensor: 2 x blue; output and operating voltage: 2 x black

A

Detachable 2.5 mm²/ sensor: 2 x black; output and operating voltage: 2 x black

B

Language

English

0

German

1

Selection and Ordering data

Order code

Operating Instructions

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

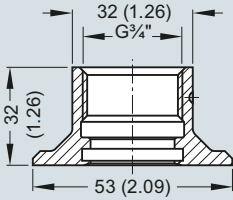
¹⁾ Available only with terminal block connection option B

²⁾ Available only with terminal block connection option A

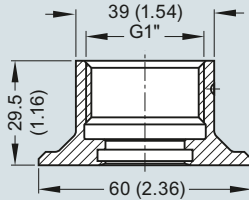
Options

LVL200 threaded welded socket

G $\frac{3}{4}$ " A/316L

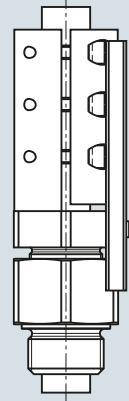


G1" A/316L

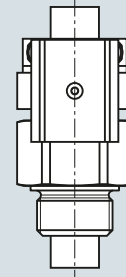


Lock fitting

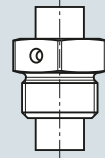
LVL200 extended
64 bar



LVL200 extended
16 bar

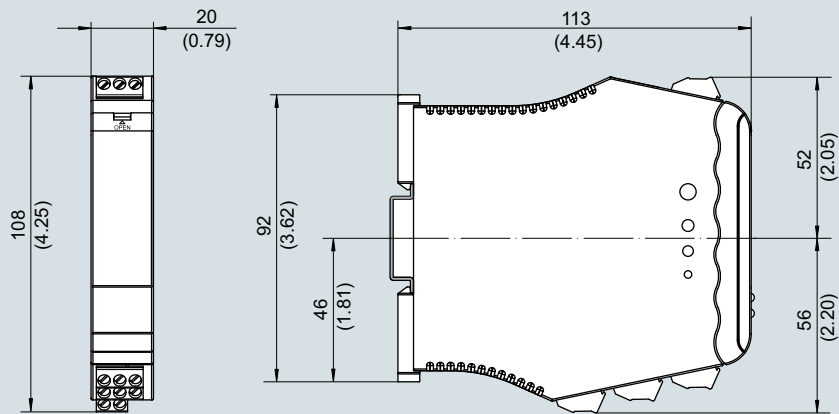


LVL200 extended
unpressurized



SITRANS LVL200 welded socket and lock fitting, dimensions in mm (inch)

SITRANS SCSC and TCSC LVL test conditioner



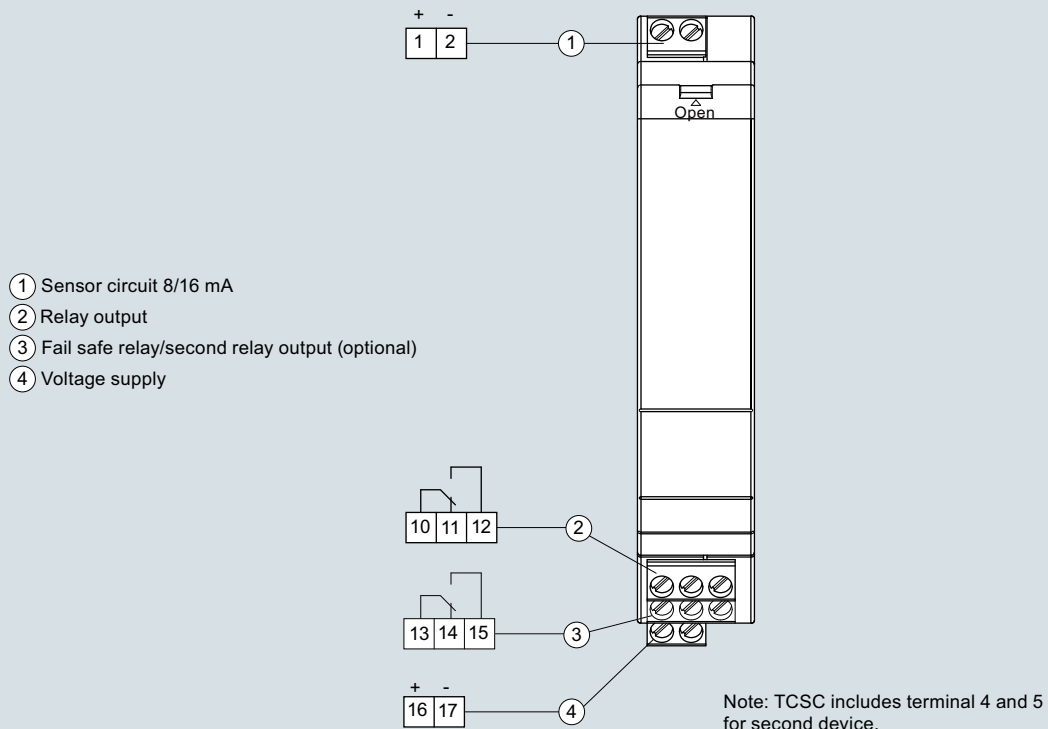
SITRANS SCSC and SITRANS TCSC LVL Test Conditioners, dimensions in mm (inch)

Level Measurement

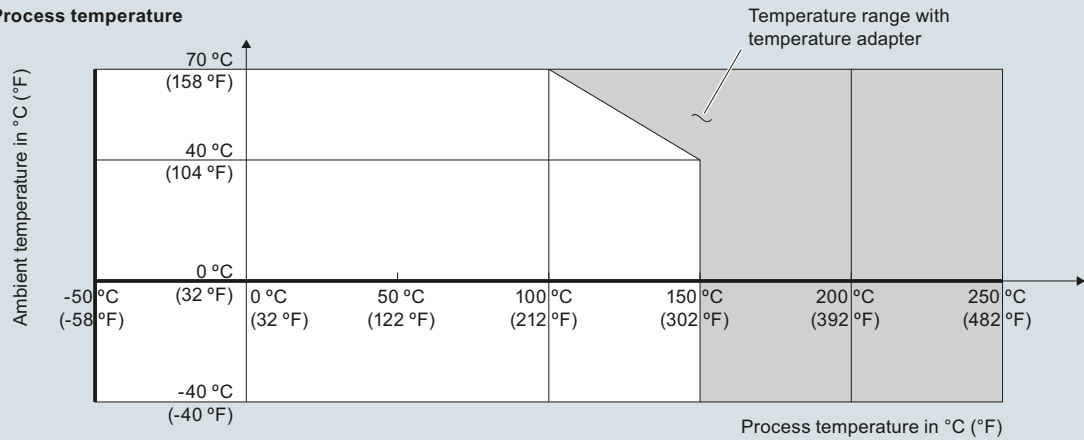
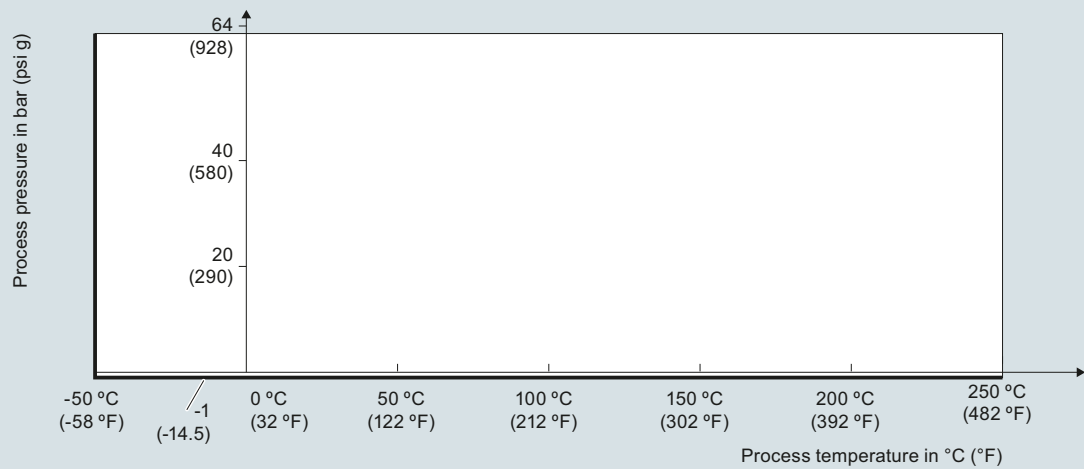
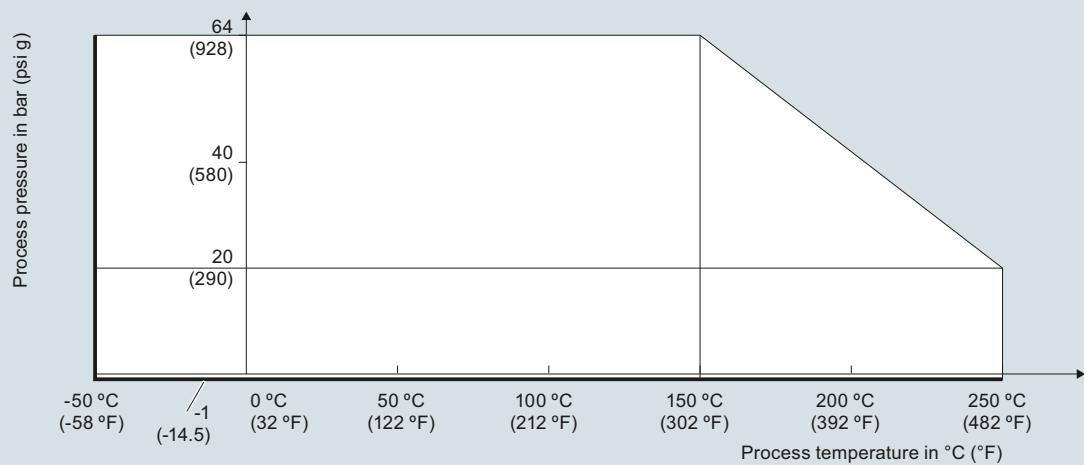
Point level measurement

Vibrating switches

SITRANS LVL200



SITRANS SCSC and SITRANS TCSC LVL Test Conditioner connections

Characteristic curves
Ambient/Process temperature

Process pressure with switch position 0.7 g/cm³ (mode switch)

Process pressure with switch position 0.5 g/cm³ (mode switch)


SITRANS LVL200 process pressure/process temperature/ambient temperature derating curves

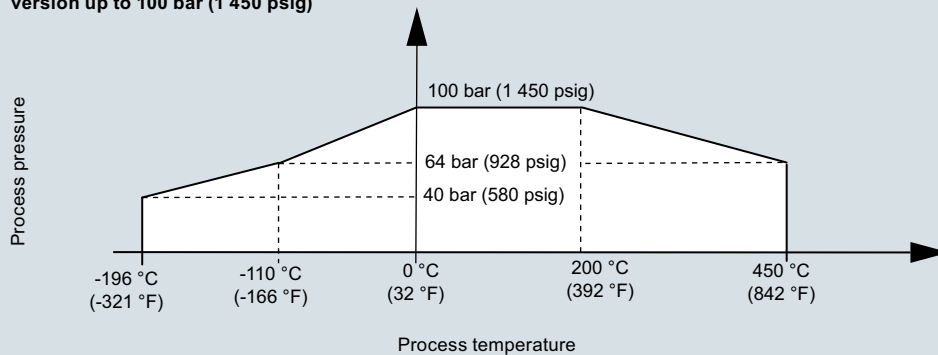
Level Measurement

Point level measurement

Vibrating switches

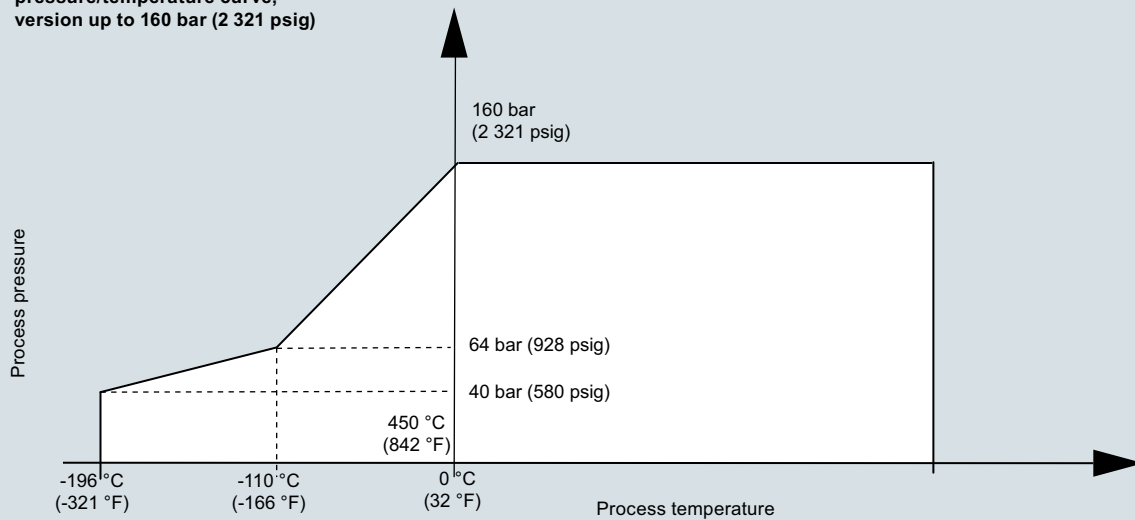
SITRANS LVL200

**SITRANS LVL high temperature
process temperature/process pressure,
version up to 100 bar (1 450 psig)**



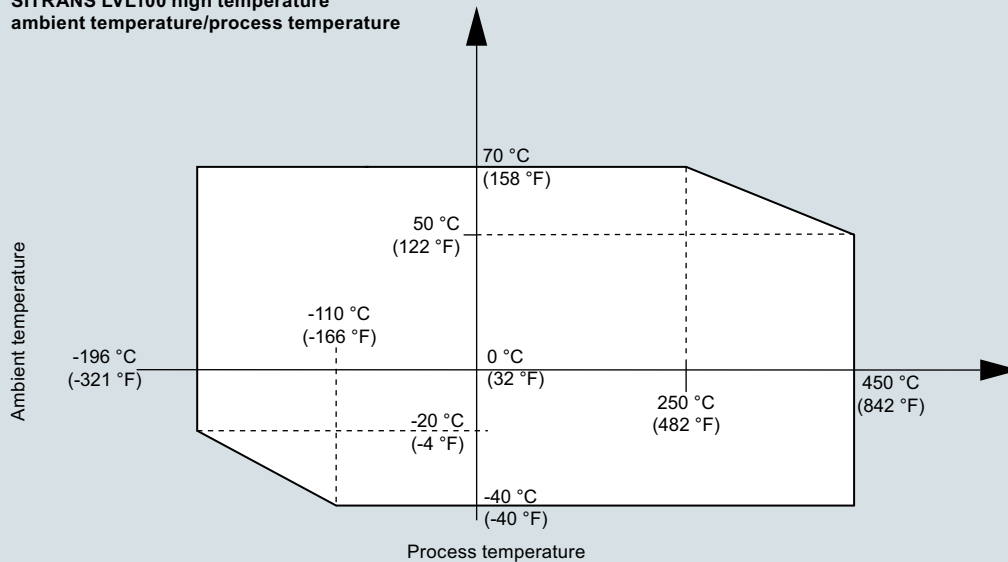
SITRANS LVL200 high temperature, process temperature/process pressure version up to 100 bar (1 450 psig)

**SITRANS LVL200 high temperature
pressure/temperature curve,
version up to 160 bar (2 321 psig)**



SITRANS LVL200 high temperature, pressure/temperature, version up to 160 bar (2 321 psig)

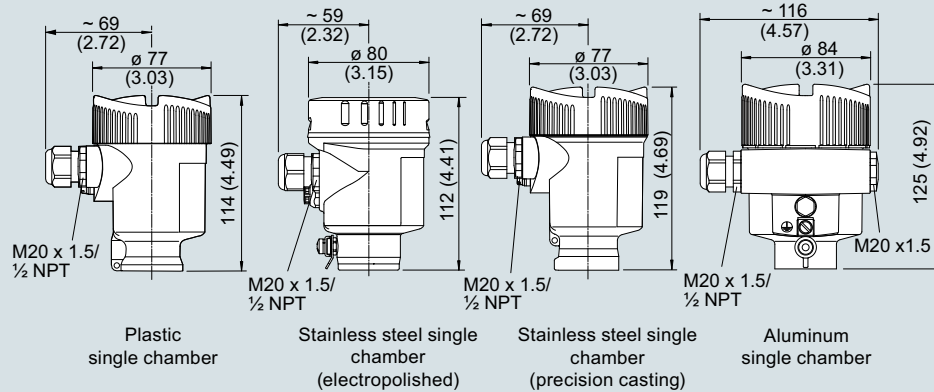
**SITRANS LVL100 high temperature
ambient temperature/process temperature**



SITRANS LVL200 high temperature ambient temperature/process temperature, version up to 100 bar (1 450 psig)

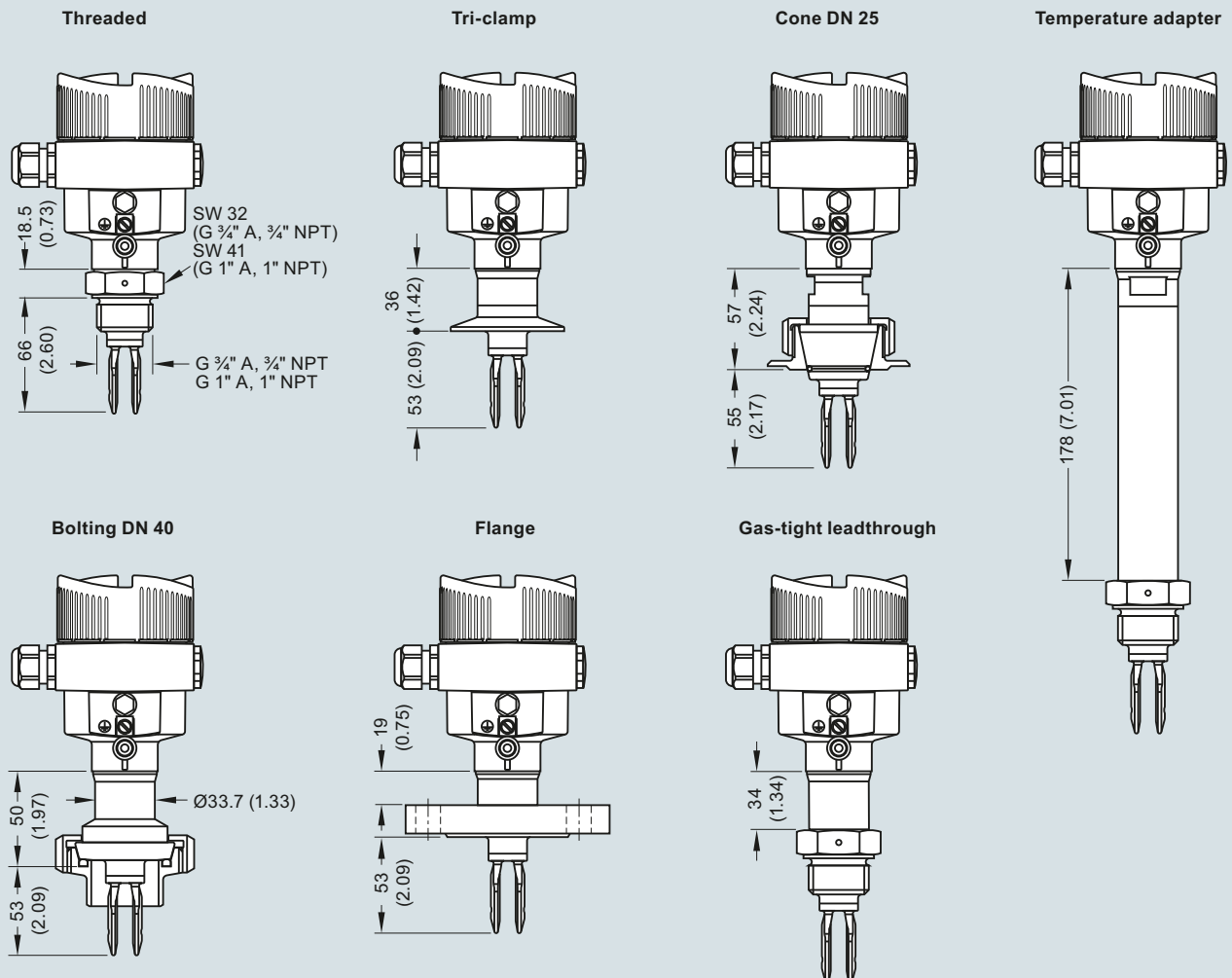
Dimensional drawings

SITRANS LVL200, housing



SITRANS LVL200 housing, dimensions in mm (inch)

SITRANS LVL200 standard



SITRANS LVL200 (standard), dimensions in mm (inch)

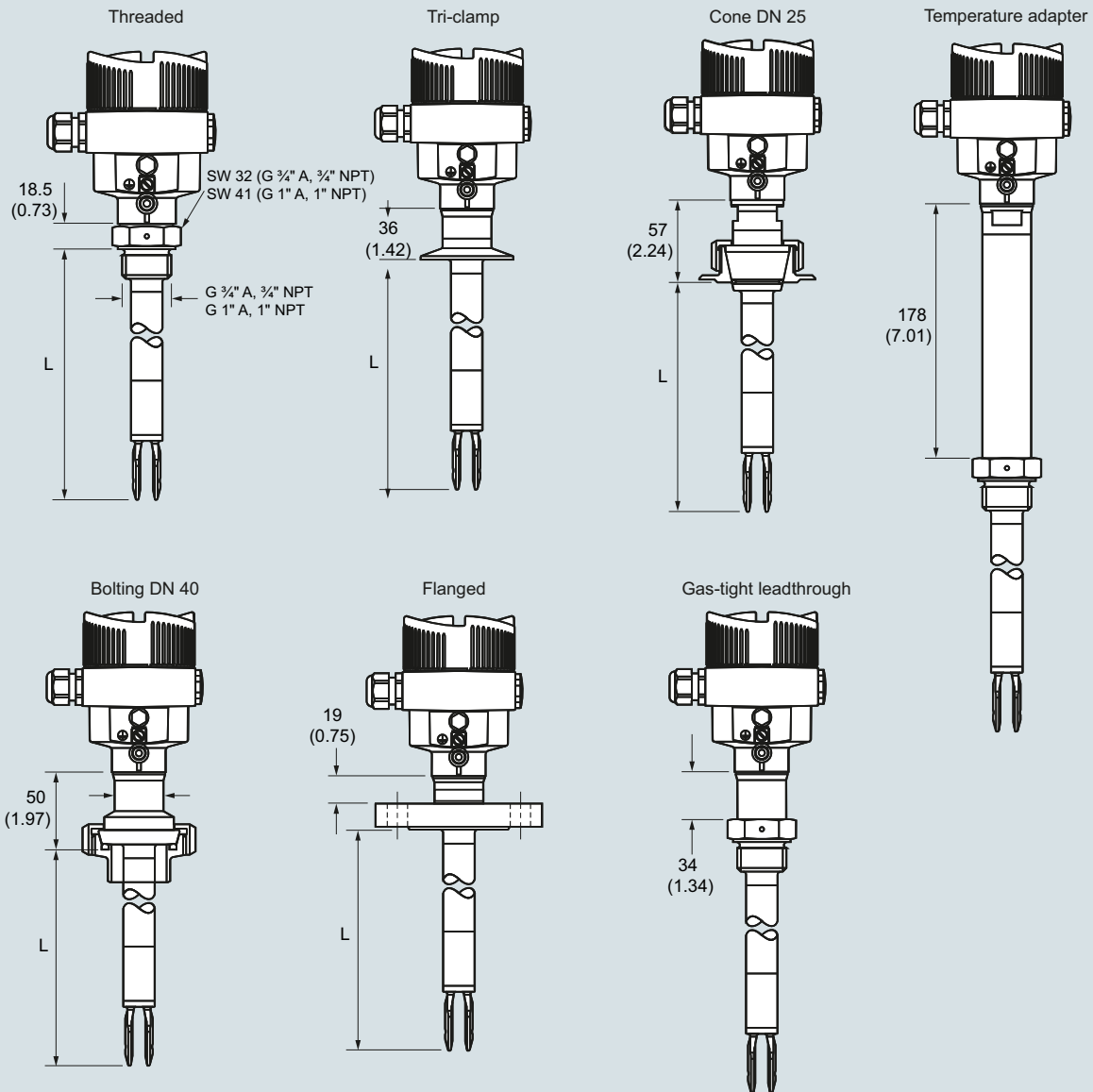
Level Measurement

Point level measurement

Vibrating switches

SITRANS LVL200

SITRANS LVL200 extended

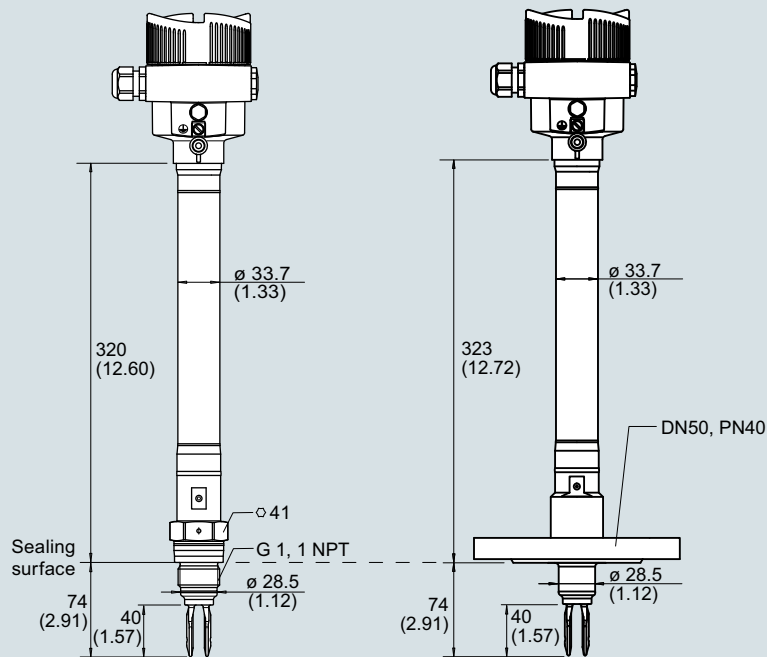


Sensor length (L)

316L, Alloy C22 (2.4602)	80 ... 6 000 mm (3.15 ... 236.2 inch)
Enamelled	80 ... 1 500 mm (3.15 ... 59.06 inch)
316L, ECTFE coated	80 ... 3 000 mm (3.15 ... 118.1 inch)
316L, PFA coated	80 ... 4 000 mm (3.15 ... 157.5 inch)

SITRANS LVL200 (extended), dimensions in mm (inch)

SITRANS LVL200 high temperature, compact version

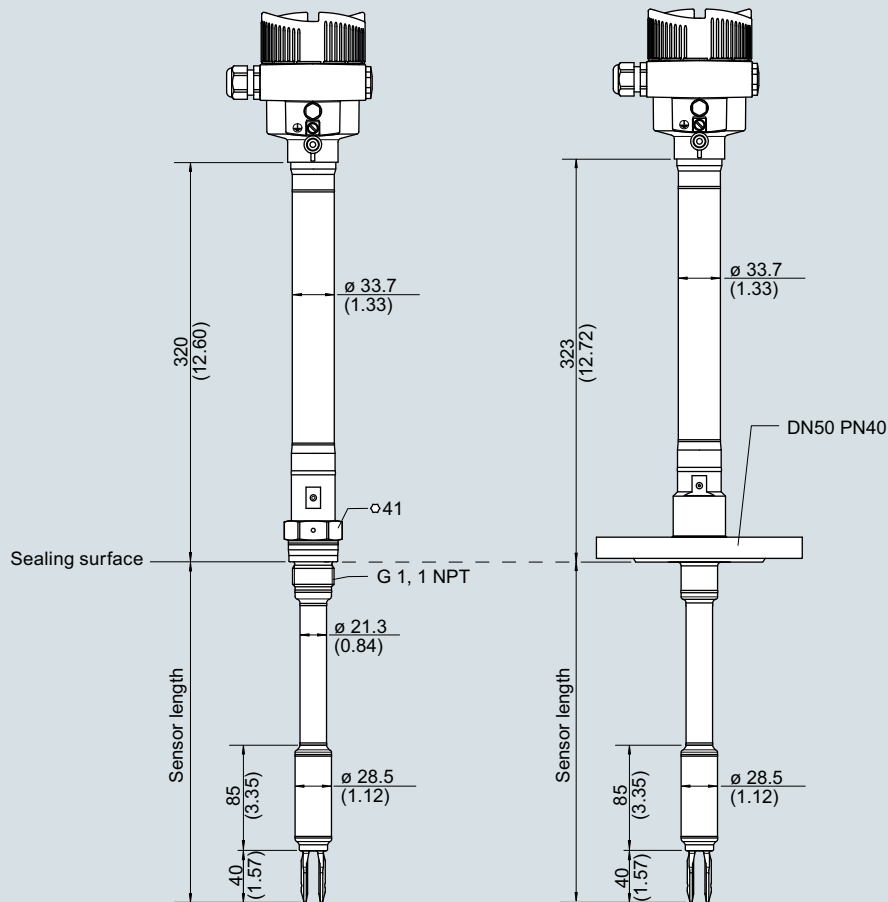


SITRANS LVL200 high temperature (compact version), dimensions in mm (inch)

Level Measurement

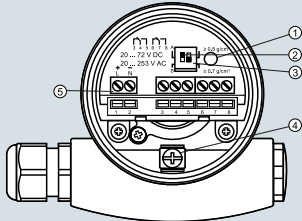
Point level measurement

Vibrating switches

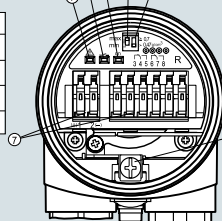
SITRANS LVL200**SITRANS LVL200 high temperature, tube version**

SITRANS LVL200 high temperature (tube version), dimensions in mm (inch)

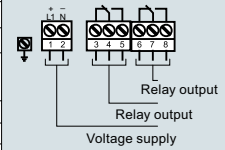
Circuit diagrams

SITRANS LVL200S, LVL200E
Relay (DPDT)

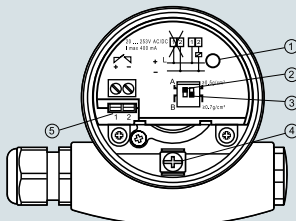
- | | |
|---|---|
| ① | Control lamp |
| ② | DIL switch for characteristics reversal |
| ③ | DIL switch for sensitivity adjustment |
| ④ | Ground terminal |
| ⑤ | Connection terminals |

SITRANS LVL200H
Relay (DPDT)

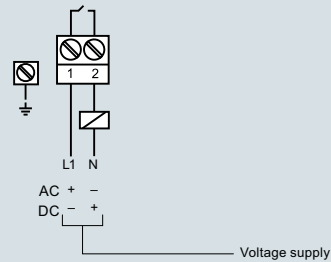
- | | |
|---|---|
| ① | Control lamp - fault indication (red) |
| ② | Control lamp - Switching status (yellow) |
| ③ | Control lamp - Operating status (green) |
| ④ | Mode switch for selecting the switching behaviour (min./max.) |
| ⑤ | DIL switch for sensitivity adjustment |
| ⑥ | Ground terminal |
| ⑦ | Connection terminals |



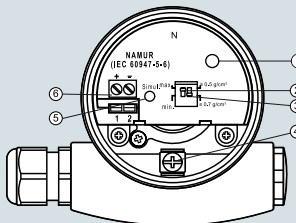
Contactless



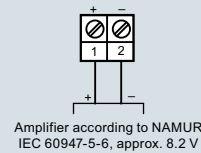
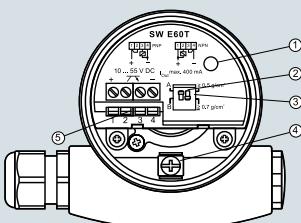
- | | |
|---|---|
| ① | Control lamp |
| ② | DIL switch for mode adjustment |
| ③ | DIL switch for switching point adaptation |
| ④ | Ground terminal |
| ⑤ | Connection terminals |



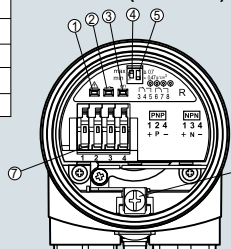
NAMUR



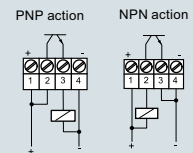
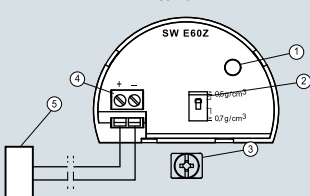
- | | |
|---|---|
| ① | Control lamp |
| ② | DIL switch for characteristics reversal |
| ③ | DIL switch for sensitivity adjustment |
| ④ | Ground terminal |
| ⑤ | Simulation key |
| ⑥ | Connection terminals |

SITRANS LVL200S, LVL200E
Transistor (NPN/PNP)

- | | |
|---|--------------------------------|
| ① | Control lamp |
| ② | DIL switch for mode adjustment |
| ③ | DIL switch for switching point |
| ④ | Ground terminal |
| ⑤ | Connection terminals |

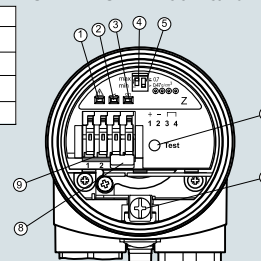
SITRANS LVL200H,
Transistor (NPN/PNP)

- | | |
|---|---|
| ① | Control lamp - fault indication (red) |
| ② | Control lamp - Switching status (yellow) |
| ③ | Control lamp - Operating status (green) |
| ④ | Mode switch for selecting the switching behaviour (min./max.) |
| ⑤ | DIL switch for sensitivity adjustment |
| ⑥ | Ground terminal |
| ⑦ | Connection terminals |

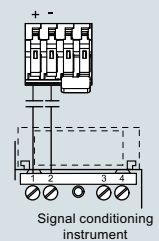
SITRANS LVL200S, LVL200E
8/16 mA

- | | |
|---|---------------------------------------|
| ① | Control lamp |
| ② | DIL switch for sensitivity adjustment |
| ③ | Ground terminal |
| ④ | Connection terminals |
| ⑤ | Processing system or PLC |

SITRANS LVL200H 8/16 mA



- | | |
|---|--|
| ① | Control lamp - fault indication (red) |
| ② | Control lamp - switching status (yellow) |
| ③ | Control lamp - operating status (green) |
| ④ | Mode switch for selecting the switching behavior (min./max.) |
| ⑤ | DIL switch for sensitivity behavior (min./max.) |
| ⑥ | Test key |
| ⑦ | Ground terminal |
| ⑧ | Connector block |
| ⑨ | Connection terminals |



SITRANS LVL200 connections

Level Measurement

Point level measurement

Vibrating switches

SITRANS LVS100

Overview



SITRANS LVS100 is a vibrating point level switch for material detection in bulk solids.

Benefits

- High resistance to mechanical forces
- Sliding sleeve options for adjustable insertion length and ease of cleaning
- Rotatable enclosure for ease of installation and wiring
- Suitable for point level detection of materials starting at a bulk density of 30 g/l (1.9 lb/ft³)
- Customer desired extensions up to 4 000 mm (157.48 inch)

Application

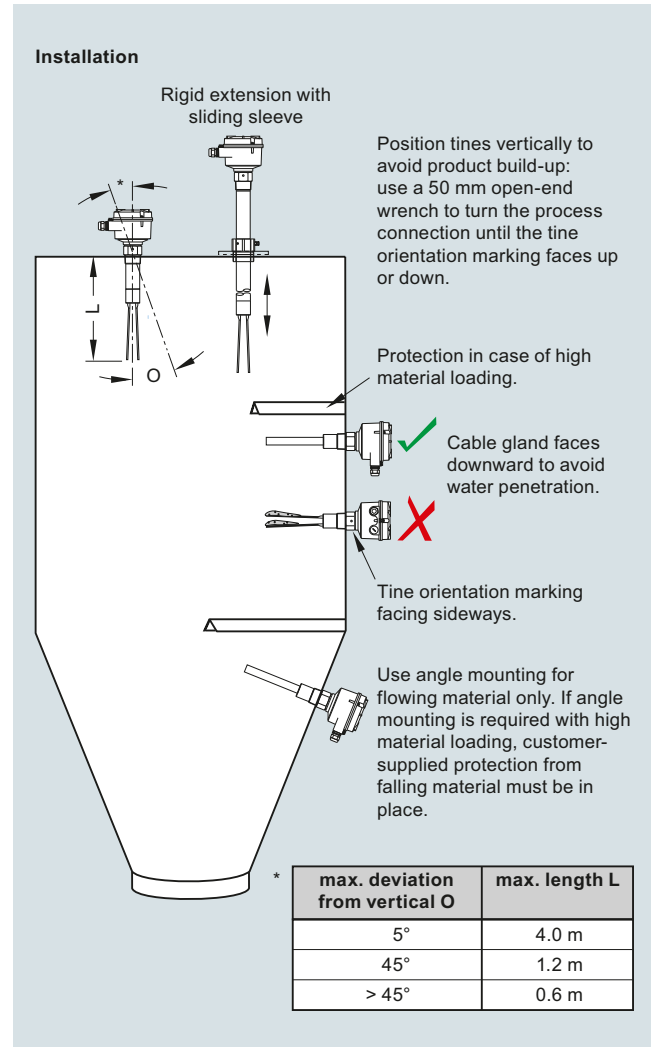
SITRANS LVS100 detects high, low or demand levels of dry bulk solids in bins, silos or hoppers.

SITRANS LVS100 has a compact design and can be top, side, or angle mounted. The vibrating fork design ensures the tines are kept clean. The unique design of the fork and crystal assembly eliminates false high level readings even if tines become damaged.

A signal from the electronic circuit excites a crystal in the probe causing the fork to vibrate. If the fork is covered by material, the change in vibration is detected by the electronic circuitry which causes the relay to change state after a one second delay. When the fork is free from material pressure, full vibration resumes and the relay reverts to its normal condition.

- Key Applications: dry bulk solids in bins, silos, hoppers

Configuration



SITRANS LVS100 installation, dimensions in mm (inch)

Technical specifications

Mode of Operation		Design	
Measuring principle	Vibrating point level switch	Material	Epoxy coated aluminum
Input		• Enclosure	
Measured variable	High, low and demand	Process connection	<ul style="list-style-type: none"> Thread 1¼" NPT [(Taper), ANSI/ASME B1.20.1], R 1½" [(BSPT), EN 10226] Thread R 1½" [(BSPT), EN 10226], ½" NPT [(Taper), ANSI/ASME B1.20.1], sliding sleeve [min. length 500 mm (19.69 inch)] Thread material: stainless steel 304 (1.4301) or 316L (1.4404) depending on configuration
Measuring frequency	200 Hz		
Output		Tine material	Stainless steel 316L (1.4404)
Relays	DPDT relay	Degree of protection	IP66/Type 4/NEMA 4
Relay delay	From loss of vibration: approximately 1 second From resumption of vibration: approximately 1 ... 2 s	Conduit entry	2 x M20 x 1.5 or 2 x ½" NPT
Signal delay	Probe uncovered to covered: approximately 1 s Probe covered to uncovered: approximately 1 ... 2 s	Weight	Standard version, no extensions: approx. 1.7 kg (3.7 lb)
Relay fail-safe	High or low, switch selectable	Power supply	
Alarm output	Relay 8 A at 250 V AC, non-inductive Relay 5 A at 30 V DC, non-inductive	<ul style="list-style-type: none"> 19 ... 230 V AC, +10 %, 50 ... 60 Hz, 8 VA 19 ... 40 V DC, +10 %, 1.5 W 	
Sensitivity	High or low, switch selectable	Certificates and approvals	
Rated operating conditions		<ul style="list-style-type: none"> CSA/FM General Purpose CE CSA/FM Dust Ignition Proof RCM ATEX II 1/2 D IECex 	
Installation conditions			
• Location	Indoor/outdoor		
Ambient conditions			
• Ambient temperature	-40 ... +60 °C (-40 ... +140 °F)		
• Installation category	III		
• Pollution degree	2		
Medium conditions			
• Process temperature	-40 ... +150 °C (-40 ... +302 °F)		
• Max. threaded bushing temperature	80 °C (176 °F)		
• Max. enclosure surface temperature (Category 2D)	90 °C (194 °F)		
• Max. extension surface temperature (Category 1D)	150 °C (302 °F)		
• Pressure (vessel)	Max. 10 bar g (145 psi g) European Pressure Directive 2014/68/ EU: Category 1		
Minimum material density	Approx. 30 g/l (1.9 lb/ft³)		

Level Measurement

Point level measurement

Vibrating switches

SITRANS LVS100

Selection and Ordering data

SITRANS LVS100, standard

Vibrating point level switch for high or low level detection of bulk solids. Sensitivity > 30 g/l.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Input Voltage

DPDT Relay: 19 ... 230 V AC, 19 ... 40 V DC

DPDT Relay: 19 ... 230 V AC, 19 ... 40 V DC (stocked version)¹⁾³⁾

Process temperature

Up to 150 °C (302 °F)

Process connection

Threaded

R 1½" [(BSPT), EN 10226]

1¼" NPT [(Taper), ANSI/ASME B1.20.1]

R 1½" [(BSPT), EN 10226] DIN 2999 thread, sliding sleeve [min. length 500 mm (19.69 inch)]²⁾

1½" NPT [(Taper), ANSI/ASME B1.20.1], sliding sleeve [min. length 500 mm (19.69 inch)]²⁾

Extension length

Stainless steel 316L (1.4404)

Standard length, 170 mm (6.69 inch)

Add Order code Y01 and plain text:

"Insertion length ... mm"

Stainless steel 304 (1.4301)

- 230 ... 500 mm (9.05 ... 19.69 inch)
- 501 ... 1 000 mm (19.72 ... 39.37 inch)
- 1 001 ... 1 500 mm (39.41 ... 59.06 inch)
- 1 501 ... 2 000 mm (59.09 ... 78.74 inch)
- 2 001 ... 2 500 mm (78.78 ... 98.43 inch)
- 2 501 ... 3 000 mm (98.46 ... 118.11 inch)
- 3 001 ... 3 500 mm (118.15 ... 137.80 inch)
- 3 501 ... 4 000 mm (137.83 ... 157.48 inch)

Approvals

CSA/FM General Purpose, CE, RCM

CSA/FM Class II, Div. 1, Group E, F, G, Class III, ATEX II 1/2 D, RCM

IEC-Ex Ex t IIIC T-- Da/Db IP6X

EAC Ex ta/tb IIIC Da/Db

Article No.

7ML5735-

0 A 0

1

2

A

A

B

C

D

11

12

13

14

15

16

17

18

20

Selection and Ordering data

Further Designs

Please add "-Z" to Art. No. and specify Order code(s).

Total insertion length: Enter the total insertion length in plain text description, max. (50 mm increments)

Signal bulb inserted in M20 cable gland¹⁾

Operating Instructions

Multi-language

Note: the Operating Instructions should be ordered as a separate line on the order.

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Spare Parts

Replacement Electronics Module LVS100 DPDT Relay (19 ... 253 V AC, 19 ... 55 V DC)

R 1½" [(BSPT), EN 10226] DIN 2999 thread, sliding sleeve

1½" NPT [(Taper), ANSI/ASME B1.20.1], sliding sleeve [min. length 500 mm (19.69 inch)]

¹⁾ Available only with Approval option A

Order code

Y01

A20

Article No.

7ML19985FT63

7ML1830-1NS

7ML1830-1NT

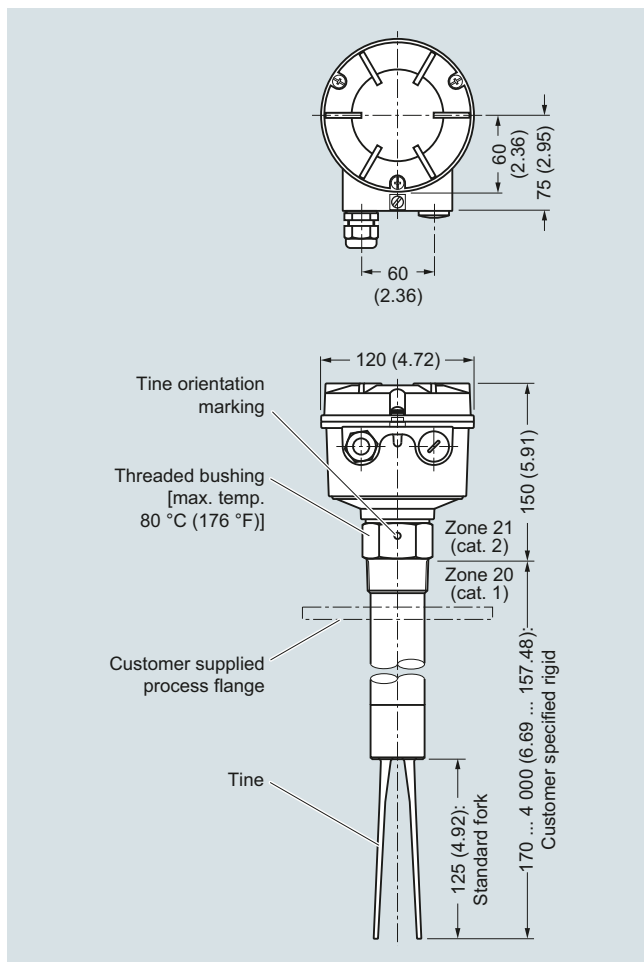
7ML1830-1NU

¹⁾ Only available with the following configurations 7ML5735-2AA11-0AA0 or 7ML5735-2AB11-0AA0

²⁾ Not available with extension length options 11, 12

³⁾ Input voltage 2 not allowed with extension length 16, 17, 18 or 20

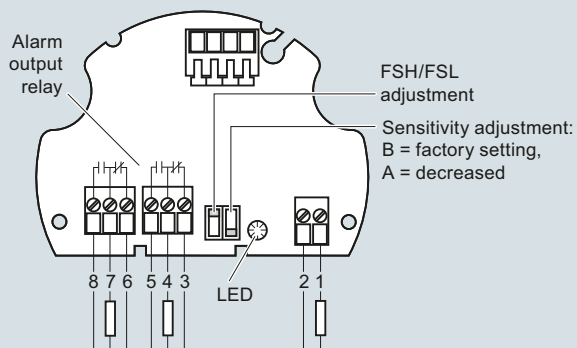
Dimensional drawings



SITRANS LVS100, dimensions in mm (inch)

Circuit diagrams

Universal voltage (DPDT relay)



AC: Terminal 1: L
Terminal 2: N
19 ... 230 V AC, +10 %, 50 ... 60 Hz, 8 VA

DC: Terminal 1: +
Terminal 2: -
19 ... 50 V DC, +10 %, 2 W

SITRANS LVS100 connections

Level Measurement

Point level measurement

Vibrating switches

SITRANS LVS200

Overview



SITRANS LVS200 is a vibrating point level switch for high, low, or demand level detection of bulk solids.

Benefits

- High resistance to mechanical forces
- Strong vibration resistance to high bulk material loads
- Rotatable enclosure for convenient wiring
- Suitable for low density material: standard version, 20 g/l (1.3 lb/ft³); liquid/solid interface version, 50 g/l (3 lb/ft³) and low density option min. 5 g/l (0.3 lb/ft³)
- Customer desired extensions up to 20 000 mm (787 inch)
- Optional detection of solids within liquid
- Durable short fork option with 165 mm (6.5 inch) insertion length

Application

The standard LVS200 detects high, low, or demand levels of dry bulk solids in bins, silos, or hoppers. The liquid/solid interface version can also detect settled solids within liquids or solids within confined spaces such as feed pipes. It is designed to ignore liquids in order to detect the interface between a solid and a liquid.

A pipe extension version is available with either the standard or liquid/solid interface electronics and fork, separated by a customer supplied 1 inch pipe.

SITRANS LVS200 has an optional 4 to 20 mA output for monitoring buildup on the fork to determine when preventative maintenance should be performed in sticky applications.

The LVS200 has a compact design and can be top, side or angle mounted. The vibrating fork design ensures the tines are kept clean. The unique design of the fork and crystal assembly eliminates false high level readings even if tines become damaged.

A signal from the electronic circuit excites a crystal in the probe causing the fork to vibrate. If the fork is covered by material, the change in vibration is detected by the electronic circuitry which causes the relay to change state after a one second delay. When the fork is free from material pressure, full vibration resumes and the relay reverts to its normal condition.

- Key Applications: dry bulk solids in bins, silos, hoppers or settled solids within liquids (interface version)

Technical specifications

Mode of operation		Rated operating conditions	
Measuring principle	Vibrating point level switch	Installation conditions	Indoor/outdoor
Input		• Location	
Measured variable	High, low, and demand	Ambient conditions	
Measuring frequency		• Ambient temperature	-40 ... +60 °C (-40 ... +140 °F)
• Standard	125 Hz	• Installation category	III
• Liquid/solid interface and short fork version	350 Hz	• Pollution degree	2
Output		Medium conditions	
PNP	Open collector: Permanent load max. 0.4 A, short-circuit and overload protected Turn-on voltage: max. 50 V (reverse protection)	• Process temperature	<ul style="list-style-type: none"> • All except CSA Class II, Group G: -40 ... +150 °C (-40 ... +302 °F) • CSA Class II, Group G: -40 ... +140 °C (-40 ... +284 °F), CSA temperature code T3B
2-wire without contact	Load current: <ul style="list-style-type: none"> • Min. 10 mA • Max. 500 mA permanent • Max. 2A < 200 ms • Max. 5A < 50 ms Voltage drop on the electronic module: max. 7 V with closed electric circuit Cut-off current with open electric circuit: max. 5 mA	<ul style="list-style-type: none"> • Max. threaded bushing temperature • Max. enclosure surface temperature (Category 2D) • Max. extension surface temperature (Category 1D) • Pressure (vessel) 	80 °C (176 °F) 90 °C (194 °F) 150 °C (302 °F)
Relays	SPDT relay DPDT relay	• Minimum material density	Max. 10 bar g (145 psi g) European Pressure Directive 2014/68/EU: Category 1 <ul style="list-style-type: none"> • Standard version: approx. 20 g/l (1.2 lb/ft³) • Liquid/solid interface version: approx. 50 g/l (3 lb/ft³) • Optional low density version: approx. 5 g/l (0.3 lb/ft³)
• Version with 1 relay		Design	
• Version with 2 relays		Material	
Relay delay	<ul style="list-style-type: none"> • From loss of vibration: approximately 1 second • From resumption of vibration: approximately 1 ... 2 seconds 	• Enclosure	Epoxy coated aluminum
Signal delay	<ul style="list-style-type: none"> • Probe uncovered to covered: approximately 1 second • Probe covered to uncovered: approximately 1 ... 2 seconds 	Process connection	<ul style="list-style-type: none"> • Thread 1½" NPT [(Taper), ANSI/ASME B1.20.1], R ½" [(BSPT), EN 10226], and flange options • Optional sliding bushing with 2" NPT [(Taper), ANSI/ASME B1.20.1] or BSP thread • Thread material: stainless steel 303 (1.4301)
Relay fail-safe	High or low, switch selectable	Tine material	Stainless steel 316L (1.4404), PTFE-coated tines are available upon special request
Alarm output	<ul style="list-style-type: none"> • Relay 8 A at 250 V AC, non-inductive • Relay 5 A at 30 V DC, non-inductive 	Degree of protection	IP65/Type 4/NEMA 4
mA output	8/16 mA or 4 ... 20 mA	Conduit entry	2 x M20 x 1.5 or 2 x ½" NPT
• Resolution	4 ... 20 mA ± 0.1 mA	Weight	<ul style="list-style-type: none"> • Standard version, no extensions: approx. 2.0 kg (4.4 lb) • Solids/liquids version, no extensions: approx. 1.9 kg (4.2 lb)
Sensitivity	High or low, switch selectable	Power supply	<ul style="list-style-type: none"> • 19 ... 230 V AC, +10 %, 50 ... 60 Hz, 8 VA • 19 ... 55 V DC, +10 %, 1.5 W
		Certificates and approvals	<ul style="list-style-type: none"> • CSA/FM General Purpose • CE • CSA/FM Dust Ignition Proof • RCM • ATEX II 1/2 D • CSA/FM IS Class I, II, III Div. 1, Groups A, B, C, D, E, F, G, FM Class I, Aex ia IIC, CSA Class I, Ex ia IIC, available only with power supply options 5 and 6 • ATEX II 1G and 1/2 G Eex ia IIC; ATEX II 1D and 1/2 D, available only with power supply option 5

Level Measurement

Point level measurement

Vibrating switches

SITRANS LVS200

Selection and Ordering data

Article No.

SITRANS LVS200, standard

SITRANS LVS200 is a vibrating point level switch for high, low, or demand level detection of bulk solids.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Power supply

19 ... 230 V AC, 19 ... 55 V DC, one relay output (SPDT)¹⁾

19 ... 230 V AC, 19 ... 55 V DC, two relay outputs (DPDT)¹⁾

18 ... 50 V DC PNP¹⁾

19 ... 230 V AC/DC without contact, 2-wire loop powered¹⁾

7 ... 9 V DC (requires NAMUR switch amplifier)

NAMUR IEC 60947-5-6, 2-wire²⁾

8/16 mA or 4 ... 20 mA; 12.5 ... 35 V DC, 2-wire³⁾

19 ... 230 V AC, 19 ... 55 V DC, one relay output (SPDT) basic version⁴⁾

Process temperature

Without temperature isolator

With temperature isolator

Separated enclosure - cable length 1.5 m (4.92 ft)

[max. temperature process 150 °C (302 °F)/
max. temperature electronics 60 °C (140 °F)]

Separated enclosure - cable length 4.0 m (13.12 ft)

[max. temperature process 150 °C (302 °F)/
max. temperature electronics 60 °C (140 °F)]

Process connection

Threaded

R 1½" [(BSPT), EN 10226]

1½" NPT [(Taper), ANSI/ASME B1.20.1]

G 2" [(BSPP), EN ISO 228-1], sliding sleeve
[min. length 500 mm (19.69 inch)]⁶⁾

2" NPT [(Taper), ANSI/ASME B1.20.1],
sliding sleeve [min. length 500 mm (19.69 inch)]⁶⁾

Flanged

DN 100 PN 6, EN 1092-1⁷⁾

DN 100 PN 16, EN 1092-1

2" ASME 150 lb B16.5

3" ASME 150 lb B16.5

4" ASME 150 lb B16.5

2" Tri-clamp (DN 50) ISO 2852

Extension length

Stainless steel 304 (1.4301)

Standard length, 235 mm (9.25 inch)

Add Order code Y01 and plain text:

"Insertion length ... mm"

• 300 ... 500 mm (11.81 ... 19.69 inch)

• 501 ... 750 mm (19.72 ... 29.53 inch)

• 751 ... 1 000 mm (29.57 ... 39.37 inch)

• 1 001 ... 1 250 mm (39.41 ... 49.21 inch)

• 1 251 ... 1 500 mm (49.25 ... 59.06 inch)

• 1 501 ... 1 750 mm (59.09 ... 68.90 inch)

• 1 751 ... 2 000 mm (68.94 ... 78.74 inch)

• 2 001 ... 2 250 mm (78.78 ... 88.58 inch)

• 2 251 ... 2 500 mm (88.62 ... 98.43 inch)

• 2 501 ... 2 750 mm (98.46 ... 108.27 inch)

• 2 751 ... 3 000 mm (108.31 ... 118.11 inch)

• 3 001 ... 3 250 mm (118.15 ... 127.95 inch)

• 3 251 ... 3 500 mm (127.99 ... 137.80 inch)

• 3 501 ... 3 750 mm (137.83 ... 147.64 inch)

• 3 751 ... 4 000 mm (147.68 ... 157.48 inch)

Selection and Ordering data

Article No.

SITRANS LVS200, standard

SITRANS LVS200 is a vibrating point level switch for high, low, or demand level detection of bulk solids.

Stainless steel 316L (1.4404)

Standard length, 235 mm (9.25 inch)

Add Order code Y01 and plain text:

"Insertion length ... mm"

300 ... 500 mm (11.81 ... 19.69 inch)

501 ... 750 mm (19.72 ... 29.53 inch)

751 ... 1 000 mm (29.57 ... 39.37 inch)

1 001 ... 1 250 mm (39.41 ... 49.21 inch)

1 251 ... 1 500 mm (49.25 ... 59.06 inch)

1 501 ... 1 750 mm (59.09 ... 68.90 inch)

1 751 ... 2 000 mm (68.94 ... 78.74 inch)

2 001 ... 2 250 mm (78.78 ... 88.58 inch)

2 251 ... 2 500 mm (88.62 ... 98.43 inch)

2 501 ... 2 750 mm (98.46 ... 108.27 inch)

2 751 ... 3 000 mm (108.31 ... 118.11 inch)

3 001 ... 3 250 mm (118.15 ... 127.95 inch)

3 251 ... 3 500 mm (127.99 ... 137.80 inch)

3 501 ... 3 750 mm (137.83 ... 147.64 inch)

3 751 ... 4 000 mm (147.68 ... 157.48 inch)

Material process connection/extension

Stainless steel threads 304 (1.4301),

flanges 321 (1.4541), Tri-clamp 304 (1.4301)⁸⁾

Stainless steel 316L (1.4404)⁹⁾

Approvals

CSA/FM Dust Ignition Proof, RCM

ATEX II 1/2 D, RCM

CSA/FM General Purpose, RCM, CE

CE, RCM

CSA/FM IS Class I, II, III Div. 1, Groups A, B, C, D,

E, F, G, FM Class I, Aex ia IIC, CSA Class I,

Ex ia IIC, RCM

ATEX II 1G and 1/2G Eex ia IIC; ATEX II 1D and

1/2D, RCM

IEC-Ex t IIIC Da/Db

EAC Ex ta/tb IIIC Da/Db, Ex ta IIIC Da

EAC Ex Ga/Gb Ex ia IIC, 0Ex ia IIC Ga; Ex ta/tb

IIIC Da/Db, Ex ta IIIC Da

¹⁾ Available with Approval options A ... D, G only.

²⁾ Available with Approval options D, E, F only.

³⁾ Available with Approval options B, D, G only.

⁴⁾ Available with configurations 7ML5731-7AA11-1BA0 or 7ML5731-7AB11-1AA0 only.


⁵⁾ Basic version is cost effective and offers fast delivery.

⁶⁾ Not available with extension length options 11, 12, 31, 32.

⁷⁾ Max. 6 bar (87 psi).

⁸⁾ Available with option extension length 11 ... 28.

⁹⁾ Available with option extension length 31 ... 48.

Selection and Ordering data		Order code	Selection and Ordering data		Article No.
Further Designs			SITRANS LVS200, short fork for liquids/solids interface		7ML5732-
Please add "-Z" to Article No. and specify Order code(s).			Vibrating point level switch for short insertion and liquids/solids interface applications as well as high load applications with short insertion requirements.		 A 0
Total insertion length: Enter the total insertion length in plain text description, max. 4 000 mm (157.48 inch)		Y01	Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Stainless steel tag [100 x 45 mm (3.94 x 1.77 inch)]: Measuring-point number/identification (max. 27 characters); specify in plain text		Y14	Power supply		
Enhanced sensitivity > 5 g/l via electronics and increased insertion length of 25 mm (0.98 inch) ³⁾		K05	19 ... 230 V AC, 19 ... 55 V DC, one relay output (SPDT) ⁶⁾		1
Enhanced sensitivity < 5 g/l via electronics, increased insertion length of 25 mm (0.98 inch), and increased aluminum fork width ¹⁾³⁾		G01	19 ... 230 V AC, 19 ... 55 V DC, two relay outputs (DPDT) ⁶⁾		2
Signal bulb inserted in M20 cable gland ²⁾		A20	18 ... 50 V DC PNP ⁶⁾		3
NAMUR 8/16 mA switch amplifiers available, contact factory for pricing			19 ... 230 V AC/DC without contact, 2-wire loop powered ⁶⁾		4
Operating Instructions		Article No.	8/16 mA or 4 ... 20 mA; 12.5 ... 35 V DC, 2-wire ¹⁾		5
Multi-language		7ML19985FT63	Process temperature		
Note: the Operating Instructions should be ordered as a separate line on the order.			Without temperature isolator		A
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation			With temperature isolator		B
Spare Parts			Separated enclosure - cable length 1.5 m (4.92 ft) [max. temperature process 150 °C (302 °F)/max. temperature electronics 60 °C (140 °F)]		C
Replacement Electronics Module (125 Hz) [19 ... 230 V AC, 19 ... 55 V DC, one relay output (SPDT)]		7ML1830-1KL	Separated enclosure - cable length 4.0 m (13.12 ft) [max. temperature process 150 °C (302 °F)/max. temperature electronics 60 °C (140 °F)]		D
Replacement Electronics Module (125 Hz) [19 ... 230 V AC, 19 ... 55 V DC, two relay output (DPDT)]		A5E35525363	Process connection		
Sliding sleeve, 2" BSP (ISO 228)		7ML1830-1JM	Threaded		
Sliding sleeve, 2" NPT (ASME B1.20.1)		7ML1830-1JN	R 1½" [(BSPT), EN 10226]		A
Namur Isolator switch amplifier relay output KFD2-SR2-Ex1.W		A5E35667901	1½" NPT [(Taper), ANSI/ASME B1.20.1]		B
SITRANS LVS200, standard, power supply 7, process temperature A, process connection A, extension length 11, material process connection/extension 1, and approval B		7ML5731-7AA11-1BA0	G 2" [(BSPP), EN ISO 228-1], sliding sleeve [min. length 500 mm (19.69 inch)] ²⁾		C
SITRANS LVS200, standard, power supply 7, process temperature A, process connection B, extension length 11, material process connection/extension 1, and approval A		7ML5731-7AB11-1AA0	2" NPT [(Taper), ANSI/ASME B1.20.1], sliding sleeve [min. length 500 mm (19.69 inch)] ²⁾		D
			Flanged		
			DN 100 PN 6, EN 1092-1 ³⁾		E
			DN 100 PN 16, EN 1092-1		F
			2" ASME 150 lb B16.5		G
			3" ASME 150 lb B16.5		H
			4" ASME 150 lb B16.5		J
			2" Tri-clamp (DN 50) ISO 2852		K
			Extension length		
			Stainless steel 304 (1.4301)		
			Standard length, 165 mm (6.50 inch)		11
			<u>Add Order code Y01 and plain text:</u>		
			<u>"Insertion length ... mm"</u>		
			200 ... 500 mm (7.87 ... 19.69 inch)		12
			501 ... 750 mm (19.72 ... 29.53 inch)		13
			751 ... 1 000 mm (29.57 ... 39.37 inch)		14
			1 001 ... 1 250 mm (39.41 ... 49.21 inch)		15
			1 251 ... 1 500 mm (49.25 ... 59.06 inch)		16
			1 501 ... 1 750 mm (59.09 ... 68.90 inch)		17
			1 751 ... 2 000 mm (68.94 ... 78.74 inch)		18
			2 001 ... 2 250 mm (78.78 ... 88.58 inch)		21
			2 251 ... 2 500 mm (88.62 ... 98.43 inch)		22
			2 501 ... 2 750 mm (98.46 ... 108.27 inch)		23
			2 751 ... 3 000 mm (108.31 ... 118.11 inch)		24
			3 001 ... 3 250 mm (118.15 ... 127.95 inch)		25
			3 251 ... 3 500 mm (127.99 ... 137.80 inch)		26
			3 501 ... 3 750 mm (137.83 ... 147.64 inch)		27
			3 751 ... 4 000 mm (147.68 ... 157.48 inch)		28

¹⁾ Available only with power supply 1 and Approval C, D and with Process connection flange E ... J.

²⁾ Available with Approval option D only.


³⁾ K05 and G01 are not available together.

Level Measurement

Point level measurement

Vibrating switches

SITRANS LVS200

Selection and Ordering data	Article No.
SITRANS LVS200, short fork for liquids/solids interface	7ML5732-
Vibrating point level switch for short insertion and liquids/solids interface applications as well as high load applications with short insertion requirements.	 A 0
<u>Stainless steel 316L (1.4404)</u>	
Standard length, 165 mm (6.50 inch)	3 1
Add Order code Y01 and plain text:	
<u>"Insertion length ... mm"</u>	
200 ... 500 mm (7.87 ... 19.69 inch)	3 2
501 ... 750 mm (19.72 ... 29.53 inch)	3 3
751 ... 1 000 mm (29.57 ... 39.37 inch)	3 4
1 001 ... 1 250 mm (39.41 ... 49.21 inch)	3 5
1 251 ... 1 500 mm (49.25 ... 59.06 inch)	3 6
1 501 ... 1 750 mm (59.09 ... 68.90 inch)	3 7
1 751 ... 2 000 mm (68.94 ... 78.74 inch)	3 8
2 001 ... 2 250 mm (78.78 ... 88.58 inch)	4 1
2 251 ... 2 500 mm (88.62 ... 98.43 inch)	4 2
2 501 ... 2 750 mm (98.46 ... 108.27 inch)	4 3
2 751 ... 3 000 mm (108.31 ... 118.11 inch)	4 4
3 001 ... 3 250 mm (118.15 ... 127.95 inch)	4 5
3 251 ... 3 500 mm (127.99 ... 137.80 inch)	4 6
3 501 ... 3 750 mm (137.83 ... 147.64 inch)	4 7
3 751 ... 4 000 mm (147.68 ... 157.48 inch)	4 8
Material process connection/extension	
Stainless steel threads 304 (1.4301), flanges 321(1.4541), Tri-clamp 304 (1.4301) ⁴⁾	1
Stainless steel 316L (1.4404) ⁵⁾	2
Approvals	
CSA/FM Dust Ignition Proof, RCM	A
ATEX II 1/2 D, RCM	B
CSA/FM General Purpose, RCM, CE	C
CE, RCM	D
IEC-Ex t IIIC Da/Db	E
ATEX II 1G and 1/2G Eex ia IIC; ATEX II 1D and 1/2D, CE, RCM	F
EAC Ex ta/tb IIIC Da/Db, Ex ta IIIC Da	G
EAC Ex Ga/Gb Ex ia IIC, 0Ex ia IIC Ga; Ex ta/tb IIIC Da/Db, Ex ta IIIC Da	H

¹⁾ Available with Approval options B, D, E only.

²⁾ Not available with extension length options 11,12, 31, 32.

³⁾ Max. 6 bar (87 psi).

⁴⁾ Available with option extension length 11 ... 28.

⁵⁾ Available with option extension length 31 ... 48.

⁶⁾ Power supply options 1, 2, 3, 4 not allowed with Approvals options F and H.


Selection and Ordering data	Order code
Further Designs	
Please add "-Z" to Article No. and specify Order code(s).	
Total insertion length: Enter the total insertion length in plain text description, max. 4 000 mm (147.48 inch)	Y01
Stainless steel tag [100 x 45 mm (3.94 x 1.77 inch)]: Measuring-point number/identification (max. 27 characters); specify in plain text	Y14
Signal bulb inserted in M20 cable gland ¹⁾³⁾	A20
Note: G02 must be ordered for solids/liquids interface detection.	
Adjustable sensitivity (by potentiometer) for solids/liquids interface detection ¹⁾²⁾⁴⁾	G02
Operating Instructions	Article No.
Multi-language	7ML19985FT63
Note: the Operating Instructions should be ordered as a separate line on the order.	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Spare Parts	
Replacement Electronics Module (125 Hz) [19 ... 230 V AC, 19 ... 55 V DC, two relay output (DPDT)]	A5E35525363
Replacement Electronics Module (350 Hz) [19 ... 230 V AC, 19 ... 55 V DC, one relay output (SPDT)]	7ML1830-1KM
Sliding sleeve, 2" BSP (ISO 228)	7ML1830-1JM
Sliding sleeve, 2" NPT (ASME B1.20.1)	7ML1830-1JN

¹⁾ Available with Approval option D only.

²⁾ Available with power supply option 1 only.

³⁾ A20 not allowed with power supply options 4 or 5.

⁴⁾ G02 not allowed with process temperature options C or D.

Selection and Ordering data	Article No.	Selection and Ordering data	Order code
SITRANS LVS200, pipe extension Vibrating point level switch for high or low levels of bulk solids Extended using 1" pipe extension (customer supplied) ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5733-  A 0	Further Designs Please add "-Z" to Article No. and specify Order code(s). Total insertion length: Enter the total insertion length in plain text description, max. 3 800 mm (149.61 inch) Stainless steel tag [100 x 45 mm (3.94 x 1.77 inch)]: Measuring-point number/identification (max. 27 characters); specify in plain text Enhanced sensitivity > 5 g/l via electronics and increased insertion length of 25 mm (0.98 inch) ⁵⁾ Enhanced sensitivity < 5 g/l via electronics, increased insertion length of 25 mm (0.98 inch) and increased aluminum fork width ¹⁾⁴⁾⁵⁾ Adjustable sensitivity (by potentiometer) for solids/liquids interface detection ²⁾³⁾⁴⁾ Signal bulb inserted in M20 cable gland ²⁾⁶⁾	Y01 Y14 K05 G01 G02 A20
Power supply 19 ... 230 V AC, 19 ... 55 V DC, one relay output (SPDT) ¹⁾ 19 ... 230 V AC, 19 ... 55 V DC, two relay outputs (DPDT) ¹⁾ 18 ... 50 V DC PNP ¹⁾ 19 ... 230 V AC/DC without contact, 2-wire loop powered ¹⁾ 7 ... 9 V DC (requires NAMUR switch amplifier) NAMUR IEC 60947-5-6, 2-wire ²⁾ 8/16 mA or 4 ... 20 mA; 12.5 ... 35 V DC, 2-wire ³⁾	1 2 3 4 5 6	Operating Instructions Multi-language Note: the Operating Instructions should be ordered as a separate line on the order. All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	Article No. 7ML19985FT63
Process temperature Up to 150 °C (302 °F)	A	Spare Parts Replacement Electronics Module (125 Hz) [19 ... 230 V AC, 19 ... 55 V DC, one relay output (SPDT)] Replacement Electronics Module (125 Hz) [19 ... 230 V AC, 19 ... 55 V DC, two relay output (DPDT)] Replacement Electronics Module (350 Hz) [19 ... 230 V AC, 19 ... 55 V DC, one relay output (SPDT)] NAMUR Isolated switch amplifier Relay output KFD2-SR2-Ex1.W	7ML1830-1KL A5E35525363 7ML1830-1KM A5E35667901
Process connection <u>Threaded</u> R 1½" [(BSPT), EN 10226] 1½" NPT [(Taper), ANSI/ASME B1.20.1] <u>Flanged</u> DN 100 PN 6, EN 1092-1 ⁴⁾ DN 100 PN 16, EN 1092-1 2" ASME 150 lb B16.5 3" ASME 150 lb B16.5 4" ASME 150 lb B16.5 2" Tri-clamp (DN 50) ISO 2852	A B C D E F G K		
Process connection material Stainless steel threads 304 (1.4301), flanges 321 (1.4541), Tri-clamp 304 (1.4301) Stainless steel 316L (1.4404)	1 2		
Extension length Customer supplied 1" pipe extension Length: 300 ... 3 800 mm (11.81 ... 149.61 inch)	1		
Application type Dry bulk solids (125 Hz) Liquids/solids interface (350 Hz)	1 2		
Approvals CSA/FM Dust Ignition Proof, RCM ATEX II 1/2 D, RCM CSA/FM General Purpose, RCM, CE CE, RCM CSA/FM IS Class I, II, III Div. 1, Groups A, B, C, D, E, F, G, FM Class I, Aex ia IIC, CSA Class I, Ex ia IIC, RCM ATEX II 1G and 1/2G Eex ia IIC; ATEX II 1D and 1/2D, RCM IEC-Ex t IIIC Da/Db EAC Ex ta/tb IIIC Da/Db, Ex ta IIIC Da EAC Ex Ga/Gb Ex ia IIC, 0Ex ia IIC Ga; Ex ta/tb IIIC Da/Db, Ex ta IIIC Da	A B C D E F G H J		

¹⁾ Available with Approval options A, B, C, D, G only.

²⁾ Available with Approval options D, F, J and application type 1 only.

³⁾ Available with Approval options B, D, G only.

⁴⁾ Max. 6 bar (87 psi).

¹⁾ Available only with power supply 1 and Approvals C, D, and with Process connection flange C ... G.

²⁾ Available with Approval options D only.

³⁾ Available with Power supply option 1 only and application type 2.

⁴⁾ Not available with option K05.

⁵⁾ Available with Application type 1 only.


⁶⁾ A20 not allowed with Power supply options 4, 5, and 6.


Level Measurement

Point level measurement

Vibrating switches

SITRANS LVS200

Selection and Ordering data	Article No.
SITRANS LVS200, cable extended Vibrating point level switch for high or low level detection of bulk solids materials	7ML5734-  A 0
➔ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Power supply	
19 ... 230 V AC, 19 ... 55 V DC, one relay output (SPDT) ¹⁾	1
19 ... 230 V AC, 19 ... 55 V DC, two relay outputs (DPDT) ¹⁾	2
18 ... 50 V DC PNP ¹⁾	3
19 ... 230 V AC/DC without contact, 2-wire loop powered ¹⁾	4
7 ... 9 V DC (requires NAMUR switch amplifier)	5
NAMUR IEC 60947-5-6, 2-wire ²⁾⁵⁾	6
8/16 mA or 4 ... 20 mA; 12.5 ... 35 V DC, 2-wire ³⁾	6
Process temperature	A
Up to 80 °C (176 °F)	
Process connection	
Threaded	
R 1½" [(BSPT), EN 10226] (1.4301/304)	A
1½" NPT [(Taper), ANSI/ASME B1.20.1] (1.4301/304)	B
Flanged	
DN 100 PN 6, EN 1092-1 (1.4541/321) ⁴⁾	C
DN 100 PN 16, EN 1092-1 (1.4541/321)	D
2" ASME 150 lb B16.5 (1.4541/321)	E
3" ASME 150 lb B16.5 (1.4541/321)	F
4" ASME 150 lb B16.5 (1.4541/321)	G
Extension length	
750 ... 1 000 mm (29.5 ... 39.4 inch) [max. length 20 000 mm (787.4 inch), not with Power supply option 5 (max. 10 000 mm, 393.7 inch)] ⁶⁾	1 0
Add Order code Y01 and plain text: "Insertion length ... mm"	
1 001 ... 2 000 mm (39.41 ... 78.74 inch)	1 1
2 001 ... 3 000 mm (78.78 ... 118.11 inch)	1 2
3 001 ... 4 000 mm (118.15 ... 157.48 inch)	1 3
4 001 ... 5 000 mm (157.52 ... 196.85 inch)	1 4
5 001 ... 6 000 mm (196.89 ... 236.22 inch)	1 5
6 001 ... 7 000 mm (236.26 ... 275.59 inch)	1 6
7 001 ... 8 000 mm (275.63 ... 314.96 inch) ⁵⁾	1 7
8 001 ... 9 000 mm (315 ... 354.33 inch) ⁵⁾	1 8
9 001 ... 10 000 mm (354.37 ... 393.70 inch) ⁵⁾	2 0
10 001 ... 11 000 mm (393.74 ... 433.07 inch) ⁵⁾⁶⁾	2 1
11 001 ... 12 000 mm (433.11 ... 472.44 inch) ⁵⁾⁶⁾	2 2
12 001 ... 13 000 mm (472.48 ... 511.81 inch) ⁵⁾⁶⁾	2 3
13 001 ... 14 000 mm (511.85 ... 551.18 inch) ⁵⁾⁶⁾	2 4
14 001 ... 15 000 mm (551.22 ... 590.55 inch) ⁵⁾⁶⁾	2 5
15 001 ... 16 000 mm (590.59 ... 629.92 inch) ⁵⁾⁶⁾	2 6
16 001 ... 17 000 mm (629.96 ... 669.29 inch) ⁵⁾⁶⁾	2 7
17 001 ... 18 000 mm (669.33 ... 708.66 inch) ⁵⁾⁶⁾	2 8
18 001 ... 19 000 mm (708.70 ... 748.03 inch) ⁵⁾⁶⁾	3 0
19 001 ... 20 000 mm (748.07 ... 787.40 inch) ⁵⁾⁶⁾	3 1
Application type	
Dry bulk solids (125 Hz)	1
Heavier materials and robust applications (350 Hz) ⁷⁾	2

Selection and Ordering data	Article No.
SITRANS LVS200, cable extended Vibrating point level switch for high or low level detection of bulk solids materials	7ML5734-  A 0
Approvals	
CSA/FM Dust Ignition Proof, RCM	A
ATEX II 1/2 D, RCM	B
CSA/FM General Purpose, RCM, CE	C
CE, RCM	D
CSA/FM IS Class I, II, III Div. 1, Groups A, B, C, D, E, F, G, FM Class I, Aex ia IIC, CSA Class I, Ex ia IIC, RCM	E
ATEX II 1G and 1/2G Eex ia IIC; ATEX II 1D and 1/2D, RCM ⁶⁾	F
IEC-Ex t IIIC Da/Db	G
EAC Ex ta/tb IIIC Da/Db, Ex ta IIIC Da	H
EAC Ex Ga/Gb Ex ia IIC, 0Ex ia IIC Ga; Ex ta/tb IIIC Da/Db, Ex ta IIIC Da	J
¹⁾ Available with Approval options A, B, C, D, G only. ²⁾ Available with Approval options D, E, and F only. Not available for application type 2 "Liquids/solids interface". ³⁾ Available with Approval option D only. ⁴⁾ Max. 6 bar (87 psi). ⁵⁾ Not available with Application type option 2. ⁶⁾ Not available with Power supply option 5. ⁷⁾ Cable length is limited to 7 000 mm (275.59 inch). ⁸⁾ Available with Power supply options 1 ... 4, and 6.	

Selection and Ordering data	Order code
Further Designs	
Please add "-Z" to Article No. and specify Order code(s).	
Enter the total insertion length in plain text description, max. 20 000 mm (787.40 inch)	Y01
Stainless steel tag [100 x 45 mm (3.94 x 1.77 inch)]: Measuring-point number/identification (max. 27 characters); specify in plain text	Y14
Enhanced sensitivity > 5 g/l via electronics and increased insertion length of 25 mm (0.98 inch) ⁵⁾	K05
Enhanced sensitivity < 5 g/l via electronics and increased insertion length of 25 mm (0.98 inch) and increased aluminum fork width ¹⁾⁴⁾	G01
Adjustable sensitivity (by potentiometer) for solids/liquids interface detection ²⁾³⁾⁴⁾	G02
Signal bulb inserted in M20 cable gland ²⁾⁶⁾	A20
Operating Instructions	
Multi-language	Article No. 7ML19985FT63
Note: the Operating Instructions should be ordered as a separate line on the order. All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Spare Parts	
Replacement Electronics Module (125 Hz) [19 ... 230 V AC, 19 ... 55 V DC, one relay output (SPDT)]	7ML1830-1KL
Replacement Electronics Module (125 Hz) [19 ... 230 V AC, 19 ... 55 V DC, two relay output (DPDT)]	A5E35525363
Replacement Electronics Module (350 Hz) [19 ... 230 V AC, 19 ... 55 V DC, one relay output (SPDT)]	7ML1830-1KM
NAMUR Isolated switch amplifier Relay output KFD2-SR2-Ex1.W	A5E35667901

¹⁾ Available only with power supply 1 and Approvals C, D, and with process connection flange C ... G.

²⁾ Available with Approval options D only.

³⁾ Available with Power supply option 1 and application type 2 only.

⁴⁾ Not available with option K05.

⁵⁾ Available with Application type 1 only.

⁶⁾ A20 not allowed with Power supply 4, 5, or 6.

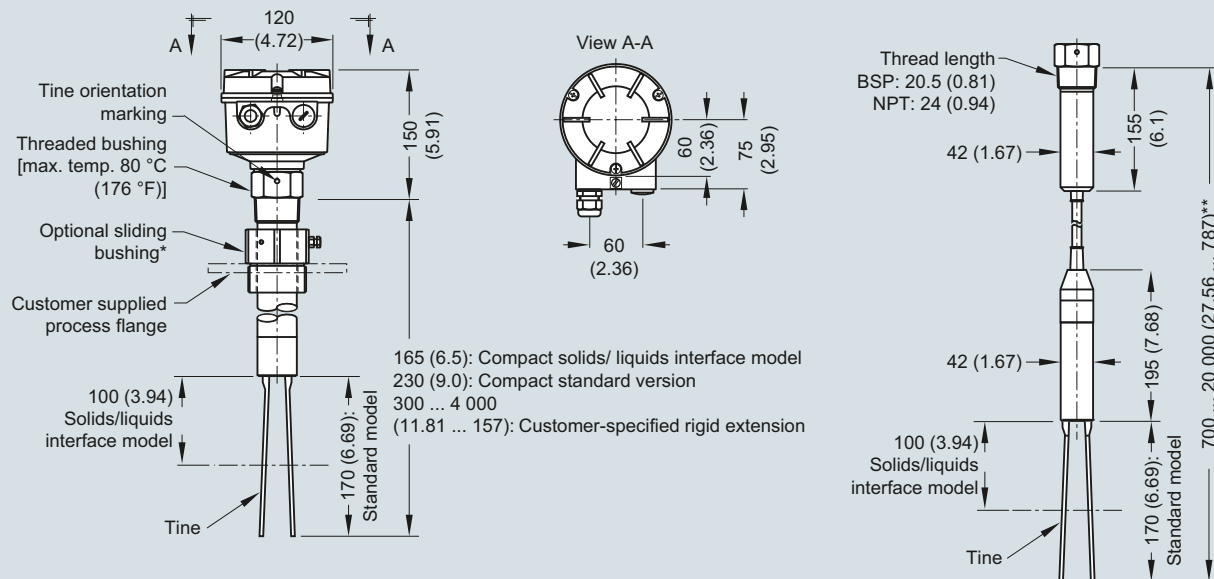
Level Measurement

Point level measurement

Vibrating switches

SITRANS LVS200

Dimensional drawings

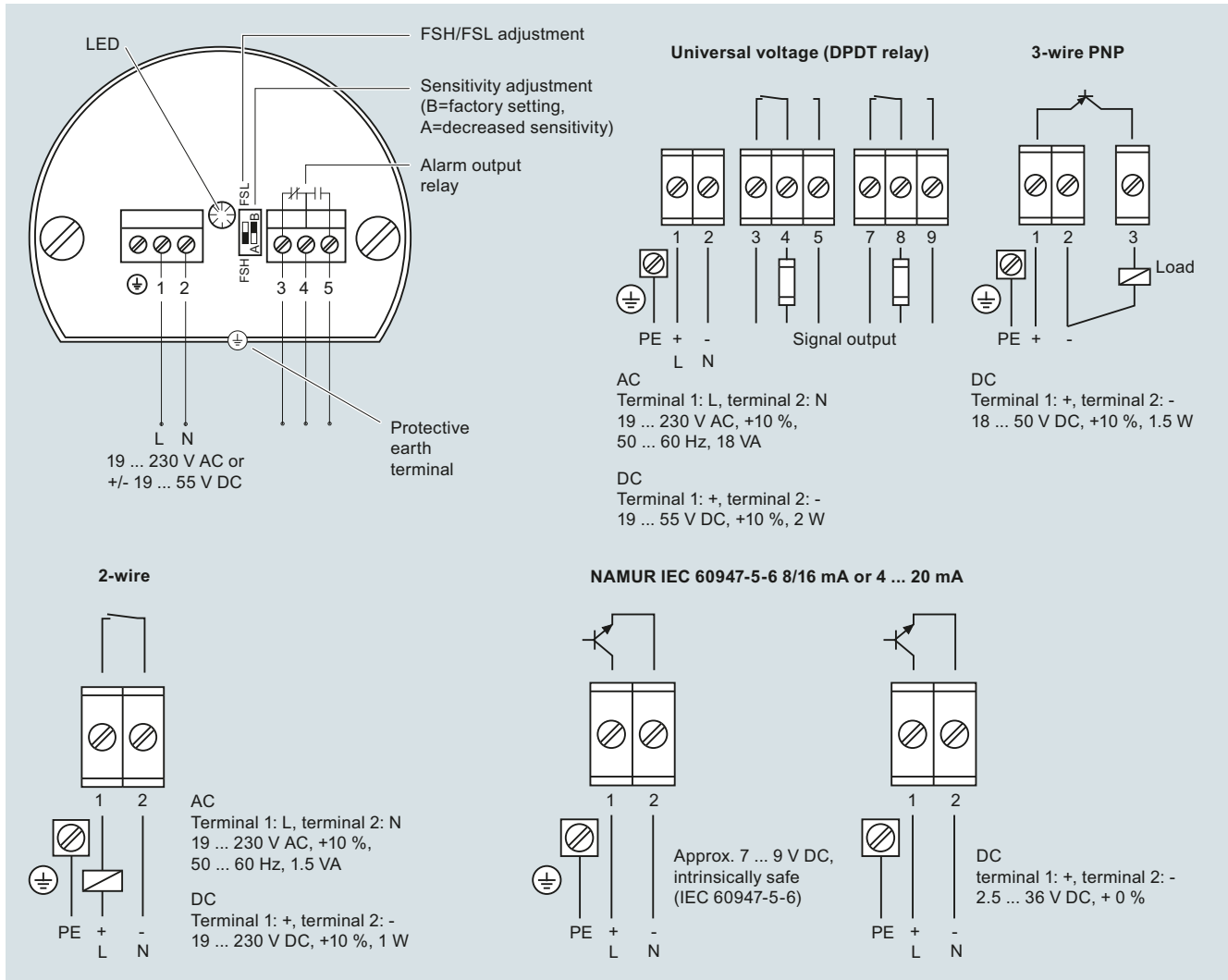


Notes:

- * The clamping screws of the sliding bushing must be tightened to 10 Nm.
- ** Cable version with liquids/solids interface model option length to 7 000 mm (275.59 inch)
Cable version with NAMUR electronics length to 10 000 mm (393.7 inch) tightened to 10 Nm.
See manual for pipe extended version details. (Pipe is customer supplied.)

SITRANS LVS200, dimensions in mm (inch)

Circuit diagrams



SITRANS LVS200 connections

Level Measurement

Point level measurement

Rotation paddle switches

SITRANS LPS200

Overview



SITRANS LPS200 is a rotary paddle switch for point level and material detection in bulk solids.

Benefits

- Proven paddle switch technology for bulk solids
- High integrity mechanical seal
- Universal power supply options available
- Unique friction clutch mechanism prevents damage from falling material
- Rotatable enclosure for convenient wiring
- Optional paddles for use with low density materials
- Small paddle makes for simple installation through existing process connection
- High temperature model and optional extension kit available
- Optional fail-safe configuration detects loss of rotation
- Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511

Application

The paddle switch technology detects full, empty, or demand conditions on materials such as grain, feed, cement, plastic granulate, and wood chips. The paddle switch can handle bulk densities as low as 15.06 g/l (0.94 lb/ft³) with the optional rectangular vane or 100 g/l (6.25 lb/ft³) with the standard measuring vane.

A low revolution geared motor with slip clutch drives a rotating measuring vane which senses the presence of material at the mounted level of the LPS200. As material comes into contact with the rotating paddle, rotation stops, which changes the microswitch state. When the paddle is no longer covered by material, rotation resumes and the relay reverts to its normal condition.

The LPS200 has a rugged design for use in harsh conditions in the solids industry. The sensitivity of the paddle can be adjusted for varying material properties like buildup on the vane.

The LPS200 comes in a variety of configurations including compact, extended and cable extension. It is equipped with a standard vane which is effective in most applications, but can be configured with a hinged or rectangular vane for increased sensitivity for light materials.

- Key Applications: bulk solids such as grain, feed, cement, plastic granulate, wood chips

Technical specifications

Mode of operation	
Measuring principle	Rotating point level switch
Input	
Measured variable	High and low and demand
Output	
Output signal	Microswitch 5 A at 250 V AC, non-inductive Microswitch SPDT contact 4 A at 30 V DC, non-inductive Standard (1 rpm model): approx. 1.3 seconds Optional process applications (5 rpm model): approx. 0.26 seconds
• Alarm output	
• Pickup delay	
Sensitivity	
Adjustable via reset force of spring or geometry of measuring vane	
Rated operating conditions	
Installation conditions	Indoor/outdoor
• Location	
Ambient conditions	
• Ambient temperature	-25 ... +60 °C (-13 ... +140 °F)
• Installation category	III
• Pollution degree	2
Medium conditions	Bulk solids
• Temperature	-25 ... +80 °C (-13 ... +176 °F) -25 ... +600 °C (-13 ... +1 112 °F) Higher temperature version is available. Consult a local sales person for details. For more information, please visit http://www.automation.siemens.com/aspa_app .
- Standard	
- Optional	
• Pressure (vessel)	Max. 0.5 bar g (7.25 psi g) Max. 10 bar g (145 psi g)
- Standard	
- Optional	
• Minimum material density	Can detect down to 100 g/l (6.25 lb/ft³)
- Standard measuring vane	
- Optional measuring vane	Can detect down to 15.06 g/l (0.94 lb/ft³)
Design	
Material	Epoxy coated aluminum Stainless steel or aluminum
• Enclosure	
• Process connection, measuring shaft and vane	
Process connection	Thread NPT, BSP, and flange options
Degree of protection	IP65/Type 4/NEMA 4
Conduit entry	2 x M20 x 1.5 or 2 x ½" NPT
Power supply	
AC or DC versions	115 V AC, ± 15 %, 50 ... 60 Hz, 4 VA or 230 V AC, ± 15 %, 50 Hz, 6 VA, <u>or</u> 48 V AC, or 24 V AC, <u>or</u> 24 V DC, ± 15 %, 2.5 W
Universal voltage (DPDT replay)	24 V DC ± 15 % 50 ... 60 Hz, 22 ... 230 V, ± 10 %, max. 10 VA
Certificates and approvals	
• CSA/FM General Purpose • CE • CSA/FM Dust Ignition Proof • ATEX II 1/2 D • RCM • IECex	

Level Measurement

Point level measurement

Rotation paddle switches

SITRANS LPS200

Selection and Ordering data		Article No.	Ord. code
SITRANS LPS200, compact Rotary paddle switch for level and material detection in bulk solids. Compact design for side or top mounted applications.		7ML5725-	
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			
Process temperature			
Up to 80 °C (176 °F)	1		
Up to 150 °C (302 °F)	2		
Up to 250 °C (482 °F)	3		
Up to 600 °C (1 112 °F) ¹⁾²⁾	4		
Up to 80 °C (176 °F) basic version aluminum ¹⁾³⁾	5		
Up to 80 °C (176 °F) basic version stainless steel ¹⁾⁴⁾	6		
Power supply			
230 V AC, 1 rev/min.	A		
230 V AC, 5 rev/min.	C		
115 V AC, 1 rev/min.	E		
115 V AC, 5 rev/min.	G		
48 V AC, 1 rev/min.	J		
24 V AC, 1 rev/min.	K		
24 V DC, 1 rev/min.	L		
24 V DC, 5 rev/min.	N		
48 V AC, 5 rev/min.	Z	J 1 B	
24 V AC, 5 rev/min.	Z	J 1 E	
Universal Voltage, 1 rev/min.	Z	J 2 A	
Universal Voltage, 1 rev/min., fail-safe	Z	J 2 B	
Universal Voltage, 5 rev/min.	Z	J 2 C	
Universal Voltage, 5 rev/min. fail-safe	Z	J 2 D	
Process connection			
Threaded			
G 1¼" [(BSPP), EN ISO 228-1]	A		
G 1" [(BSPP), EN ISO 228-1]	B		
G 1½" [(BSPP), EN ISO 228-1]	C		
1" NPT [(Taper), ANSI/ASME B1.20.1]	D		
1¼" NPT [(Taper), ANSI/ASME B1.20.1]	E		
1½" NPT [(Taper), ANSI/ASME B1.20.1]	F		
Flanged			
DN 32 PN 6, EN 1092-1 ⁵⁾	G		
DN 100 PN 6, EN 1092-1 ⁵⁾	H		
DN 100 PN 16, EN 1092-1	J		
2" ASME 150 lb B16.5	K		
3" ASME 150 lb B16.5	L		
4" ASME 150 lb B16.5	M		
2" Tri-clamp (DN 50) ISO 2852 ⁶⁾	N		
Selection and Ordering data		Article No.	Ord. code
SITRANS LPS200, compact Rotary paddle switch for level and material detection in bulk solids. Compact design for side or top mounted applications.		7ML5725-	
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			
Process pressure			
Up to 0.5 bar (7.25 psi)	1		
Up to 5 bar (72.5 psi)	2		
Up to 10 bar (145 psi)	3		
Process connection material			
Aluminum ⁷⁾	1		
Stainless steel, threads 303 (1.4305), flanges 321 (1.4541), Tri-clamp 304 (1.4301)	2		
Stainless steel 316L (1.4404) ⁸⁾	3		
Extension length			
100 mm (3.94 inch) ⁹⁾	1		
150 mm (5.91 inch)	2		
200 mm (7.87 inch)	3		
250 mm (9.84 inch)	4		
300 mm (11.81 inch)	5		
Measuring vane			
Boot shaped, 35 x 106 mm (1.38 x 4.17 inch) ¹⁰⁾	A		
Hinged vane, 65 x 200 mm (2.56 x 7.87 inch) ¹⁰⁾¹¹⁾	B		
Boot shaped, 28 x 98 mm (1.10 x 3.86 inch)	C		
Rectangular, 50 x 150 mm (1.97 x 5.91 inch) ¹²⁾	D		
Rectangular, 50 x 250 mm (1.97 x 9.84 inch) ¹²⁾	E		
Rectangular, 98 x 150 mm (3.86 x 5.91 inch) ¹¹⁾¹²⁾	F		
Rectangular, 98 x 250 mm (3.86 x 9.84 inch) ¹¹⁾¹²⁾	G		
Rectangular, 50 x 98 mm (1.97 x 3.86 inch) ¹²⁾	H		
Approvals			
CSA/FM Dust Ignition Proof, RCM	A		
ATEX II 1/2 D, RCM	B		
CSA/FM General Purpose, RCM, CE	C		
CE, RCM	D		
IEC Ex ta/tb IIIC	E		
EAC Ex ta/tb IIIC Da/Db	F		

Level Measurement

Point level measurement

Rotation paddle switches

SITRANS LPS200

Selection and Ordering data

Order code

Further Designs

Please add **"-Z"** to Article No. and specify Order code(s).

Heating of enclosure¹³⁾¹⁴⁾

A35

Signal bulb inserted in M20 cable gland¹³⁾

A20

Food grade materials (in contact with process), according to 1935/2004/EC, with FDA conform shaft sealing¹⁵⁾

K01

Stainless steel tag [100 x 45 mm (3.94 x 1.77 inch)]: Measuring-point number/identification (max. 27 characters); specify in plain text

Y14

Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511.¹⁷⁾¹⁸⁾

C20

Operating Instructions

Article No.

Multi-language

A5E34210883

Note: The Operating Instructions should be ordered as a separate line on the order.

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Spare Parts

Replacement vane, boot shape, 35 x 106 mm (1.38 x 4.17 inch)

7ML1830-1KH

Hinged vane, 98 x 200 mm (3.86 x 7.87 inch)

7ML1830-1KJ

Rigid extension kit

(Includes spring coupling, rigid tube extension, and required pins)

Extension: 500, 400, 300 mm (19.7, 15.8, 11.8 inch)¹⁶⁾

7ML5711-0AA

Extension: 1 000, 900, 800, 700, 600 mm (39.4, 35.4, 31.5, 27.6, 23.6 inch)¹⁶⁾

7ML5711-1AA

Extension: 1 500, 1 400, 1 300, 1 200, 1 100 mm (59.1, 55.1, 51.2, 47.2, 43.3 inch)¹⁶⁾

7ML5711-2AA

Rope extension kit, 2 m (6.56 ft)

7ML1830-1KK

Selection and Ordering data

Article No.

SITRANS LPS200, compact for up to 80 °C (176 °F), aluminum, with power supply E, process connection E, process pressure 1, process connection material 1, extension length 2, measuring vane A, and approval C

7ML5725-5EE11-2AC0

SITRANS LPS200, compact for up to 80 °C (176 °F), stainless steel, with power supply Z (J2A), process connection C, process pressure 1, process connection material 2, extension length 2, measuring vane A, and approval B

7ML5725-6ZC12-2AB0 J2A

SITRANS LPS200, compact for up to 80 °C (176 °F), stainless steel, with power supply Z (J2A), process connection E, process pressure 1, process connection material 2, extension length 2, measuring vane A, and approval A

7ML5725-6ZE12-2AA0 J2A

- 1) Available with approval options C and D only, up to 0.5 bar.
- 2) Not available with process connections A, B, D, E, and G.
- 3) Only available with the following configurations 7ML5725-5AC11-2AD0 or 7ML5725-5EE11-2AC0.
- 4) Only available with the following configurations 7ML5725-6ZC12-2AB0 J2A or 7ML5725-6ZE12-2AA0 J2A.
- 5) Available with process pressure options 1 and 2 only.
- 6) Available with process temperature option 1 only.
- 7) Available with process connection options A ... F only, process pressure option 1 and process temperature options 1 and 5 only.
- 8) Available with process connection options C, F, H ... N and Measuring vane options A and B.
- 9) Available with measuring vane options A, C, D, E, H only.
- 10) Add 16 mm (0.63 inch) to extension length.
- 11) Available with extension lengths 2, 3, 4, 5.
- 12) Available with process connection options H ... M only.
- 13) Available with approval option D only.
- 14) Available with power supply options A, C, E, G, J, K, L, N, J1B, J1D, J1E, J2A, J2C only.
- 15) Available up to 250 °C (482 °F). This option does not automatically implement a food conform design.
- 16) Pendulum shaft 500 mm/1 000 mm/1 500 mm should be selected with 150 mm standard length 2 and vane A (35 x 106) to get to the desired lengths.
- 17) Available with Power supply options J2A and J2C only.
- 18) Available with Approval options A, B, C, D, and E only. Approvals A and C with FM only.

Selection and Ordering data		Article No.	Ord. code	Selection and Ordering data		Article No.	Ord. code
SITRANS LPS200, shaft protected		7ML5726-		SITRANS LPS200, shaft protected		7ML5726-	
Rotary paddle switch for level and material detection in bulk solids; ideal for heavy, sticky, or high impact applications. Designed with added protection tube for enhanced shaft protection and protection against buildup on shaft (sidewall buildup).				Rotary paddle switch for level and material detection in bulk solids; ideal for heavy, sticky, or high impact applications. Designed with added protection tube for enhanced shaft protection and protection against buildup on shaft (sidewall buildup).			
➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.							
Process temperature				Process pressure			
Up to 80 °C (176 °F)	1			Up to 0.5 bar (7.25 psi)	1		
Up to 150 °C (302 °F)	2			Up to 5 bar (72.5 psi)	2		
Up to 250 °C (482 °F)	3			Up to 10 bar (145 psi)	3		
Up to 600 °C (1 112 °F) ¹⁾²⁾	4			Process connection material			
Up to 80 °C (176 °F) basic version ³⁾	5			Aluminum ⁶⁾	1		
Power supply				Stainless steel, threads 303 (1.4305), flanges 321 (1.4541), Tri-clamp 304 (1.4301) ¹⁸⁾	2		
230 V AC, 1 rev/min.	A			Stainless steel 316L (1.4404) ⁷⁾	3		
230 V AC, 5 rev/min.	C			Extension length			
115 V AC, 1 rev/min.	E			150 mm (5.91 inch) ⁸⁾	1		
115 V AC, 5 rev/min.	G			200 mm (7.87 inch)	2		
48 V AC, 1 rev/min.	J			250 mm (9.84 inch)	3		
24 V AC, 1 rev/min.	K			300 mm (11.81 inch)	4		
24 V DC, 1 rev/min.	L			Extension material (protection tube)			
24 V DC, 5 rev/min.	N			Aluminum ⁹⁾	A		
48 V AC, 5 rev/min.	Z	J 1 B		Stainless steel 303 (1.4305)	B		
24 V AC, 5 rev/min.	Z	J 1 E		Stainless steel 316L (1.4404) ¹⁰⁾	C		
Universal Voltage, 1 rev/min.	Z	J 2 A		Measuring vane			
Universal Voltage, 1 rev/min., fail-safe	Z	J 2 B		Boot shaped, 35 x 106 mm (1.38 x 4.17 inch) ¹¹⁾	A		
Universal Voltage, 5 rev/min.	Z	J 2 C		Hinged vane, 65 x 200 mm (2.56 x 7.87 inch) ¹¹⁾¹²⁾	B		
Universal Voltage, 5 rev/min., fail-safe	Z	J 2 D		Rectangular, 50 x 150 mm (1.97 x 5.91 inch) ¹³⁾	D		
Process connection				Rectangular, 50 x 250 mm (1.97 x 9.84 inch) ¹³⁾	E		
<u>Threaded</u>				Rectangular, 98 x 150 mm (3.86 x 5.91 inch) ¹²⁾¹³⁾	F		
G 1¼" [(BSPP), EN ISO 228-1]	A			Rectangular, 98 x 250 mm (3.86 x 9.84 inch) ¹²⁾¹³⁾	G		
G 1½" [(BSPP), EN ISO 228-1]	B			Rectangular, 50 x 98 mm (1.97 x 3.86 inch) ¹³⁾	H		
1¼" NPT [(Taper), ANSI/ASME B1.20.1]	C			Approvals			
1½" NPT [(Taper), ANSI/ASME B1.20.1]	D			CSA/FM Dust Ignition Proof, RCM	1		
<u>Flanged</u>				ATEX II 1/2 D, RCM	2		
DN 32 PN 6, EN 1092-1 ⁴⁾	E			CSA/FM General Purpose, RCM, CE	3		
DN 100 PN 6, EN 1092-1 ⁴⁾	F			CE, RCM	4		
DN 100 PN 16, EN 1092-1	G			IEC Ex ta/tb IIIC	5		
2" ASME 150 lb B16.5	H			EAC Ex ta/tb IIIC Da/Db	6		
3" ASME 150 lb B16.5	J						
4" ASME 150 lb B16.5	K						
2" Tri-clamp (DN 50) ISO 2852 ⁵⁾	L						

Level Measurement

Point level measurement

Rotation paddle switches

SITRANS LPS200

Selection and Ordering data

Order code

Further Designs

Please add **"-Z"** to Article No. and specify Order code(s).

Heating of enclosure¹⁴⁾¹⁵⁾

A35

Signal bulb inserted in M20 cable gland¹⁴⁾

A20

Food grade materials (in contact with process), according to 1935/2004/EC, with FDA conform shaft sealing¹⁶⁾

K01

Stainless steel tag [100 x 45 mm (3.94 x 1.77 inch)]: Measuring-point number/identification (max. 27 characters); specify in plain text

Y14

Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511.¹⁷⁾¹⁹⁾

C20

Operating Instructions

Multi-language

Article No.

A5E34210883

Note: The Operating Instructions should be ordered as a separate line on the order.

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Spare Parts

Replacement vane, boot shape, 35 x 106 mm (1.38 x 4.17 inch)

7ML1830-1KH

Hinged vane, 98 x 200 mm (3.86 x 7.87 inch)

7ML1830-1KJ

SITRANS LPS200, extended for up to 80 °C (176 °F), power supply Z (J2A), process connection B, process pressure 1, process connection material 2, extension length 2, extension material B, measuring vane A, and approval 2

7ML5726-5ZB12-2BA2 J2A

SITRANS LPS200, extended for up to 80 °C (176 °F), power supply Z (J2A), process connection C, process pressure 1, process connection material 2, extension length 2, extension material B, measuring vane A, and approval 1

7ML5726-5ZC12-2BA1 J2A

- 3) Only available with the following configurations 7ML5726-5ZB12-2BA2 J2A or 7ML5726-5ZC12-2BA1 J2A.
- 4) Available with process pressure options 1 and 2 only.
- 5) Available with process temperature option 1 only.
- 6) Available with process connection options A ... E only, available with process pressure option 1 only, and process temperature option 1 only.
- 7) Extension and vane will also change to 316L, only for process connection options B, D, F ... L and vane A.
- 8) Available with measuring vane options A, D, E, H only.
- 9) Available with process pressure option 1 and process temperature option 1 only.
- 10) Available with process connection options B, D, F ... L and vane A.
- 11) Add 16 mm (0.63 inch) to extension length.
- 12) Available with extension length options 2 ... 4 only.
- 13) Available with process connection options F, G, H, J, K only.
- 14) Available with approval option 4 only.
- 15) Available with power supply options A, C, E, G, J, K, L, N, J1B, J1D, J1E, J2A, J2C only.
- 16) Available up to 250 °C (482 °F). This option does not automatically implement a food conform design.
- 17) Available with Power supply options J2A and J2C only.
- 18) Available with Extension material Stainless steel, threads 303 option B only.
- 19) Available with Approval options 1, 2, 3, 4, and 5 only. Approvals 1 and 3 with FM only.

¹⁾ Available with approval options 3 and 4 only and up to max 0.5 bar.

²⁾ Not available with process connection options A, C, E.

Selection and Ordering data		Article No.	Ord. code	Selection and Ordering data		Article No.	Ord. code
SITRANS LPS200, cable extension Rotary paddle switch for level and material detection in bulk solids. Cable extension for increased length in top-mounted applications		7ML5727-		SITRANS LPS200, cable extension Rotary paddle switch for level and material detection in bulk solids. Cable extension for increased length in top-mounted applications		7ML5727-	
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.							
Process temperature Up to 80 °C (176 °F)		1		Process pressure Up to 0.5 bar (7.25 psi) Up to 5 bar (72.5 psi) Up to 10 bar (145 psi)		1 2 3	
Up to 150 °C (302 °F)		2		Process connection material Aluminum ⁵⁾ Stainless steel, threads 303 (1.4305), flanges 321 (1.4541)		1 2	
Up to 250 °C (482 °F)		3		Cable extension length Standard cable length, 2 000 mm (78.74 inch) Add Order code Y01 and plain text: "Insertion length ... mm"		0	
Up to 600 °C (1 112 °F) ¹⁾²⁾		4		500 ... 1 000 mm (19.69 ... 39.37 inch)		1	
Up to 80 °C (176 °F) basic version ³⁾		5		Cable length 1 001 ... 2 000 mm (39.41 ... 78.74 inch)		2	
Power supply 230 V AC, 1 rev/min.		A		Cable length 2 001 ... 3 000 mm (78.78 ... 118.11 inch)		3	
230 V AC, 5 rev/min.		C		Cable length 3 001 ... 4 000 mm (118.15 ... 157.48 inch)		4	
115 V AC, 1 rev/min.		E		Cable length 4 001 ... 5 000 mm (157.52 ... 196.85 inch)		5	
115 V AC, 5 rev/min.		G		Cable length 5 001 ... 6 000 mm (196.89 ... 236.22 inch)		6	
48 V AC, 1 rev/min.		J		Cable length 6 001 ... 7 000 mm (236.26 ... 275.59 inch)		7	
24 V AC, 1 rev/min.		K		Cable length 7 001 ... 10 000 mm (275.63 ... 393.70 inch)		8	
24 V DC, 1 rev/min.		L		Without extension ¹²⁾		9	
24 V DC, 5 rev/min.		N		Measuring vane Boot shaped, 35 x 106 mm (1.38 x 4.17 inch) ⁶⁾		N 1 A	
48 V AC, 5 rev/min.		Z		Hinged vane, 65 x 200 mm (2.56 x 7.87 inch) ⁶⁾		A	
24 V AC, 5 rev/min.		Z		Boot shaped, 28 x 98 mm (1.10 x 3.86 inch) ⁷⁾		B	
Universal Voltage, 1 rev/min.		Z		Rectangular, 50 x 150 mm (1.97 x 5.91 inch) ⁷⁾		C	
Universal Voltage, 1 rev/min., fail-safe		Z		Rectangular, 50 x 250 mm (1.97 x 9.84 inch) ⁷⁾		D	
Universal Voltage, 5 rev/min.		Z		Rectangular, 98 x 150 mm (3.86 x 5.91 inch) ⁷⁾		E	
Universal Voltage, 5 rev/min., fail-safe		Z		Rectangular, 50 x 98 mm (1.97 x 3.86 inch) ⁷⁾		F	
Process connection Threaded G 1¼" [(BSPP), EN ISO 228-1]		A		Approvals CSA/FM Dust Ignition Proof, RCM ATEX II 1/2 D, RCM CSA/FM General Purpose, RCM, CE CE, RCM IEC Ex ta/tb IIIC EAC Ex ta/tb IIIC Da/Db		A B C D E F	
G 1½" [(BSPP), EN ISO 228-1]		B					
1¼" NPT [(Taper), ANSI/ASME B1.20.1]		C					
1½" NPT [(Taper), ANSI/ASME B1.20.1]		D					
<u>Flanged</u> DN 32 PN 6, EN 1092-1 ⁴⁾		E					
DN 100 PN 6, EN 1092-1 ⁴⁾		F					
DN 100 PN 16, EN 1092-1		G					
2" ASME 150 lb B16.5		H					
3" ASME 150 lb B16.5		J					
4" ASME 150 lb B16.5		K					

Level Measurement

Point level measurement

Rotation paddle switches

SITRANS LPS200

Selection and Ordering data	Order code
Further Designs	
Please add "-Z" to Article No. and specify Order code(s).	
Total insertion length: Enter the total insertion length in plain text description, max. 10 000 mm (393.70 inch)	Y01
Stainless steel tag [100 x 45 mm (3.94 x 1.77 inch)]: Measuring-point number/identification (max. 27 characters); specify in plain text	Y14
Reinforced cable (max. 28 kN pulling force) ⁸⁾	P01
Heating of enclosure ⁹⁾¹⁰⁾	A35
Signal bulb inserted in M20 cable gland ⁹⁾	A20
Food grade materials (in contact with process), according to 1935/2004/EC, with FDA conform shaft sealing ¹¹⁾	K01
Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511. ¹³⁾¹⁴⁾	C20
Operating Instructions	
Multi-language	Article No. A5E34210883
Note: The Operating Instructions should be ordered as a separate line on the order. All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Spare Parts	
Replacement vane, boot shape, 35 x 106 mm (1.38 x 4.17 inch)	7ML1830-1KH
Hinged vane, 98 x 200 mm (3.86 x 7.87 inch)	7ML1830-1KJ
SITRANS LPS200, cable extension for up to 80 °C (176 °F), power supply Z (J2A), process connection B, process pressure 1, process connection material 2, extension length 0, measuring vane A, and approval B	7ML5727-5ZB12-0AB0 J2A
SITRANS LPS200, cable extension for up to 80 °C (176 °F), power supply Z (J2A), process connection C, process pressure 1, process connection material 2, extension length 0, measuring vane A, and approval A	7ML5727-5ZC12-0AA0 J2A

¹⁾ Available with approval options C and D up to max. 0.5 bar

²⁾ Not available with process connections A, C, E

³⁾ Only available with the following configurations
7ML5727-5ZC12-0AA0 J2A or 7ML5727-5ZB12-0AB0 J2A

⁴⁾ Available with process pressure options 1 and 2 only

⁵⁾ Available with process connections A ... E only, process pressure option 1 only and process temperature options 1 and 5 only

⁶⁾ Add 16 mm (0.63 inch) to extension length

⁷⁾ Available with process connections F ... K only

⁸⁾ Available only for process temperature up to 80 °C (176 °F) and process connection material 2

⁹⁾ Available with approval option D

¹⁰⁾ Available with power supply options A, C, E, G, J, K, L, N, J1B, J1D, J1E, J2A, J2C only

¹¹⁾ Available up to 250 °C (482 °F). This option does not automatically implement a food conform design (food conform gaps and radius)

¹²⁾ Not available with P01 and available with Approval D, mounting kit for rope extension included

¹³⁾ Available with Power supply options J2A and J2C only

¹⁴⁾ Available with Approval options A, B, C, D, and E only. Approvals A and C with FM only.

Level Measurement

Point level measurement

Rotation paddle switches

SITRANS LPS200

Selection and Ordering data		Article No.	Ord. code	Selection and Ordering data	Order code
SITRANS LPS200, angled extension		7ML5728-		Further Designs	
Rotary paddle switch with robust design for level and material detection in bulk solids; ideal for heavy or sticky applications. Angled extension is designed to avoid falling material and rotates horizontally in side mount applications to continue working even with heavy buildup.				Please add "-Z" to Article No. and specify Order code(s).	
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.				Heating of enclosure ²⁾³⁾	A35
Process temperature				Signal bulb inserted in M20 cable gland ²⁾	A20
Up to 80 °C (176 °F)		1		Food grade materials (in contact with process), according to 1935/2004/EC, with FDA conform shaft sealing ⁴⁾	K01
Up to 150 °C (302 °F)		2		Stainless steel tag [100 x 45 mm (3.94 x 1.77 inch)]: Measuring-point number/identification (max. 27 characters); specify in plain text	Y14
Up to 250 °C (482 °F)		3		Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511. ⁵⁾⁶⁾	C20
Power supply				Operating Instructions	Article No.
230 V AC, 1 rev/min.		A		Multi-language	A5E34210883
230 V AC, 5 rev/min.		C		Note: The Operating Instructions should be ordered as a separate line on the order.	
115 V AC, 1 rev/min.		E		All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
115 V AC, 5 rev/min.		G		Spare Parts	
48 V AC, 1 rev/min.		J		Replacement vane, boot shape, 35 x 106 mm (1.38 x 4.17 inch)	7ML1830-1KH
24 V AC, 1 rev/min.		K		Hinged vane, 98 x 200 mm (3.86 x 7.87 inch)	7ML1830-1KJ
24 V DC, 1 rev/min.		L			
24 V DC, 5 rev/min.		N			
48 V AC, 5 rev/min.		Z	J1B		
24 V AC, 5 rev/min.		Z	J1E		
Universal Voltage, 1 rev/min.		Z	J2A		
Universal Voltage, 1 rev/min., fail-safe		Z	J2B		
Universal Voltage, 5 rev/min.		Z	J2C		
Universal Voltage, 5 rev/min., fail-safe		Z	J2D		
Process connection					
Flanged					
DN 100 PN 6, EN 1092-1 ¹⁾		A			
DN 100 PN 16, EN 1092-1		B			
4" ASME 150 lb B16.5		C			
Process pressure					
Up to 0.5 bar (7.25 psi)		1			
Up to 5 bar (72.5 psi)		2			
Up to 10 bar (145 psi)		3			
Process connection material					
Stainless steel 303/321 (1.4305/1.4541)		1			
Extension length					
125 mm (4.92 inch)		1			
150 mm (5.91 inch)		2			
200 mm (7.87 inch)		3			
250 mm (9.84 inch)		4			
300 mm (11.81 inch)		5			
Measuring vane					
Rectangular vane, 50 x 98 mm (1.97 x 3.86 inch)		A			
Rectangular vane, 50 x 150 mm (1.97 x 5.91 inch)		B			
Rectangular vane, 50 x 250 mm (1.97 x 9.84 inch)		C			
Rectangular vane, 98 x 150 mm (3.86 x 5.91 inch)		D			
Rectangular vane, 98 x 250 mm (3.86 x 9.84 inch)		E			
Hinged vane, 65 x 200 mm (2.56 x 7.87 inch)		F			
Approvals					
CSA/FM Dust Ignition Proof, RCM		A			
ATEX II 1/2 D, RCM		B			
CSA/FM General Purpose, RCM, CE		C			
CE, RCM		D			
IEC Ex ta/tb IIIC		E			
EAC Ex ta/tb IIIC Da/Db		F			

Level Measurement

Point level measurement

Rotation paddle switches

SITRANS LPS200

Selection and Ordering data

Article No. Ord. code

SITRANS LPS200, rigid extension

Rotary paddle switch for top mount point level and material detection in bulk solids

7ML5730-

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Process temperature

Up to 80 °C (176 °F)

1

Up to 150 °C (302 °F)

2

Up to 250 °C (482 °F)

3

Up to 600 °C (1 112 °F)¹⁾²⁾

4

Power supply

230 V AC, 1 rev/min.

A

230 V AC, 5 rev/min.

C

115 V AC, 1 rev/min.

E

115 V AC, 5 rev/min.

G

48 V AC, 1 rev/min.

J

24 V AC, 1 rev/min.

K

24 V DC, 1 rev/min.

L

24 V DC, 5 rev/min.

N

48 V AC, 5 rev/min.

Z

J 1 B

24 V AC, 5 rev/min.

Z

J 1 E

Universal Voltage, 1 rev/min.

Z

J 2 A

Universal Voltage, 1 rev/min., fail-safe

Z

J 2 B

Universal Voltage, 5 rev/min.

Z

J 2 C

Universal Voltage, 5 rev/min., fail-safe

Z

J 2 D

Process connection

Threaded

G 1¼" [(BSPP), EN ISO 228-1]

A

G 1½" [(BSPP), EN ISO 228-1]

B

1¼" NPT [(Taper), ANSI/ASME B1.20.1]

C

1½" NPT [(Taper), ANSI/ASME B1.20.1]

D

Flanged

DN 32 PN 6, EN 1092-1³⁾

E

DN 100 PN 6, EN 1092-1³⁾

F

DN 100 PN 16, EN 1092-1

G

2" ASME 150 lb B16.5

H

3" ASME 150 lb B16.5

J

4" ASME 150 lb B16.5

K

2" Tri-clamp 2" (DN 50) ISO 2852⁴⁾

L

Selection and Ordering data

Article No. Ord. code

SITRANS LPS200, rigid extension

Rotary paddle switch for top mount point level and material detection in bulk solids

7ML5730-

Process pressure

Up to 0.5 bar (7.25 psi)

1

Up to 5 bar (72.5 psi)

2

Up to 10 bar (145 psi)

3

Process connection material

Aluminum⁵⁾

1

Stainless steel, threads 303 (1.4305),

2

flanges 321 (1.4541), Tri-clamp 304 (1.4301)

Stainless steel 316L (1.4404)⁶⁾

3

Extension material (protection tube)

Aluminum⁷⁾⁸⁾

0

Stainless steel 303 (1.4305)⁹⁾

1

Stainless steel 316L (1.4404)¹⁰⁾¹¹⁾²²⁾

2

Extension length

Aluminum

250 ... 500 mm (9.84 ... 19.69 inch)

A

501 ... 750 mm (19.72 ... 29.53 inch)

B

751 ... 1 000 mm (29.57 ... 39.37 inch)

C

1 001 ... 1 250 mm (39.41 ... 42.21 inch)

D

1 251 ... 1 500 mm (49.25 ... 59.06 inch)

E

1 501 ... 1 750 mm (59.09 ... 68.90 inch)

F

1 751 ... 2 000 mm (68.94 ... 78.74 inch)

G

2 001 ... 2 250 mm (78.78 ... 88.58 inch)

H

2 251 ... 2 500 mm (88.62 ... 98.43 inch)

J

2 501 ... 2 750 mm (98.46 ... 108.27 inch)

K

2 751 ... 3 000 mm (108.31 ... 118.11 inch)

L

3 001 ... 3 250 mm (118.15 ... 127.95 inch)

M

3 251 ... 3 500 mm (127.99 ... 137.80 inch)

N

3 501 ... 3 750 mm (137.83 ... 147.64 inch)

P

3 751 ... 4 000 mm (147.67 ... 157.48 inch)

Q

Stainless steel 303 (1.4305)

250 ... 500 mm (9.84 ... 19.69 inch)

R

501 ... 750 mm (19.72 ... 29.53 inch)

S

751 ... 1 000 mm (29.57 ... 39.37 inch)

T

1 001 ... 1 500 mm (39.41 ... 59.05 inch)

U

1 501 ... 2 000 mm (59.09 ... 78.74 inch)

V

2 001 ... 2 500 mm (78.78 ... 98.42 inch)

W

2 501 ... 3 000 mm (98.46 ... 118.11 inch)

X

3 001 ... 4 000 mm (118.15 ... 157.48 inch)

Y

Stainless steel 316L (1.4404)

250 ... 500 mm (9.84 ... 19.69 inch)

Z

501 ... 750 mm (19.72 ... 29.53 inch)

Z

751 ... 1 000 mm (29.57 ... 39.37 inch)

Z

1 001 ... 1 500 mm (39.41 ... 59.05 inch)

Z

1 501 ... 2 000 mm (59.09 ... 78.74 inch)

Z

2 001 ... 2 500 mm (78.78 ... 98.42 inch)

Z

2 501 ... 3 000 mm (98.46 ... 118.11 inch)

Z

3 001 ... 4 000 mm (118.5 ... 157.48 inch)

Z

P 1 A

P 1 B

P 1 C

P 1 D

P 1 E

P 1 F

P 1 G

P 1 H

Level Measurement

Point level measurement

Rotation paddle switches

SITRANS LPS200

Selection and Ordering data	Article No.	Ord. code
SITRANS LPS200, rigid extension Rotary paddle switch for top mount point level and material detection in bulk solids	7ML5730-	
Measuring vane Boot shaped, 35 x 106 mm (1.34 x 4.17 inch) ¹²⁾ Hinged vane, 65 x 200 mm (2.56 x 7.87 inch) ¹²⁾ Rectangular, 50 x 150 mm (1.97 x 5.91 inch) ¹³⁾ Rectangular, 50 x 250 mm (1.97 x 9.84 inch) ¹³⁾ Rectangular, 98 x 150 mm (3.86 x 5.91 inch) ¹³⁾ Rectangular, 98 x 250 mm (3.86 x 9.84 inch) ¹³⁾ Rectangular, 50 x 98 mm (1.97 x 3.86 inch) ¹³⁾		A B C D E F G
Approvals CSA/FM Dust Ignition Proof, RCM ATEX II 1/2 D, RCM CSA/FM General Purpose, RCM, CE CE, RCM IEC Ex ta/tb IIIC EAC Ex ta/tb IIIC Da/Db		1 2 3 4 5 6
Selection and Ordering data	Order code	
Further Designs Please add "-Z" to Article No. and specify Order code(s).		
Total insertion length: Enter the total insertion length in plain text description, max. 4 000 mm (157.48 inch)	Y01	
Stainless steel tag [100 x 45 mm (3.94 x 1.77 inch)]: Measuring-point number/identification (max. 27 characters); specify in plain text	Y14	
Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511. ²⁰⁾²¹⁾	C20	
Heating of enclosure ¹⁴⁾¹⁵⁾	A35	
Signal bulb inserted in M20 cable gland ¹⁴⁾	A20	
Food grade materials (in contact with process), according to 1935/2004/EC, with FDA conform shaft sealing ¹⁶⁾¹⁷⁾	K01	
Optional end of shaft seal for stability and ingress protection		
Max. temperature 80 °C (176 °F)	P06	
Max. temperature 150 °C (302 °F)	P07	
Max. temperature 250 °C (482 °F)	P08	
Max. temperature 600 °C (1 112 °F)	P09	
Sliding sleeve (standard, max. pressure 0.5 bar) ¹⁴⁾¹⁸⁾	P12	
Sliding sleeve (pressure tight, for over-pressure application starting from 1 bar max., dependent on pressure option ordered) ¹⁹⁾	P13	
Operating Instructions Multi-language Note: The Operating Instructions should be ordered as a separate line on the order. All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	Article No. A5E34210883	
Spare Parts Replacement vane, boot shape, 35 x 106 mm (1.38 x 4.17 inch) Hinged vane, 98 x 200 mm (3.86 x 7.87 inch)	7ML1830-1KH 7ML1830-1KJ	

- 1) Available with approval options 3 and 4, up to max 0.5 bar
- 2) Not available with process connections A, C, E.
- 3) Available with process pressure options 1 and 2 only.
- 4) Available with process temperature 1 only.
- 5) Available with process connections A ... E only, with process pressure option 1 and process temperature option 1 only.
- 6) Available with process connection options B, D, F ... L and measuring vane option A.
- 7) Available with process pressure 1 and process temperature 1 only.
- 8) Available with extension length options A ... Q only.
- 9) Available with extension length options R ... Y only.
- 10) Available with process connection options B, D, F ... L and measuring vane A, process connection material 3. Available only with extension length options P1A ... P1H only.
- 11) Only available with seal at tube end options P06 ... P09.
- 12) Add 16 mm (0.63 inch) to extension length.
- 13) Available with process connections F, G, H, J, K only.
- 14) Available with approval option 4 only.
- 15) Available with power supply options A, C, E, G, J, K, L, N, J1B, J1D, J1E, J2A, J2C only.
- 16) Available when ordered with ingress protection seal options P06 ... P09 only.
- 17) Available up to 250 °C (482 °F). This option does not automatically implement a food conform design.
- 18) Available with process pressure option 1 only.
- 19) Available up to 250 °C (482 °F).
- 20) Available with Power supply options J2A and J2C only.
- 21) Available with Approval options 1, 2, 3, 4, and 5 only. Approvals 1 and 3 with FM only.
- 22) Internal probe construction is 1.4305, add seal option P09 to prevent ingress.

Level Measurement

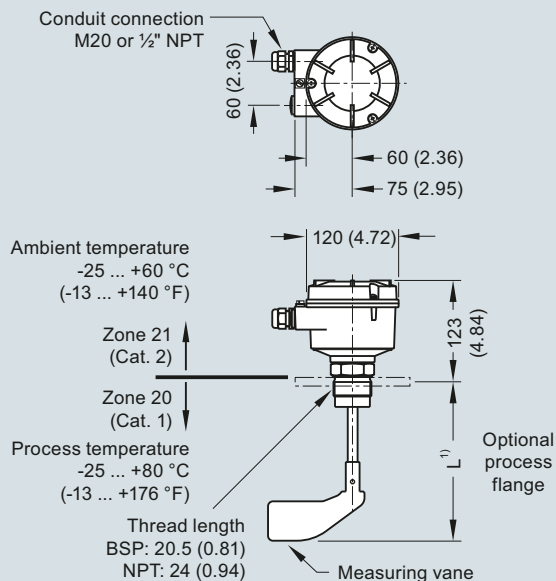
Point level measurement

Rotation paddle switches

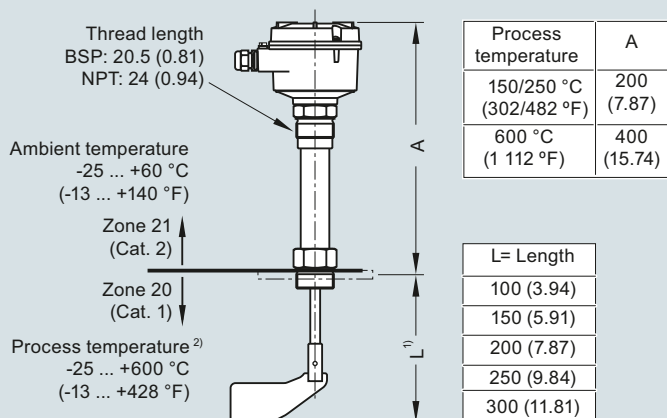
SITRANS LPS200

Dimensional drawings

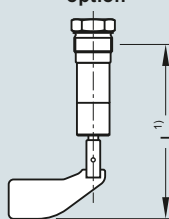
Standard model: compact version



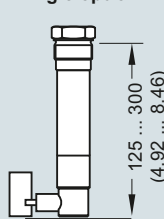
High temperature model: compact version



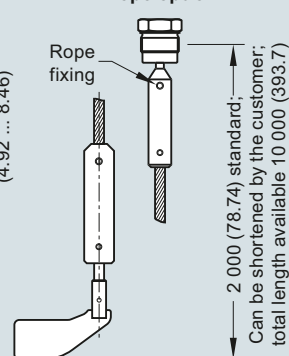
Shaft protected option



Angle option

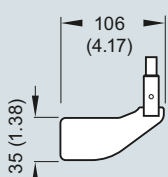


Rope option

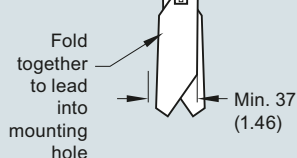


Measuring vanes

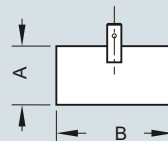
Standard



Hinged



Rectangular



Rectangular vane options

A	B
50 (1.97)	98 (3.86)
50 (1.97)	150 (5.90)
50 (1.97)	250 (9.84)
98 (3.86)	150 (5.90)
98 (3.86)	250 (9.84)

- For 35 x 106 mm boot shaped and 98 x 200 mm hinged measuring vanes, add 16 mm to extension length.
- For use with all approval options except CSA class II. See manual for more details.

Notes

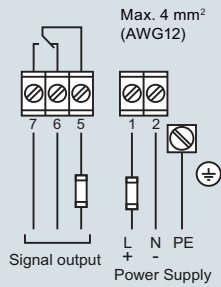
For heavy material, only top mounting of paddle switch is recommended.
Compact LPS200 is recommended for side mounting on bins for low or intermediate material levels.

Vane	Completely covered with material		Covered up to 10 cm (3.93 inch) with material	
	Spring adjustment		Spring adjustment	
	Light	Central (factory setting)	Light	Central (factory setting)
Boot shaped 35 x 106 mm	200 g/l (12.5 lb/ft ³)	300 g/l (18.7 lb/ft ³)	100 g/l (6.2 lb/ft ³)	150 g/l (9.4 lb/ft ³)
Boot shaped 28 x 98 mm	300 g/l (18.7 lb/ft ³)	500 g/l (31.2 lb/ft ³)	150 g/l (9.4 lb/ft ³)	150 g/l (9.4 lb/ft ³)
Rectangular 50 x 98 mm	300 g/l (18.7 lb/ft ³)	500 g/l (31.2 lb/ft ³)	150 g/l (9.4 lb/ft ³)	250 g/l (15.6 lb/ft ³)
Rectangular 50 x 150 mm	80 g/l (5.0 lb/ft ³)	120 g/l (7.5 lb/ft ³)	40 g/l (2.5 lb/ft ³)	60 g/l (3.7 lb/ft ³)
Rectangular 50 x 250 mm	30 g/l (1.9 lb/ft ³)	50 g/l (3.1 lb/ft ³)	15 g/l (0.9 lb/ft ³)	25 g/l (1.6 lb/ft ³)
Rectangular 98 x 150 mm	30 g/l (1.9 lb/ft ³)	50 g/l (3.1 lb/ft ³)	15 g/l (0.9 lb/ft ³)	25 g/l (1.6 lb/ft ³)
Rectangular 98 x 250 mm	20 g/l (1.2 lb/ft ³)	30 g/l (1.9 lb/ft ³)	15 g/l (0.9 lb/ft ³)	15 g/l (0.9 lb/ft ³)
Hinged 98 x 200 mm	70 g/l (4.4 lb/ft ³)	100 g/l (6.2 lb/ft ³)	35 g/l (2.2 lb/ft ³)	50 g/l (3.1 lb/ft ³)

SITRANS LPS200, dimensions in mm (inch)

Circuit diagrams

AC or DC version



Power supply:

AC version:

24 V or 48 V or 115 V or 230 V 50/60 Hz max. 4 VA
All voltages $\pm 10\%$ ¹⁾
Supply voltage as selected.
External fuse: max 10 A, fast or slow, HBC, 250 V

DC version:

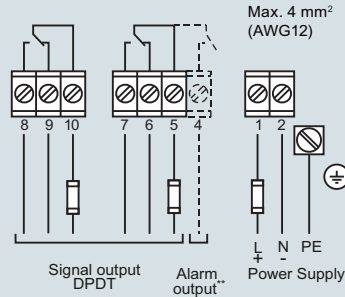
24 V DC $\pm 15\%$ ¹⁾ max. 2.5 W
External fuse: not required

¹⁾ Including $\pm 10\%$ of EN 61010

Signal output:

Micro switch, SPDT contact
max. 250 V AC, 5 A, non inductive
max. 30 V DC, 4 A, non inductive
External fuse: max 10 A, fast or slow, HBC, 250 V

Universal voltage (DPDT relay)*

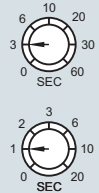


* See manual for universal voltage with SIL.

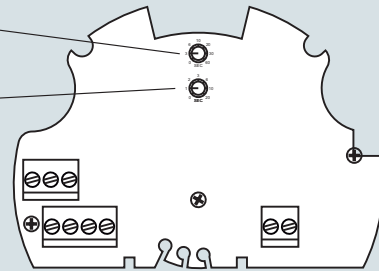
** With option Fail safe alarm (rotation control).
Contact open when de-energised.
Fail safe alarm switching and timing behaviour:
If the vane is not covered, the rotating vane
shaft will send pulses at 20 second intervals.
In case of fault, the pulses are missed.
After 30 seconds, the alarm relay will open.

Signal output: delay

Sensor covered -> free
Factory setting = 3 sec



Sensor covered -> covered
Factory setting = 1 sec



Level Measurement

Point level measurement

Ultrasonic non-contacting switch

Pointek ULS200

Overview



The Pointek ULS200 is an ultrasonic non-contacting switch with two switch points for level detection of bulk solids, liquids and slurries in a wide variety of industries; ideal for sticky materials.

Benefits

- 2 switch outputs for high-high, high, low, and low-low level alarms or pump up/pump down control
- Integral temperature compensation
- AC or DC power supply
- Electronics provided with fail-safe function
- Threaded and sanitary fitting clamp process connections
- Polycarbonate enclosure, Type 6/NEMA 6/IP67
- Easy, two-button programming

Application

The measuring range for bulk solids is max. 3 m (9.8 ft) and 5 m (16.4 ft) for liquids and slurries. Unlike invasive contacting devices, there is no material buildup on the sensor.

The level switch has a rugged design, combining the transducer and electronics in one durable device. It has no moving parts and is virtually maintenance-free.

The transducer, available in ETFE or PVDF copolymer, is inert to most chemicals. This means the device can be used in the chemical, petrochemical, water, and wastewater industries. A sanitary version of the ULS200, with an industry standard flange option, is easy to remove from the application for cleaning. It thus satisfies the prerequisites for use in the food, beverage, and pharmaceutical industries. The Pointek ULS200 delivers superior performance while reducing maintenance, downtime, and equipment replacement costs.

- Key Applications: liquids, slurries, fluid materials, plugged chute detection, chemical industry

Design

Installation

The Pointek ULS200 should be mounted in an area that is within the temperature range specified and that is suitable to the enclosure rating and materials of construction. The cover should be accessible to allow programming, wiring and display viewing.

It is advisable to keep the Pointek ULS200 away from high voltage or current runs, contactors and SCR control drives.

Locate the Pointek ULS200 so that it has a clear sound path perpendicular to the material surface. The sound path should not intersect the fill path, rough walls, seams, rungs etc.

Mounting and Interconnection

The Pointek ULS200 is available in three thread types: 2" NPT, R 2" (BSPT), EN 10226 or PF2 and can be fitted with the optional 75 mm (3 inch) flange adapter for mating to 3" ASME, DN 65, PN 10, and JIS 10K 3B sized flanges.

Separate cables and conduit may be required to conform to standard instrumentation wiring or electrical codes.

Level Measurement

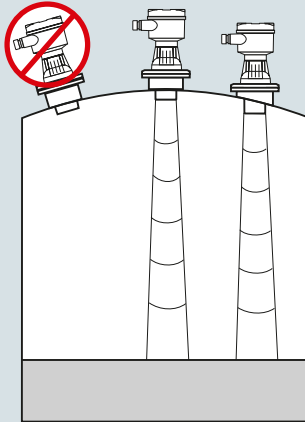
Point level measurement

Ultrasonic non-contacting switch

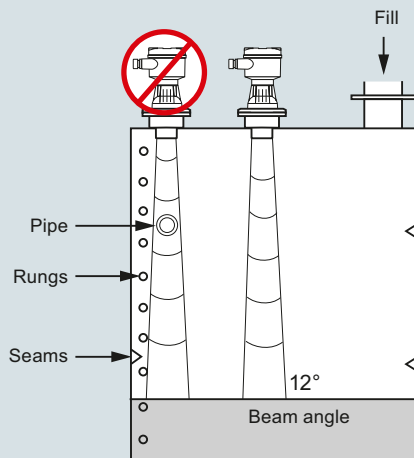
Pointek ULS200

Configuration

Parabolic mounting



Flat mounting and Beam angle



Pointek ULS200 mounting

Technical specifications

Mode of operation

Measuring principle	Ultrasonic level switch
---------------------	-------------------------

Measuring range

Measuring range in liquids	0.25 ... 5 m (0.8 ... 16.4 ft)
Measuring range in bulk solids	0.25 ... 3 m (0.8 ... 9.8 ft)

Output

AC Version (relay)	2 SPDT Form C contacts, rated 5 A at 250 V AC or 30 V DC, resistive load; rated 1 A at 48 V DC resistive load
DC Version (relay)	2 SPDT Form C contacts, rated 5 A at 30 V DC, resistive load; rated 1 A at 48 V DC resistive load
DC Version (transistor)	2 switches, rated max. 100 mA, 48 V DC

Accuracy

AC/DC version	
• Resolution	3 mm (0.1 inch)
• Repeatability	0.25 % of measuring range

Rated operation conditions

Installation conditions	
• Location	Indoors/outdoors
• Beam angle	12°
Ambient conditions	
• Ambient temperature	-40 ... +60 °C (-40 ... +140 °F)
• If mounted in metal threads	-20 ... +60 °C (-5 ... +140 °F)
Medium conditions	
• Process pressure	0.5 bar (7.25 psi) max.

Design

Material	Polycarbonate with gasket
Weight	Approx. 1.5 kg (3.3 lb)
Transducer material	PVDF or ETFE copolymer
Threaded mounting	2" NPT [(Taper), ANSI/ASME B1.20.1] R 2" [(BSPT), EN 10226] or G 2" [(BSPP), EN ISO 228-1]
• Optional flange adapter	For 3" ASME, DN 65, PN 10, and JIS 10 K3B
Sanitary mounting	4" sanitary fitting clamp

Power supply

AC version	100 ... 230 V AC, ± 15 %, 50/60 Hz, max. 12 VA, 5 W
DC version	18 ... 30 V DC, 3 W

Displays and controls

Display	LCD, three digits, 9 mm (0.35 inch) high, for display of distance between sensor face and material, multi-segment graphic for operating state
Memory	EEPROM, non-volatile
Programming	2 keys

Electronics/enclosure

Connection	terminal block, max. 2.5 mm ² (14 AWG) solid/1.5 mm ² (16 AWG) stranded
Degree of protection	IP67/Type 6/NEMA 6
Cable inlet	2 x 1/2" NPT or 2 x PG 13.5

Certificates and approvals

	CE, CSA US/C, FM
--	------------------

Level Measurement

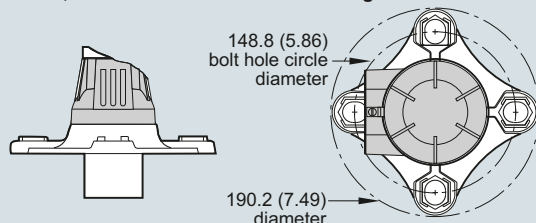
Point level measurement

Ultrasonic non-contacting switch

Pointek ULS200

Options

Flange adapter for mating 2" NPT or 2" BSP process connections to 3" ASME, DN 65 PN 10 and JIS 10K 3B flanges



Pointek ULS200 optional flange adapter, dimensions in mm (inch)

Selection and Ordering data

Article No.

Pointek ULS200

Ultrasonic non-contacting switch with two switch points for level detection of bulk solids, liquids and slurries in a wide variety of industries; ideal for sticky materials

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Power supply

24 V DC, relay output
24 V DC, transistor output
100 ... 230 V AC, relay output

Approvals

CE, RCM, CSA Class I, II, Div. 2¹⁾
CE, RCM, CSA_{US/CA}, FM

Transducer/Process connection

ETFE, 2" NPT [(Taper), ANSI/ASME B1.20.1]
ETFE, R 2" [(BSPT), EN 10226]
ETFE, G 2" [(BSPP), EN ISO 228-1]
PVDF copolymer, 2" NPT [(Taper), ANSI/ASME B1.20.1]
PVDF copolymer, R 2" [(BSPT), EN 10226]
PVDF copolymer, G [(BSPP), EN ISO 228-1]
PVDF copolymer, 4" sanitary mounting²⁾

Enclosure/cable inlet

Polycarbonate

- Cable inlet PG 13.5
- Cable inlet 1/2" NPT

¹⁾ Available with Enclosure/cable inlet option 2 only

²⁾ Available with Approvals option K only

7ML1510-

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2

Selection and Ordering data

Order code

Further designs

Please add "-Z" to Article No. and specify Order code(s)

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

Operating Instructions

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Accessories

Tag, stainless steel, 12 x 45 mm (0.47 x 1.77 inch), one text line, suitable for enclosures

Universal Box Bracket Mounting Kit

3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" NPT

3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" BSPT

2" BSPT Locknut, plastic

2" NPT Locknut

4" sanitary mounting clamp

Article No.

7ML1930-1AC

7ML1830-1BK

7ML1830-1BT

7ML1830-1BU

7ML1830-1DQ

7ML1830-1DT

7ML1830-1BR

Spare Parts

Polycarbonate Lid

7ML1830-1LG

Level Measurement

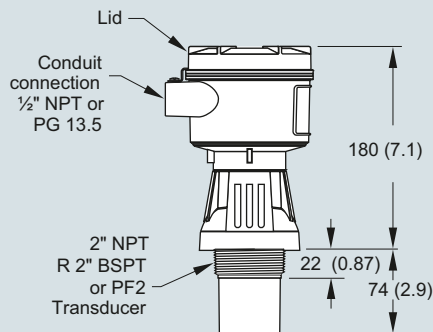
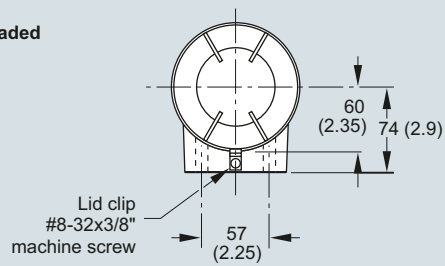
Point level measurement

Ultrasonic non-contacting switch

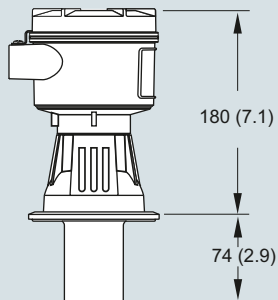
Pointek ULS200

Dimensional drawings

Threaded



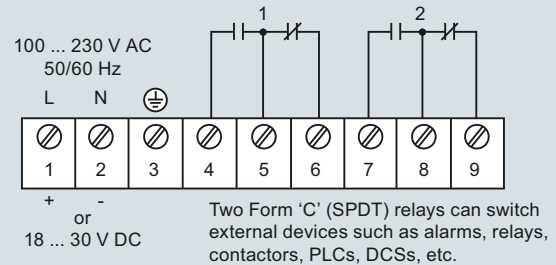
Sanitary



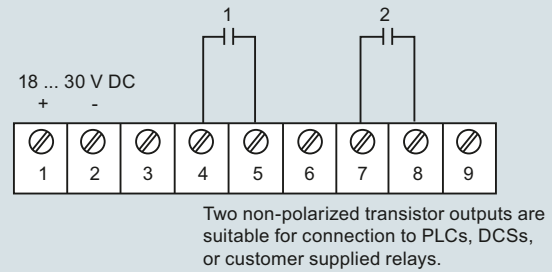
Pointek ULS200, dimensions in mm (inch)

Circuit diagrams

Relay output



Transistor output: DC version only



Pointek ULS200 connections

Level Measurement

Continuous level measurement

Ultrasonic

Ultrasonic

Overview

Introduction

Ultrasonic measurement is based on the speed of sound. Sound can be used as a measurement tool because there is a measurable time lapse between sound generation and the "hearing" of the sound. This time lapse is then converted into usable information. Ultrasonic sensing equipment generates a sound above 20 000 Hz and then interprets the time lapse of the returned echo. The transducer creates the sound and senses the echo and then a transceiver interprets the sound and converts it into information.

Siemens ultrasonic units include Sonic Intelligence, a signal processing technology. Using unique algorithms, Sonic Intelligence differentiates between true echoes from the material and false echoes from obstructions or electrical noise, providing intelligent processing of echo profiles.

Typical System

Ultrasonic level measurement requires two components: one to generate the sound and catch the echo (transducer) and one to interpret the data and derive a measurement (transceiver). Even though some ultrasonic instruments combine the components in one unit, the individual functionality remains distinct. The measurement output is communicated to the unit, PLCs or PCs for process control.

Principle of Operation

A piezoelectric crystal inside the transducer converts an electrical signal into sound energy, firing a burst into the air which travels to the target and then is reflected back to the transducer. The transducer then acts as a receiving device and converts the sonic energy back into an electrical signal contained in the transceiver. An electronic signal processor analyzes the return echo and calculates the distance between the transducer and the target. The time lapse between firing the sound burst and receiving the return echo is directly proportional to the distance between the transducer and the material in the vessel. This basic principle lies at the heart of the ultrasonic measurement technology and is illustrated in the equation:

$$\text{Distance} = (\text{Velocity of Sound} \times \text{Time})/2.$$

Mode of operation

Common Terms

Attenuation

Denotes a decrease in signal magnitude in transmission from one point to another. Attenuation may be expressed as a scalar ratio of the input magnitude to the output magnitude or in decibels.

Beam angle

The diameter of a conical boundary centered around the axis of transmission when the power (radiating perpendicular to the transducer face on the axis of transmission) is reduced by half (-3 dB).

Blanking distance

Specified zone extending downward from the transducer face in which received echoes are ignored by the transceiver. Blanking distance ignores echoes from ringing.

Echo confidence

The recognition of the validity of the echo as material level. A measure of echo reliability.

Ringing

The inherent nature of the transducer to continue vibrating after the transmit pulse has ceased; the decay of the transmit pulse.

Transducer/Transceiver

A transducer provides the initial ultrasonic pulse and receives its echo. An ultrasonic transducer amplifies the sound wave created by the piezoelectric crystal and transmits that sound wave to the face of the transducer while at the same time dampening the sound wave from the other sides of the crystal.

Transceivers analyze the echo from the transducer to determine the required measurement.

Technical specifications

Ultrasonic Transmitter/Controller Selection Guide

Criteria	SITRANS Probe LU	SITRANS LU150/LU180	SITRANS LUT400	HydroRanger 200	MultiRanger 100/200
Range	6 m (20 ft) or 12 m (40 ft)	0.25 ... 5 m (0.8 ... 16.4 ft)	0.3 ... 60 m (1 ... 196 ft), transducer and application dependent	15 m (50 ft) transducer and application dependent	15 m (50 ft) transducer and application dependent
Typical applications	Chemical storage vessels, filter beds, liquid storage vessels	Chemical storage vessels, filter beds, mud pits, liquid storage vessels, food applications	Wet wells, reservoirs, flumes/weirs, chemical storage, liquid storage, hoppers, crusher bins, dry solids storage	Wet wells, flumes/weirs, bar screen control	Wet wells, flumes/weirs, bar screen control, hoppers, chemical storage, liquid storage, crusher bins, dry solids storage
Output	HART model: 4 ... 20 mA/HART PROFIBUS PA model: PROFIBUS	4 ... 20 mA loop powered	4 ... 20 mA/HART 3 relays	6 relays standard, two 4 ... 20 mA outputs (isolated)	1 relay (option on MultiRanger 100) 3 relays standard 6 relays (option) Two 4 ... 20 mA outputs (isolated)
Communications	HART or PROFIBUS PA Options: SIMATIC PDM for remote configuration and diagnostics	N/A	HART 7.0, USB, SIMATIC PDM	Built-in Modbus RTU/ASCII via RS 485 Options: • SIMATIC PDM • SmartLinx (PROFIBUS DP, DeviceNet)	Built-in Modbus RTU or ASCII via RS 485 Options: • SIMATIC PDM • SmartLinx (PROFIBUS DP, DeviceNet)
Power specifications	HART: 4 ... 20 mA, 24 V DC nominal, max. 550 Ω, 30 V DC PROFIBUS PA: 12, 13, 15, or 20 mA, dependent on programming	12 ... 30 V DC, 0.1 A surge, max. 600 Ω in the loop at 24 V DC	AC version: 100 ... 230 V AC ± 15 %, 50/60 Hz, 36 VA Fuse: 5 x 20 mm, Slow Blow, 0.25 A, 250 V DC version: 10 ... 32 V DC, 10 W Fuse: 5 x 20 mm, Slow Blow, 1.6 A, 125 V	AC version: 100 ... 230 V AC ± 15 %, 50/60 Hz, 36 VA/17 W DC version: 12 ... 30 V DC, 20 W	AC version: 100 ... 230 V AC ± 15 %, 50/60 Hz, 36 VA/17 W DC version: 12 ... 30 V DC, 20 W
Approvals	CE, CSA _{US/C} , FM, RCM, ATEX, IECEx	CE, CSA _{US/C} , FM, ATEX, RCM, NEPSI, IECEx	CE, CSA _{US/C} , UL Listed, FM, RCM, Lloyd's Register, ABS, MCERTS	CE, CSA _{US/C} , UL Listed, FM, RCM, MCERTS	CE, CSA _{US/C} , UL Listed, FM, RCM

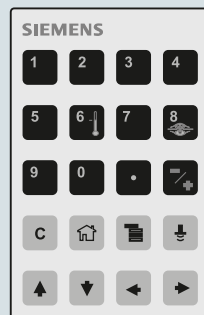
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MultiRanger 100/200
HydroRanger 200
SITRANS Probe LU HART*
SITRANS LU

* Note: To order the IS version of this hand programmer, order 7ML5830-2AH.

7ML5830-2AJ



SITRANS Probe LU PROFIBUS

Handheld programmer selection guide

Level Measurement

Continuous level measurement

Ultrasonic transmitters

SITRANS LU150

Overview



SITRANS LU150 is a short-range integrated ultrasonic level transmitter. This general purpose, 2-wire, 4 to 20 mA loop powered transmitter is ideal for liquids, slurries, and bulk materials in open or closed vessels to 5 m (16.4 ft).

Benefits

- Easy to install, program, and maintain
- Accurate and reliable
- Sanitary models available
- Patented Sonic Intelligence echo processing
- Integral temperature compensation

Application

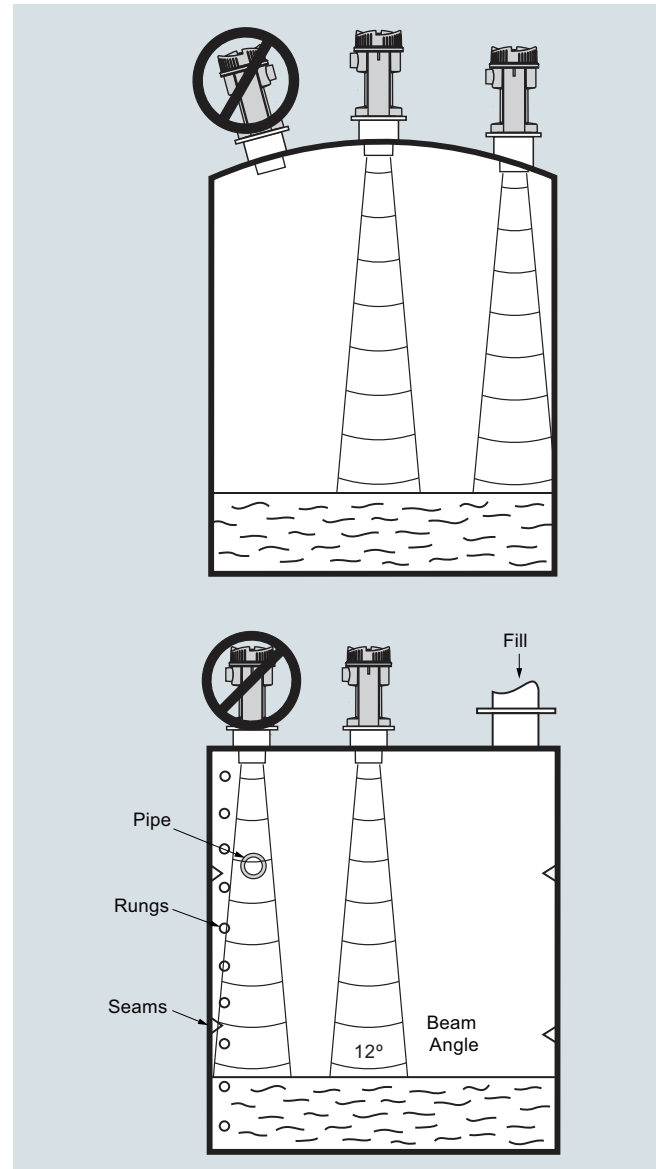
The transducer is available in PVDF copolymer, making the device suitable for use in a wide variety of applications.

SITRANS LU150 is easy to install and maintain, and can be quickly removed for cleaning as required by the food, beverage and pharmaceutical industries.

The reliability of the level data is based on the Sonic Intelligence echo processing algorithms. A filter discriminates between the true echo and false echoes from acoustic or electrical noises and agitator blades in motion. The ultrasonic pulse propagation time to the material and back is temperature-compensated and converted into distance for display, analog output.

- Key Applications: chemical storage vessels, filter beds, mud pits, liquid storage vessels, food applications

Configuration



SITRANS LU150 mounting

Level Measurement

Continuous level measurement

Ultrasonic transmitters

SITRANS LU150

Technical specifications

Mode of Operation	
Measuring principle	Ultrasonic level measurement
Input	
Measuring range	0.25 ... 5 m (0.8 ... 16.4 ft)
Frequency	54 kHz
Output	
mA	4 ... 20 mA
• Span	Proportional/ inversely proportional
• Max. load	600 Ω in the loop at 24 V DC
Power supply	
Supply voltage	12 ... 30 V DC, 0.1 A surge
Max. power consumption	0.75 W (25 mA at 24 V DC)
Certificates and approvals	
CE, CSA _{US/C}	
Accuracy	
Error in measurement	0.25 % of measuring range (in air)
Resolution	3 mm (0.125 inch)
Temperature compensation	Built in
Echo processing	Sonic Intelligence
Rated operation conditions	
Beam angle	12°
Ambient temperature	
• Standard	-30 ... +60 °C (-22 ... +140 °F)
• Metallic mounting	-20 ... +60 °C (-4 ... +140 °F)
Max. static operating pressure	Normal atmospheric pressure
Design	
Weight	1.3 kg (2.9 lb)
Material	
• Electronics enclosure	PBT
• Transducer	PVDF copolymer
Degree of protection	IP68 / NEMA 6 / TYPE 6
Process connection	<ul style="list-style-type: none"> • 2" NPT [(Taper), ANSI/ASME B1.20.1] • R 2" [(BSPT), EN 10226] • G 2" [(BSPP), EN ISO 228-1] • 4" sanitary
Flange adapter	3" Universal, (fits DN 65, PN 10 and 3" ASME)
Cable inlet	1 inlet for M20, optional 1/2" NPT

Selection and Ordering data

SITRANS LU150

Short-range integrated ultrasonic level transmitter, general purpose, 2-wire, 4 to 20 mA loop powered ideal for liquids, slurries, and bulk materials in open or closed vessels to 5 meters (16.4 feet)

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Transducer/Process connection (PVDF)

PVDF copolymer, 2" NPT [(Taper), ANSI/ASME B1.20.1]
 PVDF copolymer, R 2" [(BSPT), EN 10226]
 PVDF copolymer, G 2" [(BSPP), EN ISO 228-1]
 PVDF copolymer, 4" Sanitary mounting

Cable inlet

M20 x 1.5 [General Purpose cable gland -20 ... +60 °C (-4 ... +140 °F) included]
 1/2" NPT stainless steel entry (no cable gland included)

Article No.

7ML5201-
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Selection and Ordering data

Further designs

Please add ***-Z** to Article No. and specify Order code(s).

Stainless steel tag [13 x 45 mm (0.5 x 1.75 inch)]: Measuring-point number/ identification (max. 20 characters) specify in plain text

Test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and to ISO 9000

Operating Instructions

English

German

Note: Operating instructions should be ordered as a separate line on the order

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Accessories

Tag, stainless steel, 12 x 45 mm (0.47 x 1.77 inch), one text line

Universal Box Bracket Mounting kit

Sanitary 4" mounting clamp

3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" NPT

3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" BSPT

2" NPT locknut, plastic

2" BSPT locknut, plastic

Cable Gland - General Purpose -20 ... +60 °C (-4 ... +140 °F)

Order code

Y15

C11

Article No.

A5E34590123

A5E36369862

7ML1930-1AC

7ML1830-1BK

7ML1830-1BR

7ML1830-1BT

7ML1830-1BU

7ML1830-1DT

7ML1830-1DQ

A5E34457564

Level Measurement

Continuous level measurement

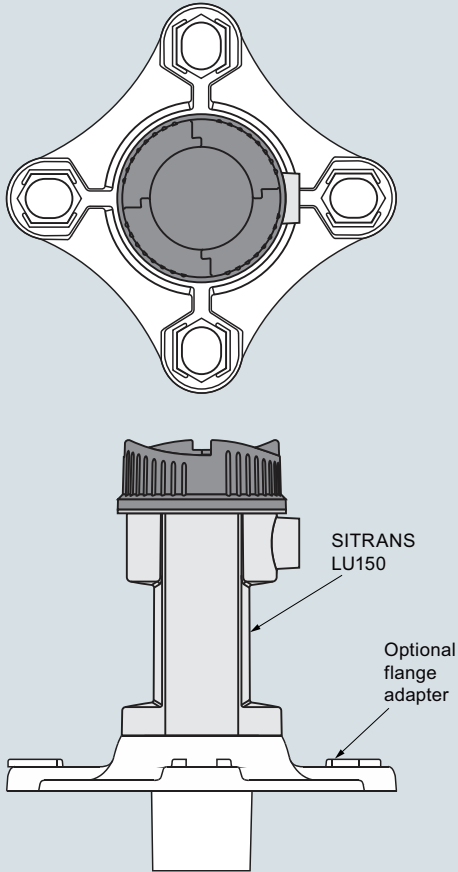
Ultrasonic transmitters

SITRANS LU150

Options

SITRANS LU150, Flange Adapter

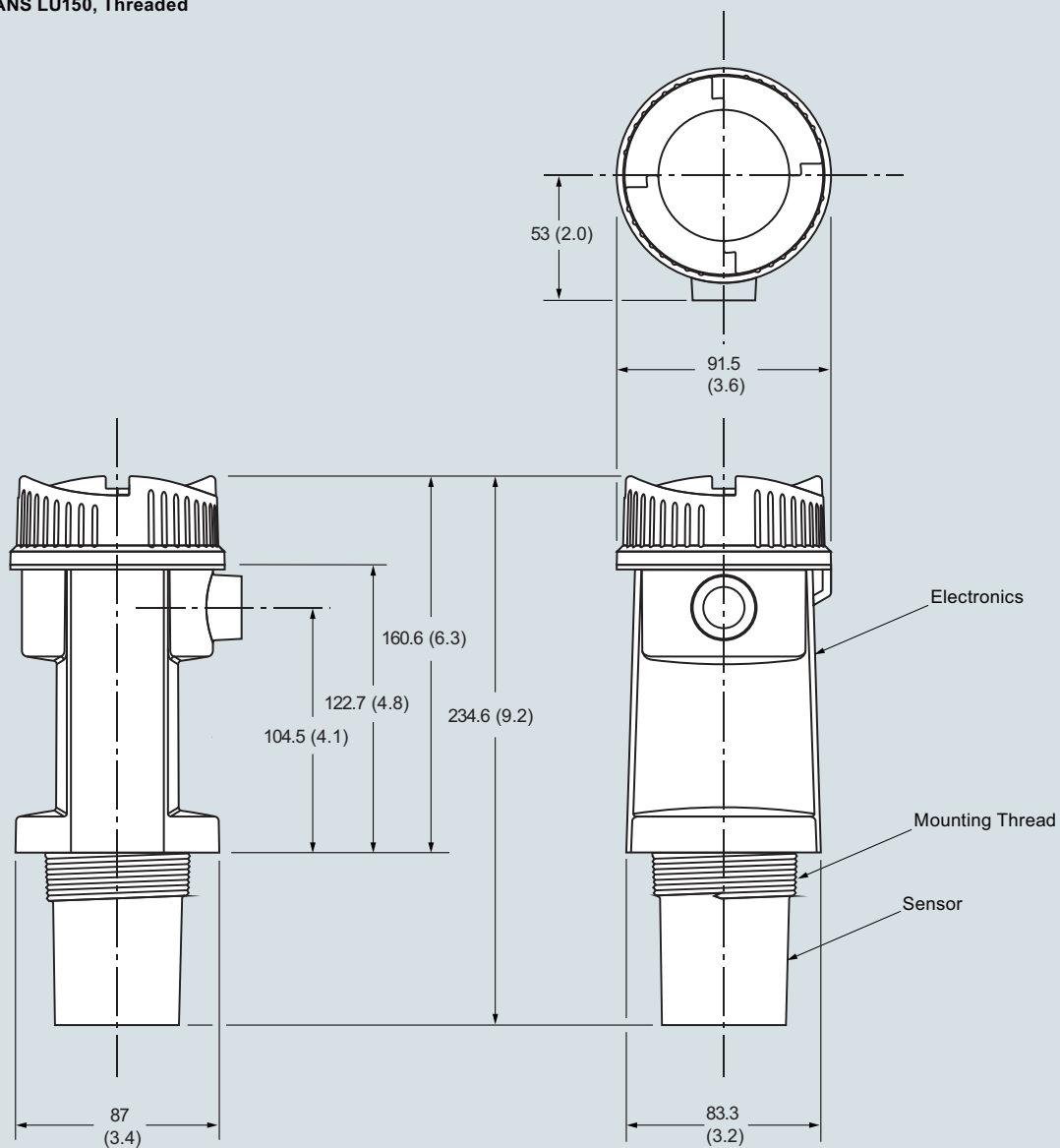
The SITRANS LU150 can be fitted with the optional 75 (3) flange adapter for mating to 3" ANSI, DIN 65 PN10 and JIS 10K3B flanges.



SITRANS LU150 optional flange adapter, dimensions in mm (inch)

Dimensional drawings

SITRANS LU150, Threaded



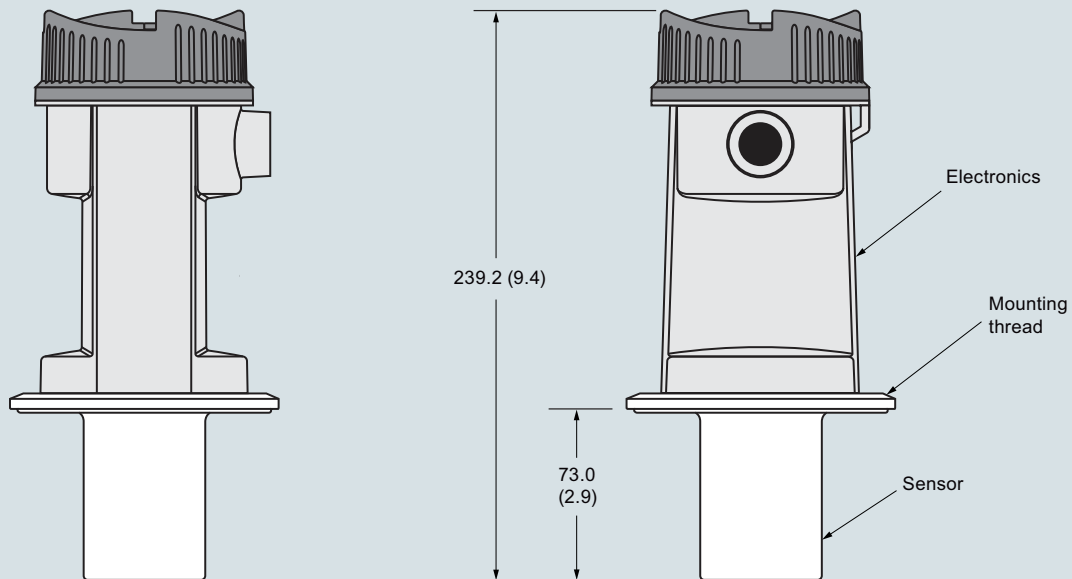
SITRANS LU150, dimensions in mm (inch)

Level Measurement

Continuous level measurement
Ultrasonic transmitters

SITRANS LU150

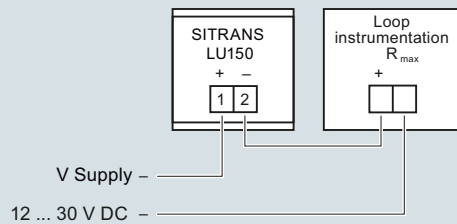
SITRANS LU150, Sanitary



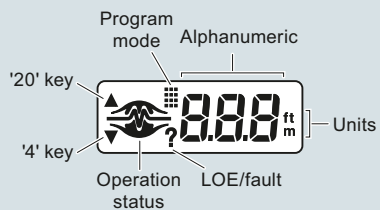
SITRANS LU150, dimensions in mm (inch)

Circuit diagrams

Threaded and Sanitary models



Display



SITRANS LU150 connections

Overview



SITRANS LU180 is a short-range integrated ultrasonic level transmitter. It is intrinsically safe (ATEX, CSA, FM, IECEx, NEPSI), 2 wire, 4 to 20 mA loop powered, ideal for liquids, slurries, and bulk materials in open or closed vessels to 5 meters (16.4 feet).

Benefits

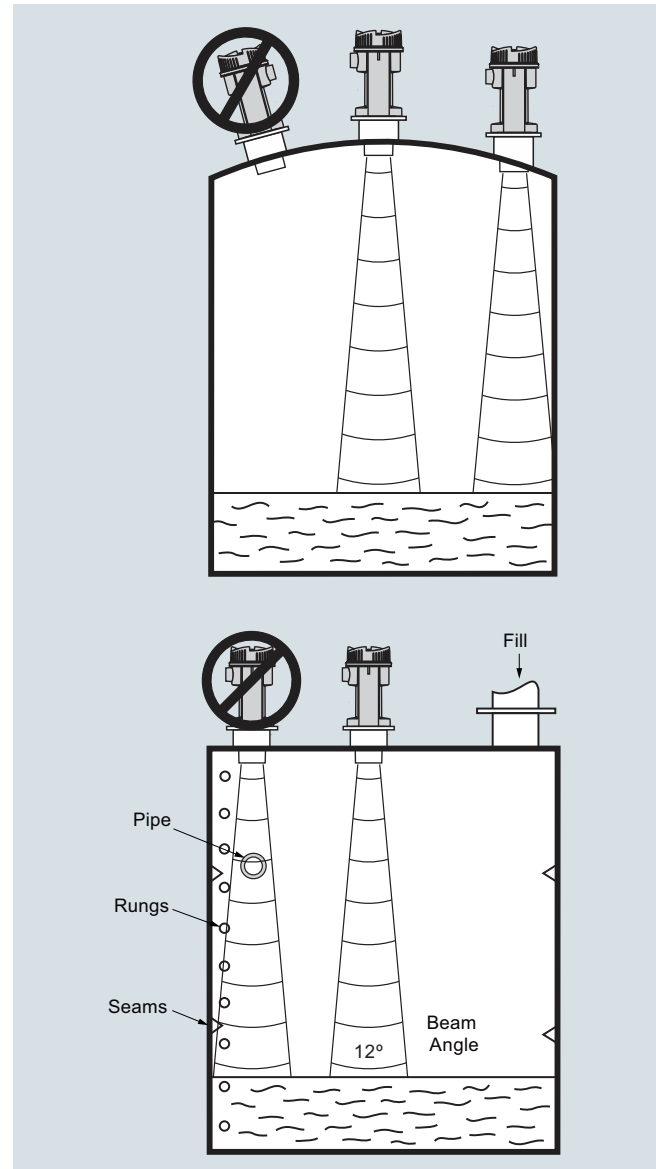
- Easy to install, program, and maintain
- Accurate and reliable
- Sanitary models available
- Patented Sonic Intelligence echo processing
- Integral temperature compensation

Application

The transducer is available in PVDF copolymer, making the device suitable for use in a wide variety of applications. SITRANS LU180 is easy to install and maintain, and can be quickly removed for cleaning as required by the food, beverage and pharmaceutical industries. The reliability of the level data is based on the Sonic Intelligence echo processing algorithms. A filter discriminates between the true echo and false echoes from acoustic or electrical noises and agitator blades in motion. The ultrasonic pulse propagation time to the material and back is temperature compensated and converted into distance for display, analog output.

- Key Applications: chemical storage vessels, filter beds, mud pits, liquid storage vessels, food applications

Configuration



SITRANS LU180 mounting

Level Measurement

Continuous level measurement

Ultrasonic transmitters

SITRANS LU180

Technical specifications

Mode of operation	
Measuring principle	Ultrasonic level measurement
Input	
Measuring range	0.25 ... 5 m (0.8 ... 16.4 ft)
Frequency	54 kHz
Output	
mA	4 ... 20 mA
• Span	Proportional/ inversely proportional
• Max. load	600 Ω in the loop at 24 V DC
Power supply	
Supply voltage	12 ... 30 V DC, 0.1 A surge
Max. power consumption	0.75 W (25 mA at 24 V DC)
Certificates and approvals	
CSA:	
IS/ Class I, II, III, Div. 1, Groups: A, B, C, D, E, F, G T4	
FM:	
IS/ Class I, II, III, Div. 1, Groups: A, B, C, D, E, F, G T4	
ATEX:	
II 1G Ex ia IIC T4 Ga	
IECEX Ex ia IIC T4 Ga	
NEPSI Ex ia IIC T4 Ga	
Accuracy	
Error in measurement	0.25 % of measuring range (in air)
Resolution	3 mm (0.125 inch)
Temperature compensation	Built in
Echo processing	Sonic Intelligence
Rated operation conditions	
Beam angle	12°
Ambient temperature	
• Standard	-40 ... +60 °C (-40 ... +140 °F)
• Metallic mounting	-20 ... +60 °C (-4 ... +140 °F)
Max. static operating pressure	Normal atmospheric pressure
Design	
Weight	1.3 kg (2.9 lb)
Material	
• Electronics enclosure	PBT
• Transducer	PVDF copolymer
Degree of protection	IP68 / NEMA 6 / TYPE 6
Process connection	<ul style="list-style-type: none"> • 2" NPT [(Taper), ANSI/ASME B1.20.1] • R 2" [(BSPT), EN 10226] • G 2" [(BSPP), EN ISO 228-1] • 4" sanitary
Flange adapter	3" Universal (fits DN 65, PN 10 and 3" ASME)
Cable inlet	1 inlet for M20, optional 1/2" NPT

Selection and Ordering data

SITRANS LU180

Short-range integrated ultrasonic level transmitter, intrinsically safe (ATEX, CSA, FM, IECEx, NEPSI), 2 wire, 4 to 20 mA loop powered, ideal for liquids, slurries, and bulk materials in open or closed vessels to 5 meters (16.4 feet).

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Transducer/Process connection

PVDF copolymer, 2" NPT [(Taper), ANSI/ASME B1.20.1]
 PVDF copolymer, R 2" [(BSPT), EN 10226]
 PVDF copolymer, G 2" [(BSPP), EN ISO 228-1]
 PVDF copolymer, 4" Sanitary mounting

Cable inlet

M20 x 1.5 [General Purpose cable gland
 -20 ... +60 °C (-4 ... +140 °F) included]
 1/2" NPT stainless steel entry
 (no cable gland included)

Article No.

7ML5202-

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Selection and Ordering data

Order code

Further designs

Please add **"-Z"** to Article No. and specify Order code(s).

Stainless steel tag [13 x 45 mm (0.5 x 1.75 inch)]: Measuring-point number/ identification (max. 20 characters) specify in plain text

Test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and to ISO 9000

Operating Instructions

English

German

Note: Operating instructions should be ordered as a separate line on the order

All literature is available to download for free, in a range of languages, at www.siemens.com/processinstrumentation/documentation

Accessories

Tag, stainless steel, 12 x 45 mm (0.47 x 1.77 inch), one text line

Universal box bracket mounting kit

Sanitary 4" mounting clamp

3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" NPT

3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" BSPT

2" NPT locknut, plastic

2" BSPT locknut, plastic

Cable Gland, General Purpose
 -20 ... +60 °C (-4 ... +140 °F)

Y15

C11

Article No.

A5E37100674

A5E37100685

7ML1930-1AC

7ML1830-1BK

7ML1830-1BR

7ML1830-1BT

7ML1830-1BU

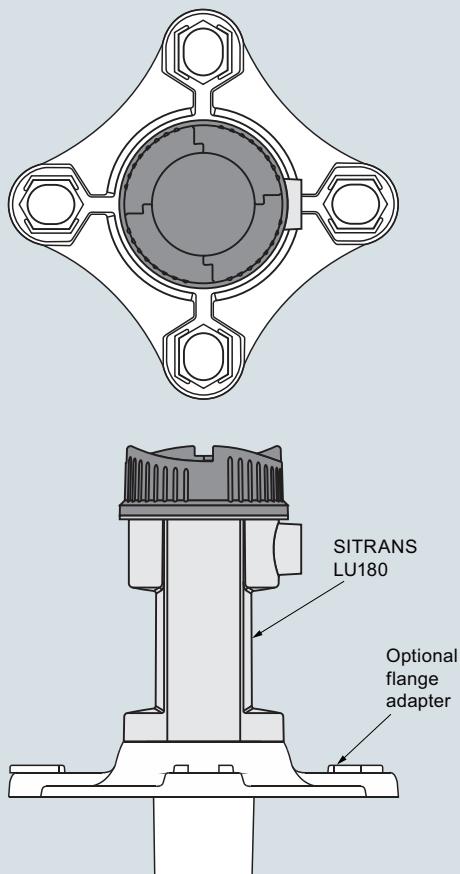
7ML1830-1DT

7ML1830-1DQ

A5E34457564

Options**SITRANS LU180, Flange Adapter**

The SITRANS LU180 can be fitted with the optional 75 (3) flange adapter for mating to 3" ANSI, DIN 65 PN10 and JIS 10K3B flanges.

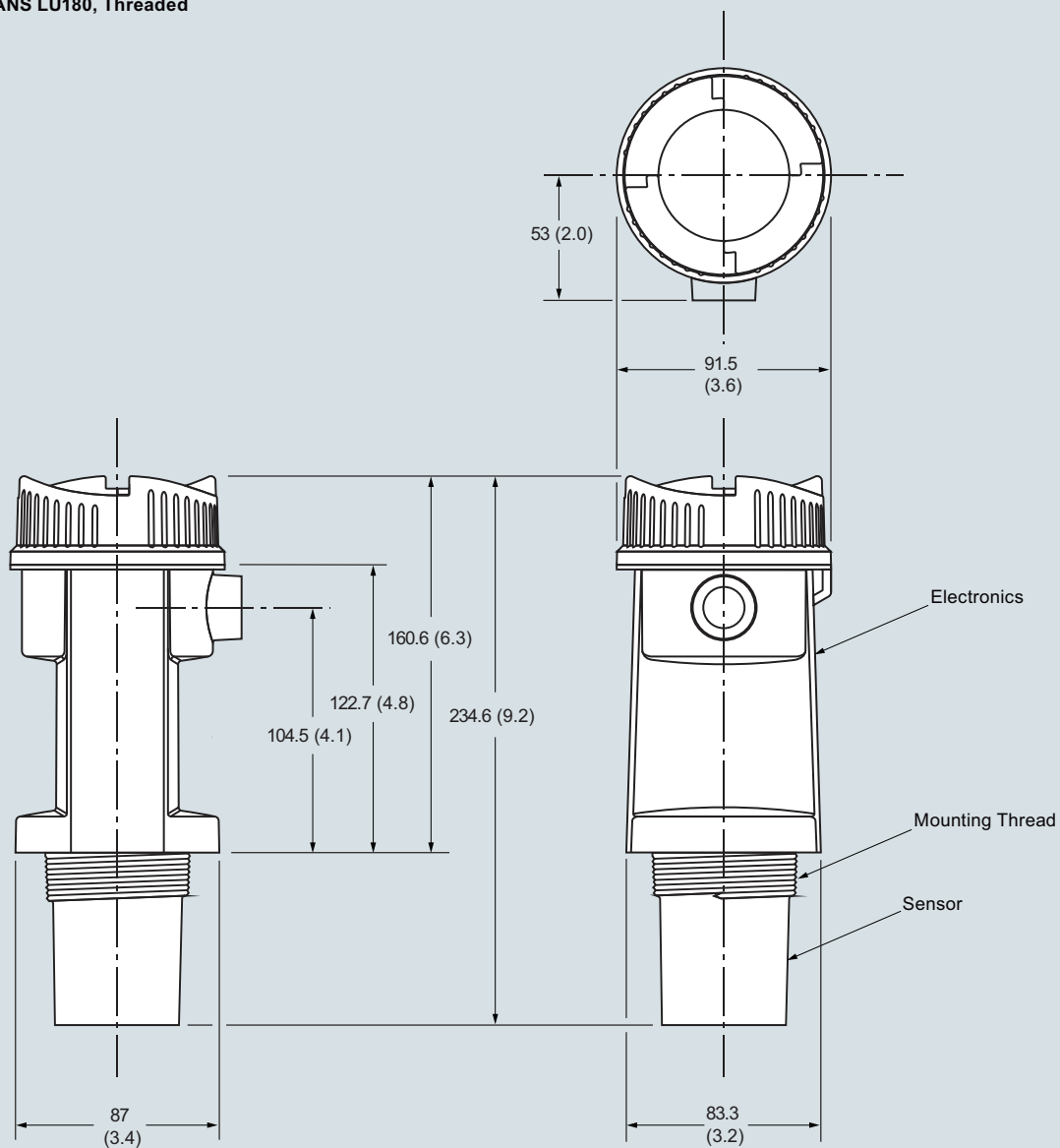


SITRANS LU180 optional flange adapter, dimensions in mm (inch)

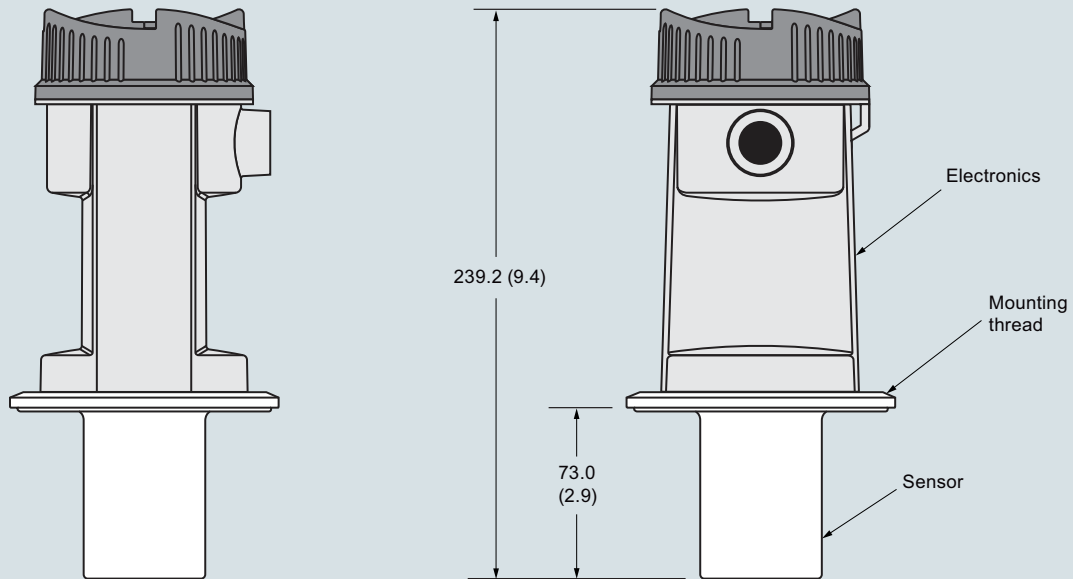
Level Measurement

Continuous level measurement

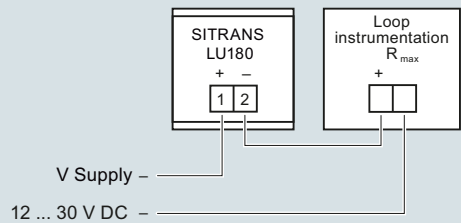
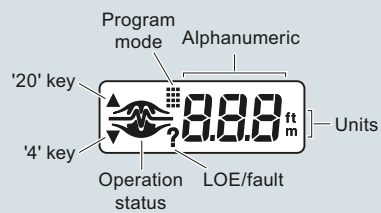
Ultrasonic transmitters

SITRANS LU180**Dimensional drawings****SITRANS LU180, Threaded**

SITRANS LU180, dimensions in mm (inch)

SITRANS LU180, Sanitary

SITRANS LU180, dimensions in mm (inch)

Circuit diagrams**SITRANS LU180, Threaded and sanitary models****Display**

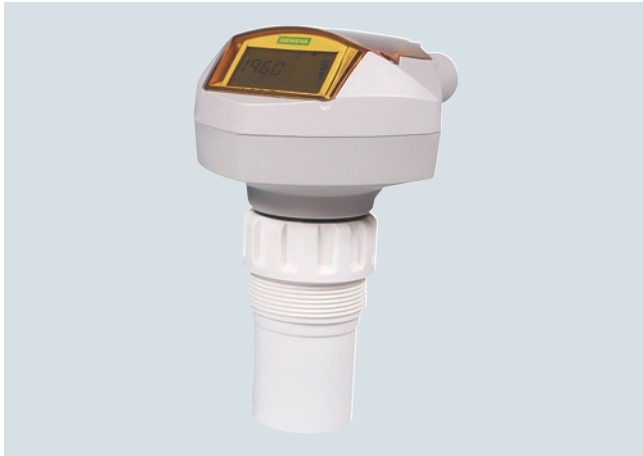
SITRANS LU180 connections

Level Measurement

Continuous level measurement
Ultrasonic transmitters

SITRANS Probe LU

Overview



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

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 or PROFIBUS PA
- ETFE or PVDF transducers for chemical compatibility
- Sonic Intelligence signal processing
- Auto False-Echo Suppression for fixed obstruction avoidance
- Level to volume or level to flow conversion

Application

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

The range of SITRANS Probe LU is 6 or 12 m (20 or 40 ft). Using Sonic Intelligence, Auto False Echo Suppression for fixed obstruction avoidance, and accuracy of 0.15 % of range or 6 mm (0.25 inch), the Probe LU provides unmatched reliability.

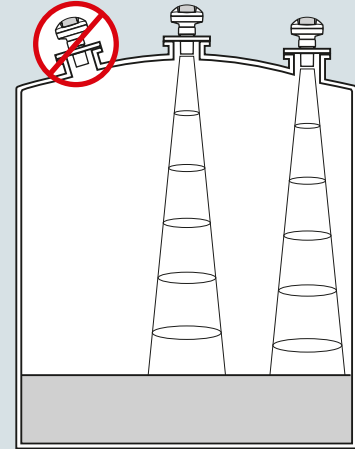
The Probe LU offers two communications options: HART or PROFIBUS PA (Profile version 3.0, Class B).

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.

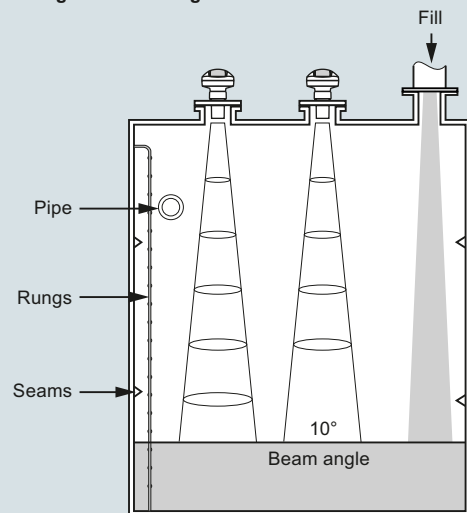
- Key Applications: chemical storage vessels, filter beds, liquid storage vessels

Configuration

Parabolic mounting



Flat mounting and beam angle



SITRANS Probe LU mounting

Technical specifications

Mode of operation		Process connection	
Measuring principle	Ultrasonic level measurement	Threaded connection	2" NPT [(Taper), ANSI/ASME B1.20.1] R 2" [(BSPT), EN 10226] or G 2" [(BSPP), EN ISO 228-1]
Typical application	Level measurement in storage vessels and simple process vessels	Flange connection	3 inch (80 mm) universal flange
Inputs		Other connection	FMS 200 mounting bracket (see page 4/186) or customer supplied mount
Measuring range		Display and Controls	
• 6 m (20 ft) model	0.25 ... 6 m (10 inch ... 20 ft)	Interface	Local: LCD display with bar graph Remote: Available via HART or PROFIBUS PA
• 12 m (40 ft) model	0.25 ... 12 m (10 inch ... 40 ft)	Configuration	Using Siemens SIMATIC PDM (PC) or HART handheld communicator or Siemens infrared handheld programmer
Frequency	54 kHz	Memory	Non-volatile EEPROM
Outputs		Power supply	
mA/HART		4 ... 20 mA/HART	Nominal 24 V DC with 550 Ω maximum; maximum 30 V DC 4 ... 20 mA
• Range	4 ... 20 mA	PROFIBUS PA	12, 13, 15, or 20 mA depending on programming (General Purpose or Intrinsically Safe version) per IEC 61158-2
• Accuracy	± 0.02 mA	Certificates and Approvals	
PROFIBUS PA	Profile 3, Class B	General	CSA _{US/C} , FM, CE, RCM
Performance		Marine (only applies to HART communication option)	• Lloyd's Register of Shipping • ABS Type Approval
Resolution	≤ 3 mm (0.12 inch)	Hazardous	
Accuracy	\pm the greater of 0.15 % of range or 6 mm (0.24 inch)	• Intrinsically Safe (Europe)	ATEX II 1G Ex ia IIC T4 Ga
Repeatability	≤ 3 mm (0.12 inch)	• Intrinsically Safe (USA/Canada)	CSA/FM, Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III T4
Blanking distance	0.25 m (10 inch)	• Intrinsically Safe (International)	SIR 13.0008X Ex ia IIC T4 Ga
Update time	≤ 5 s	• Intrinsically Safe (Brazil)	INMETRO Ex ia IIC T4 Ga
• 4/20 mA/HART version	≤ 5 s at 4 mA	• Non-incendive (USA)	FM Class I, Div. 2, Groups A, B, C, D T4
• PROFIBUS version	≤ 4 s at 15 mA current loop	Handheld Programmer	
Temperature compensation	Built-in to compensate over temperature range	Intrinsically Safe Siemens handheld programmer	Infrared receiver
Beam angle	10°	• Approvals for handheld programmer	ATEX II 1GD / IECEx SIR 09.0073 Ex ia IIC T4 Ga Ex iaD 20 T135 °C FM/CSA Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G T6
Rated operating conditions		Ambient temperature	-20 ... 50 °C (-5 ... 122 °F)
Ambient conditions		Interface	Proprietary infrared pulse signal
• Location	Indoor/outdoor	Power	3 V lithium battery (non-replaceable)
• Ambient temperature	-40 ... +80 °C (-40 ... +176 °F)		
• Relative humidity/ingress protection	Suitable for outdoor		
• Installation category	I		
• Pollution degree	4		
Medium conditions			
• Temperature at flange or threads	-40 ... +85 °C (-40 ... +185 °F)		
• Pressure (vessel)	0.5 bar g (7.25 psi g)		
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 lb)		
Cable inlet	2 x M20 x 1.5 cable gland or 2 x ½" NPT thread or 1 x M20 x 1.5 and 1 x ½" NPT		
Material (transducer)	Buna-N seal with ETFE (Ethylene Tetrafluoroethylene) or PVDF (Polyvinylidene Fluoride)		

Level Measurement

Continuous level measurement
Ultrasonic transmitters

SITRANS Probe LU

Selection and Ordering data

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

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Enclosure/Cable Inlet

Plastic (PBT), 1 x M20 x 1.5 and 1 x 1/2" NPT (no cable glands supplied)
Plastic (PBT), 2 x M20 x 1.5 (includes 1 general purpose cable gland: 7ML1930-1AM)
Plastic (PBT), 2 x 1/2" NPT (no cable glands supplied)

Range/Transducer material

6 m (20 ft), ETFE
6 m (20 ft), PVDF Copolymer
12 m (40 ft), ETFE
12 m (40 ft), PVDF Copolymer

Process connection

2" NPT [(Taper), ANSI/ASME B1.20.1]
R 2" [(BSPT), EN 10226]
G 2" [(BSPP), EN ISO 228-1]

Communication/Output

4 ... 20 mA, HART
PROFIBUS PA

Approvals

General Purpose, FM, CSA_{US/C}, CE, RCM, KCC
Non-incendive, FM Class I, Div. 2, Groups A, B, C, D T5¹⁾
Intrinsically Safe, CSA/FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III T4²⁾
Intrinsically Safe ATEX 1G / JECEX / INMETRO Ex ia IIC T4 Ga, RCM, KCC²⁾
Intrinsically Safe ATEX 1G / JECEX / INMETRO Ex ia IIC T4 Ga, RCM, KCC³⁾
Intrinsically safe, CSA/FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III T4³⁾

¹⁾ Available with Enclosure/Cable Inlet option 2 only.

²⁾ Available with Communication option 2 only.

³⁾ Available with Communication option 1 only.

Article No.

7ML5221-

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Selection and Ordering data

Further designs

Please add **"-Z"** to Article No. and specify Order code(s).

Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]:
Measuring-point number/identification (max. 27 characters) specify in plain text

Operating Instructions for HART/mA device

English

Note: The Operating Instructions should be ordered as a separate item on the order.

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Accessories

Handheld programmer, Intrinsically Safe, EEx ia
Handheld programmer, General Purpose approvals
Handheld programmer, Infrared, Intrinsically Safe, PROFIBUS PA

HART modem/USB
(for use with a PC and SIMATIC PDM)

2" NPT locknut, plastic

2" BSPT locknut, plastic

3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" NPT

3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" BSPT

One General Purpose polymeric cable gland M20 x 1.5, rated for -20 ... +80 °C (-4 ... +176 °F)

One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F) for General Purpose or ATEX EEx e installations (available for HART only)

One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F) with integrated shield connection (available for PROFIBUS PA)

Universal box bracket, FMS-200

Probe LU rock guard and sunshield

SITRANS RD100, loop powered display - see Chapter 7

SITRANS RD200, universal input display with Modbus conversion - see Chapter 7

SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7

SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7

For applicable back up point level switch see point level measurement section.

Spare Parts

Plastic lid

Order code

Y15

Article No.

A5E32337695

7ML5830-2AH

A5E36563512

7ML5830-2AJ

7MF4997-1DB

7ML1830-1DT

7ML1830-1DQ

7ML1830-1BT

7ML1830-1BU

7ML1930-1AM

7ML1930-1AP

7ML1930-1AQ

7ML1830-1BK

7ML1930-1GH

7ML5741-...

7ML5740-...

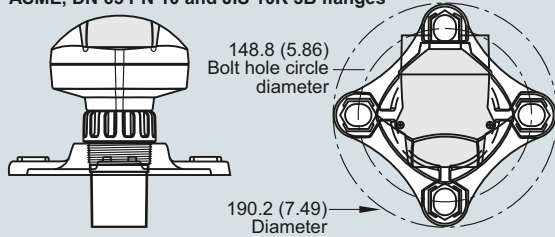
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7ML1830-1KB

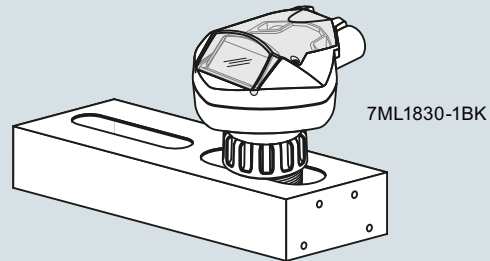
Options

Flange adapter for mating 2" NPT or 2" BSP process connections to 3" ASME, DN 65 PN 10 and JIS 10K 3B flanges



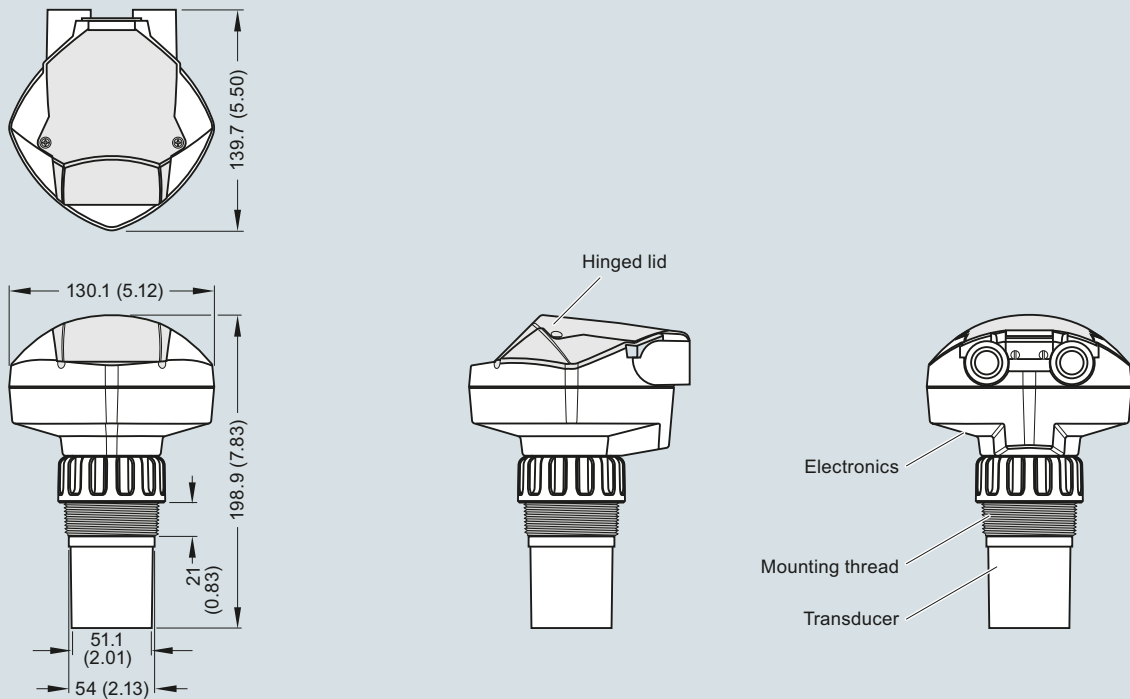
SITRANS Probe LU optional flange adapter, dimensions in mm (inch)

SITRANS Probe LU with FMS 200 universal box bracket



SITRANS Probe LU with optional mounting bracket

Dimensional drawings



Note: Above model is shown without M20 cable glands or 1/2" NPT conduit connectors.

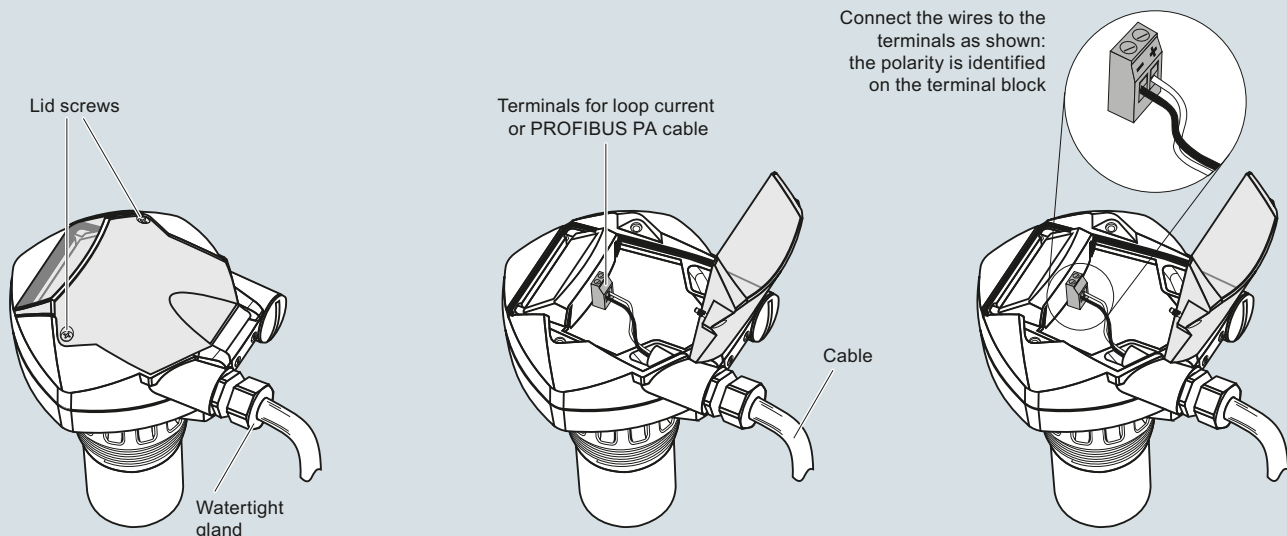
SITRANS Probe LU, dimensions in mm (inch)

Level Measurement

Continuous level measurement
Ultrasonic transmitters

SITRANS Probe LU

Circuit diagrams



Note:

- HART model above is shown with M20 cable glands. 1/2" 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.
- Separate cables and conduit may be required to conform to standard instrumentation wiring practices or electrical codes.

SITRANS Probe LU connections

Overview



The Probe is a short-range integrated ultrasonic level transmitter, ideal for liquids and slurries in open or closed vessels.

Benefits

- Easy to install, program, and maintain
- Accurate and reliable
- Sanitary models available
- Sonic Intelligence echo processing
- Integral temperature compensation

Application

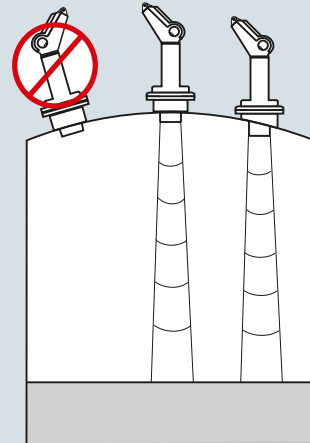
The transducer is available in PVDF copolymer, making the device suitable for use in a wide variety of applications. The Probe is easy to install and maintain, and can be quickly removed for cleaning as required by the food, beverage and pharmaceutical industries.

The reliability of the level data is based on the Sonic Intelligence echo processing algorithms. A filter discriminates between the true echo and false echoes from acoustic or electrical noises and agitator blades in motion. The ultrasonic pulse propagation time to the material and back is temperature-compensated and converted into distance for display, analog output and relay actuation.

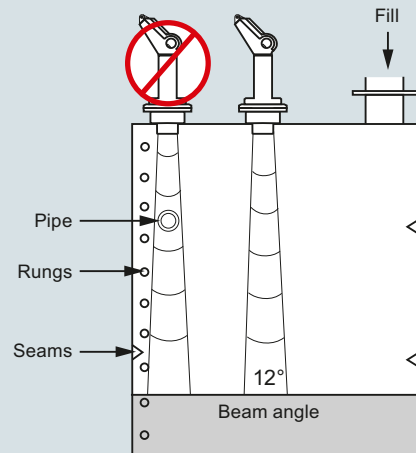
- Key Applications: chemical storage vessels, filter beds, mud pits, liquid storage vessels, food applications

Configuration

Parabolic mounting



Flat mounting and beam angle



The Probe mounting

Level Measurement

Continuous level measurement
Ultrasonic transmitters

The Probe

Technical specifications

3-wire version	
Mode of operation	
Measuring principle	Ultrasonic level measurement
Input	
Measuring range	0.25 ... 5 m (0.8 ... 16.4 ft)
Frequency	54 kHz
Output	
mA	4 ... 20 mA
• Span	Proportional/ inversely proportional
• Max. load	750 Ω at 24 V DC
Relay	For level alarm or fault
Power supply	
Supply voltage	18 ... 30 V DC, max. 0.2 A
Max. power consumption	5 W (200 mA at 24 V DC)
Certificates and approvals	CE, RCM, CSA _{US/C} , FM
Accuracy	
Error in measurement	0.25 % of measuring range (in air)
Resolution	3 mm (0.125 inch)
Temperature compensation	Built in
Echo processing	Sonic Intelligence
Rated operation conditions	
Beam angle	12°
Ambient temperature	
• Standard	-40 ... +60 °C (-40 ... +140 °F)
• Metallic mounting	-20 ... +60 °C (-4 ... +140 °F)
Max. static operating pressure	Normal atmospheric pressure
Degree of protection	IP65
Design	
Weight	
• Without flange adapter	1.5 kg (3.3 lb)
• With flange adapter	1.7 kg (3.7 lb)
Material	
• Electronics enclosure	PVC
• Transducer	PVDF copolymer
Degree of protection	IP65
Process connection	<ul style="list-style-type: none"> • 2" NPT [(Taper), ANSI/ASME B1.20.1] • R 2" [(BSPT), EN 10226] • G 2" [(BSPP), EN ISO 228-1] • 4" sanitary
Flange adapter	3" Universal (fits DN 65, PN 10 and 3" ASME)
Cable inlet	2 inlets for PG 16 or ½" NPT cable glands

Selection and Ordering data

Article No.

The Probe

Short-range integrated ultrasonic level transmitter, ideal for liquids and slurries in open or closed vessels

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Measuring range

5 m (16.40 ft)

Transducer/Process connection

PVDF copolymer, 2" NPT [(Taper), ANSI/ASME B1.20.1]
 PVDF copolymer, R 2" [(BSPT), EN 10226]
 PVDF copolymer, G 2" [(BSPP), EN ISO 228-1]
 PVDF copolymer, 4" Sanitary mounting

Model/Approval

3-wire, 24 V DC, CE, RCM, CSA, FM

7ML1201-

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Selection and Ordering data

Order code

Further designs

Please add "-Z" to Article No. and specify Order code(s).

Acrylic coated, stainless steel tag [13 x 45 mm (0.5 x 1.75 inch)]: Measuring-point number/identification (max. 20 characters) specify in plain text

Y17

Operating Instructions

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Accessories

Universal Box Bracket Mounting kit

Sanitary 4" mounting clamp

3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" NPT

3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" BSPT

2" NPT locknut, plastic

2" BSPT locknut, plastic

Plastic M20 cable gland with metal locknut

SITRANS RD100, loop powered display - see Chapter 7

SITRANS RD200, universal input display with Modbus conversion - see Chapter 7

SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7

SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7

For applicable back up point level switch see point level measurement section.

Article No.

7ML1830-1BK

7ML1830-1BR

7ML1830-1BT

7ML1830-1BU

7ML1830-1DT

7ML1830-1DQ

7ML1930-1DB

7ML5741-...

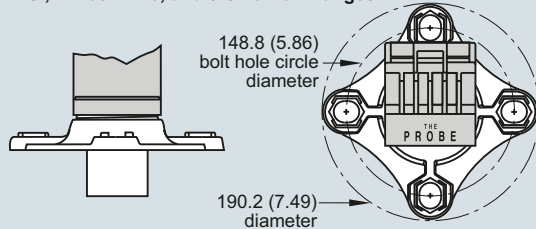
7ML5740-...

7ML5744-...

7ML5750-...

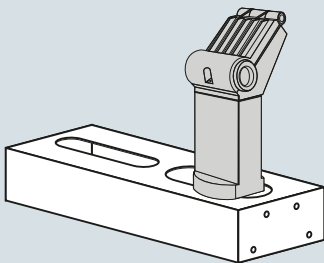
Options

Flange adapter for mating 2" NPT or 2" BSP process connections to 3" ANSI, DN 65 PN10, and JIS 10K 3B flanges



The Probe optional flange adapter, dimensions in mm (inch)

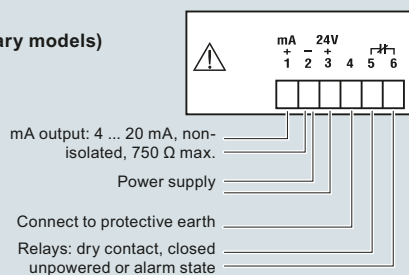
The Probe with FMS 200 mounting bracket



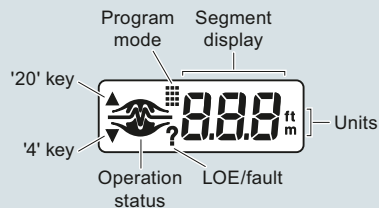
The Probe with optional mounting bracket

Circuit diagrams

3 wire model
(standard and sanitary models)



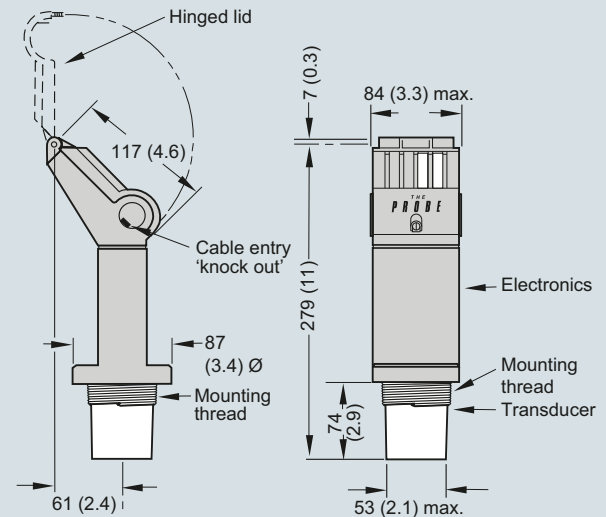
Display



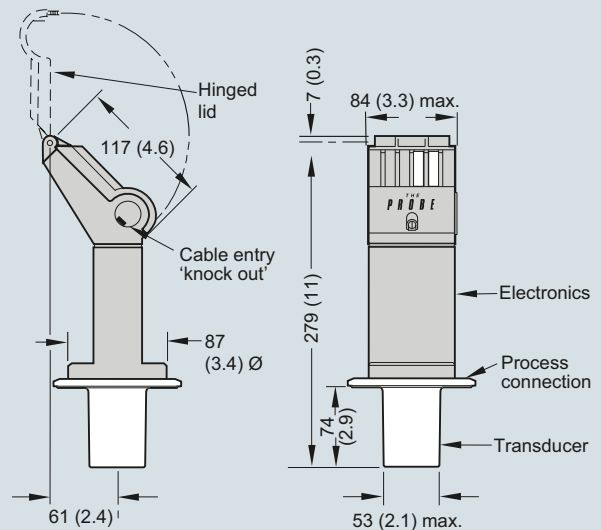
The Probe connections

Dimensional drawings

Standard model



Sanitary model



The Probe, dimensions in mm (inch)

Level Measurement

Continuous level measurement
Ultrasonic controllers

SITRANS LUT400 series

Overview



The SITRANS LUT400 series controllers are compact, single point, long-range ultrasonic controllers for continuous level or volume measurement of liquids, slurries, solids, and high accuracy monitoring of open channel flow.

Benefits

- Small 1/2 DIN enclosure [144 h x 144 d x 146 w mm (5.7 x 5.7 x 5.75 inch)] with standard universal mounting bracket for wall, pipe, and DIN rail, plus an optional panel mount
- Easy to use HMI display with local four-button programming, menu-driven parameters, and Wizard support for key applications
- English, German, French, Spanish, Chinese, Italian, Portuguese, and Russian texts on the HMI.
- Level, Volume, OCM Flow monitoring
- Three relays combined with a suite of pump, alarm, and relay control features
- HART Communications
- EDDs for SIMATIC PDM, AMS Device Manager, and Field Communicator 375/475, plus DTMs for FDTs (Field Device Tools)
- Web browser for local programming from an intuitive web-based interface
- Two discrete inputs for backup level override and pump interlock functions
- Echo profile and trend views from the local display
- Patented digital receiver for improved performance in electrically noisy applications (close proximity to VSDs)
- Real time clock with daylight savings time, supporting an integrated datalogger and energy saving algorithms for minimizing pump operation during high cost energy periods
- Removable terminal blocks for ease of wiring
- MCERTS Certified for Open Channel Flow

Application

The SITRANS LUT400 comes in three different models, depending on the application, level of performance and functionality required:

- SITRANS LUT420 Level Controller: Level or volume measurement of liquids, slurries, and solids, as well as basic pump control functions, and basic data logging capability
- SITRANS LUT430 Level, Pump and Flow Controller: Includes all features of the LUT420 plus a full suite of advanced pump control and alarm functionality, open channel flow monitoring, and basic flow data logging capability
- SITRANS LUT440 High Accuracy OCM: Our most featured, highest accuracy model. Includes all features of the LUT430, plus the industry's best accuracy (± 1 mm within 3 m), full suite of advanced control functionality, and enhanced flow logging capability
- Key Applications: wet wells, reservoirs, flumes/weirs, chemical storage, liquid storage, hoppers, crusher bins, dry solids storage

Technical specifications

Mode of Operation	Ultrasonic level, volume, pump, and open channel flow
Measuring range	0.3 ... 60 m (1 ... 196 ft), transducer dependent
Input	
Discrete	0 ... 50 V DC switching level Logical 0 ≤ 10 V DC Logical 1 = 10 ... 50 V DC Max. 3 mA
Output	
Transducer frequency	10 ... 52 kHz
Ultrasonic transducer	Compatible transducers: All Echo-Max and ST-H series transducers
Relays	<ul style="list-style-type: none"> • 1 SPDT Form C, NO or NC relay, rated 1A at 250 V AC, non-inductive and 3A at 30 V DC • 2 SPST Form A, NO relays, rated 5A at 250 V AC, non-inductive and 3 A at 30 V DC
mA output	4 ... 20 mA, isolated
Max. load	600 Ω max. in ACTIVE mode, 750 Ω max. in PASSIVE mode
Resolution	0.1 % of range
Accuracy	
Error in measurement	<ul style="list-style-type: none"> • Standard operation: ± 1 mm (0.04 inch) plus 0.17 % of measured distance • High accuracy OCM: ± 1 mm (0.04 inch), within 3 m (9.84 ft) range
Resolution	<ul style="list-style-type: none"> • Standard operation: 0.1 % of range or 2 mm (0.08 inch), whichever is greater • High accuracy OCM: 0.6 mm (0.02 inch), within 3 m (9.84 ft) range
Temperature compensation	<ul style="list-style-type: none"> • -40 ... +150 °C (-40 ... +300 °F) • Integral temperature sensor in transducer • External TS-3 temperature sensor (optional) • Programmable fixed temperature values
Rated operating conditions	
Installation conditions	
• Location	Indoor/outdoor
• Installation category	II
• Pollution degree	4
Ambient conditions	
• Ambient temperature (enclosure)	-20 ... +50 °C (-4 ... +122 °F)

Design	
Weight	
• Enclosure with display lid	1.3 kg (2.87 lb)
• Enclosure with blank lid	1.2 kg (2.65 lb)
Material (enclosure)	Polycarbonate
Degree of protection	
• Enclosure with display or blank lid	IP65/Type 4X/NEMA 4X
• Enclosure with blank lid and knock-out removed	IP20
Remote display lid	IP65/Type 3/NEMA 3
Cable	
Transducer and mA output signal	<ul style="list-style-type: none"> • Transducer, mA output: 2 copper conductors, twisted, with foil shield/drain wire, 300 V 0.5 ... 0.75 mm² (22 ... 18 AWG) • Relay/power to be copper conductors per local requirements to meet 250 V 5 A contact rating
Max. separation between transducer and transceiver	365 m (1 200 ft)
Displays and controls	60 x 40 mm (2.36 x 1.57 inch) removable LCD, 240 x 160 pixels resolution, operational up to 5 m from enclosure base
Programming	
• Primary	4 Local push buttons
• Secondary	<ul style="list-style-type: none"> • PC running SIMATIC PDM • PC running Emerson AMS Device Manager • PC running a web browser • PC running a Field Device Tool (FDT) • Field Communicator 375/475 (FC375/FC475)
Memory	<ul style="list-style-type: none"> • 512 kB flash EPROM • 1.5 MB flash for data logging
Power supply	
AC version	100 ... 230 V AC ± 15 %, 50/60 Hz, 36 VA Fuse: 5 x 20 mm, Slow Blow, 0.25 A, 250 V
DC version	10 ... 32 V DC, 10 W Fuse: 5 x 20 mm, Slow Blow, 1.6 A, 125 V
Certificates and approvals	
General	CSA _{US/C} , CE, FM, UL listed, RCM, EAC, KCC, MCERTS certified for Open Channel Flow
Hazardous	
• Non-incendive (Canada)	CSA Class I, Div. 2, Groups A, B, C, D; Class II, Div. 2, Groups F, G; Class III
• Shipping	Lloyd's Register, ABS
Communication	HART 7.0, USB

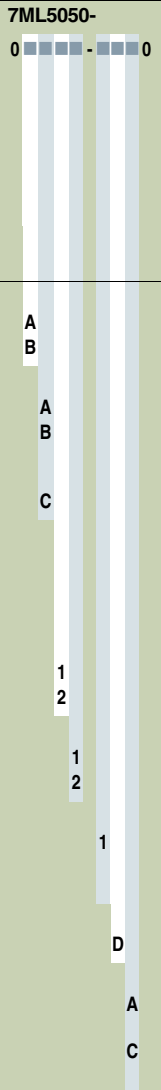
Level Measurement

Continuous level measurement

Ultrasonic controllers

SITRANS LUT400 series

		SITRANS LUT420	SITRANS LUT430	SITRANS LUT440
Category	Feature	Level Controller	Level, pump and flow controller	High accuracy OCM controller
Operations	Level, space, and distance measurement	✓	✓	✓
	Open channel flow measurement		✓	✓
	Volume conversion	✓	✓	✓
Specifications	Compatible with EchoMax and ST-H transducers	✓	✓	✓
	Standard accuracy: $\pm 1 \text{ mm} + 0.17 \%$ of measured distance	✓	✓	✓
	High accuracy: $\pm 1 \text{ mm}$ within 3 meters			✓
	Mounting options: wall or panel, pipe, DIN-rail	✓	✓	✓
Data logging and communications	HART communications	✓	✓	✓
	4 ... 20 mA output (active and passive)	✓	✓	✓
	Integrated datalogger for measurement value and alarms	✓	✓	✓
	Integrated datalogger for fixed rate flow logging		✓	✓
	Integrated datalogger for variable rate flow logging triggered by changes in flow condition			✓
	Daily data logging for maximum, minimum and average flow, daily totalized volume, and minimum and maximum temperature		✓	✓
Flow monitoring	High accuracy open channel flow measurement			✓
	9 digit daily and running flow totalizers		✓	✓
	High and low flowrate alarms		✓	✓
	External totalizer and sampler control		✓	✓
	MCERTS Class 1 Certification			✓
	MCERTS Class 2 Certification		✓	
Pump control	Energy saving algorithms for pump control		✓	✓
	Wall cling reduction	✓	✓	✓
	Pump run-on functionality		✓	✓
	Pump start and power resumption delays		✓	✓
	Alternate duty pump routines	✓	✓	✓
	Fixed duty and service ratio pump routines		✓	✓
	Pumped volume totalizer		✓	✓
	Submergence detection	✓	✓	✓
	Discrete input pump interlocks		✓	✓
	Time to spill calculation		✓	✓

Selection and Ordering data		Article No.	Selection and Ordering data		Article No.
SITRANS LUT420 and LUT430 Compact ultrasonic level controllers for continuous short to long-range level or volume measurement of liquids, slurries, and solids. Both units include basic relay functions for pumps, alarms, and other controls, plus onboard data logging. LUT430 offers additional advanced pump control and alarm functionality, open channel flow monitoring, and basic flow data logging capability. Functionality varies by model.		7ML5050- 	Accessories Tag, stainless steel, 12 x 45 mm (0.47 x 1.77 inch), one text line, suitable for enclosure TS-3 Temperature Sensor - see TS-3 on page 4/188 Panel mount cable extension, 2.5 m (8.2 ft) Qty 3 cable glands and retaining nuts USB cable, 2 m (6.56 ft) - Standard USB-A to USB-mini B Hart modem/USB (for use with a PC and SIMATIC PDM) Sunshield, 304 stainless steel SITRANS RD100, loop powered display - see Chapter 7 SITRANS RD200, universal input display with Modbus conversion - see Chapter 7 SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7 SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7		7ML1930-1AC 7ML1813-... 7ML1930-1GF 7ML1930-1GB 7ML1930-1GD 7MF4997-1DB 7ML1930-1GE 7ML5741-... 7ML5740-... 7ML5744-... 7ML5750-...
<p>➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p> <p>Model SITRANS LUT420 - Level controller SITRANS LUT430 - Level, Pump & Flow controller</p> <p>Enclosure display options With display With remote panel mount display [Includes panel mount cable extension, 2.5 m (8.2 ft)] No display (blank lid provided) Note: Enclosure includes back-plate for wall and pipe mounting, and an integrated clip for DIN-rail mounting. DIN-rail mounting for standard TS35 x 7.5 and TS35 x 15 mm DIN-rail to IEC 60715, EN 60715</p> <p>Input voltage 100 ... 230 V AC ± 15 % 10 ... 32 V DC</p> <p>Cable inlet 3 cable inlets, cable glands not supplied 3 cable inlets, 3 M20 plastic cable glands supplied</p> <p>Number of measurement points Single point system (includes one transducer input, one mA output, and one external temperature sensor input)</p> <p>Communications and I/O HART, 2 discrete inputs, 3 relays</p> <p>Approvals General purpose CE, FM, CSA_{US/IC}, UL, RCM, EAC, KCC Hazardous locations CSA Class I, II, III, Div. 2, Groups A, B, C, D, F, G</p>			Spare parts Panel mount retrofit kit (convert standard unit with display to panel mount version) Terminal block replacement kit (5 piece kit with one of each removable terminal) Wall/Pipe mount plate Enclosure (include blank label) SITRANS LUT400 Lid (with Display) SITRANS LUT400 Lid (blank) Fuse - AC (0.25 A, 250 V, Slow Blow) Fuse - DC (1.6 A, 125 V, Slow Blow) Panel mount gasket and fastener kit DIN-rail clip LUT420, assembly, DC, board stack with cradle, hazardous LUT420, assembly, AC, board stack with cradle, hazardous LUT430, assembly, DC, board stack with cradle, hazardous LUT430, assembly, AC, board stack with cradle, hazardous		7ML1830-1PA 7ML1830-1PB 7ML1830-1PC 7ML1830-1PD 7ML1830-1PE 7ML1830-1PF 7ML1830-1PG 7ML1830-1PH 7ML1830-1PK 7ML1830-1PL A5E42824561 A5E42824563 A5E42824565 A5E42824570
Selection and Ordering data		Order code			
Further designs Please add "-Z" to Article No. and specify Order code(s). Manufacturer's test certificate M to DIN 55350, Part 18 and to ISO 9000 Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text Namur NE43 failsafe setting - device preset to failsafe < 3.6 mA		C11 Y15 N07			
Operating Instructions English German Note: The Operating Instructions should be ordered as a separate line item on the order. All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation		Article No. A5E33329501 A5E35690863			

Level Measurement

Continuous level measurement
Ultrasonic controllers

SITRANS LUT400 series

Selection and Ordering data

Article No.

SITRANS LUT440

The SITRANS LUT440 is the most accurate and featured model in the LUT400 series. It includes high accuracy open channel monitoring, relay functions for external samplers, totalizers, alarms, and enhanced data logging, as well as all pump and control functions available with other models in the LUT400 series.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Model

SITRANS LUT440 - High accuracy Open Channel Monitor¹⁾

Enclosure display options

With display

With remote panel mount display [includes panel mount cable extension, 2.5 m (8.2 ft)]
No display (blank lid provided)

Note: Enclosure includes back-plate for wall and pipe mounting, and an integrated clip for DIN-rail mounting. DIN-rail mounting for standard TS35 x 7.5 and TS35 x 15 mm DIN-rail to IEC 60715, EN 60715

Input voltage

100 ... 230 V AC \pm 15 %
10 ... 32 V DC

Cable inlet

3 cable inlets, cable glands not supplied
3 cable inlets, 3 M20 plastic cable glands supplied

Number of measurement points

Single point system (includes one transducer input, one mA output, and one external temperature sensor input)

Communications and I/O

HART, 2 discrete inputs, 3 relays

Approvals

General purpose CE, FM, CSA_{US/C}, UL, RCM, EAC, KCC

Hazardous locations CSA Class I, II, III, Div. 2, Groups A, B, C, D, F, G

¹⁾ Compatible with all EchoMax Transducers. High accuracy OCM performance with the use of an XRS-5 transducer and TS-3 temperature sensor (each sold separately).

Article No.

7ML5050-

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Selection and Ordering data

Article No.

Accessories

Tag, stainless steel, 12 x 45 mm (0.47 x 1.77 inch), one text line, suitable for enclosure

TS-3 Temperature Sensor - see TS-3 on page 4/188

Panel mount cable extension 2.5 m (8.2 ft)

Qty 3 cable glands and retaining nuts

USB cable 2 m (6.56 ft) - Standard USB-A to USB-mini B

HART modem/USB
(for use with PC and SIMATIC PDM)

Sunshield, 304 stainless steel

SITRANS RD100, loop powered display - see Chapter 7

SITRANS RD200, universal input display with Modbus conversion - see Chapter 7

SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7

SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7

Spare parts

Panel mount retrofit kit (convert standard unit with display to panel mount version)

Terminal block replacement kit
(5 piece kit with one of each removable terminal)

Wall/Pipe mount plate

Enclosure (include blank label)

SITRANS LUT400 Lid (with Display)

SITRANS LUT400 Lid (blank)

Fuse - AC (0.25 A, 250 V, Slow Blow)

Fuse - DC (1.6 A, 125 V, Slow Blow)

Panel mount gasket and fastener kit

DIN-rail clip

LUT440, assembly, DC, board stack with cradle, hazardous

LUT440, assembly, AC, board stack with cradle, hazardous

Article No.

7ML1930-1AC

7ML1813-...

7ML1930-1GF

7ML1930-1GB

7ML1930-1GD

7MF4997-1DB

7ML1930-1GE

7ML5741-...

7ML5740-...

7ML5744-...

7ML5750-...

7ML1830-1PA

7ML1830-1PB

7ML1830-1PC

7ML1830-1PD

7ML1830-1PE

7ML1830-1PF

7ML1830-1PG

7ML1830-1PH

7ML1830-1PK

7ML1830-1PL

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Selection and Ordering data

Order code

Further designs

Please add "-Z" to Article No. and specify Order code(s).

Manufacturer's test certificate M to DIN 55350, Part 18 and to ISO 9000

Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]:
Measuring-point number/identification
(max. 27 characters) specify in plain text

Namur NE43 failsafe setting - device preset to failsafe < 3.6 mA

Operating Instructions

English

German

Note: The Operating Instructions should be ordered as a separate line item on the order.

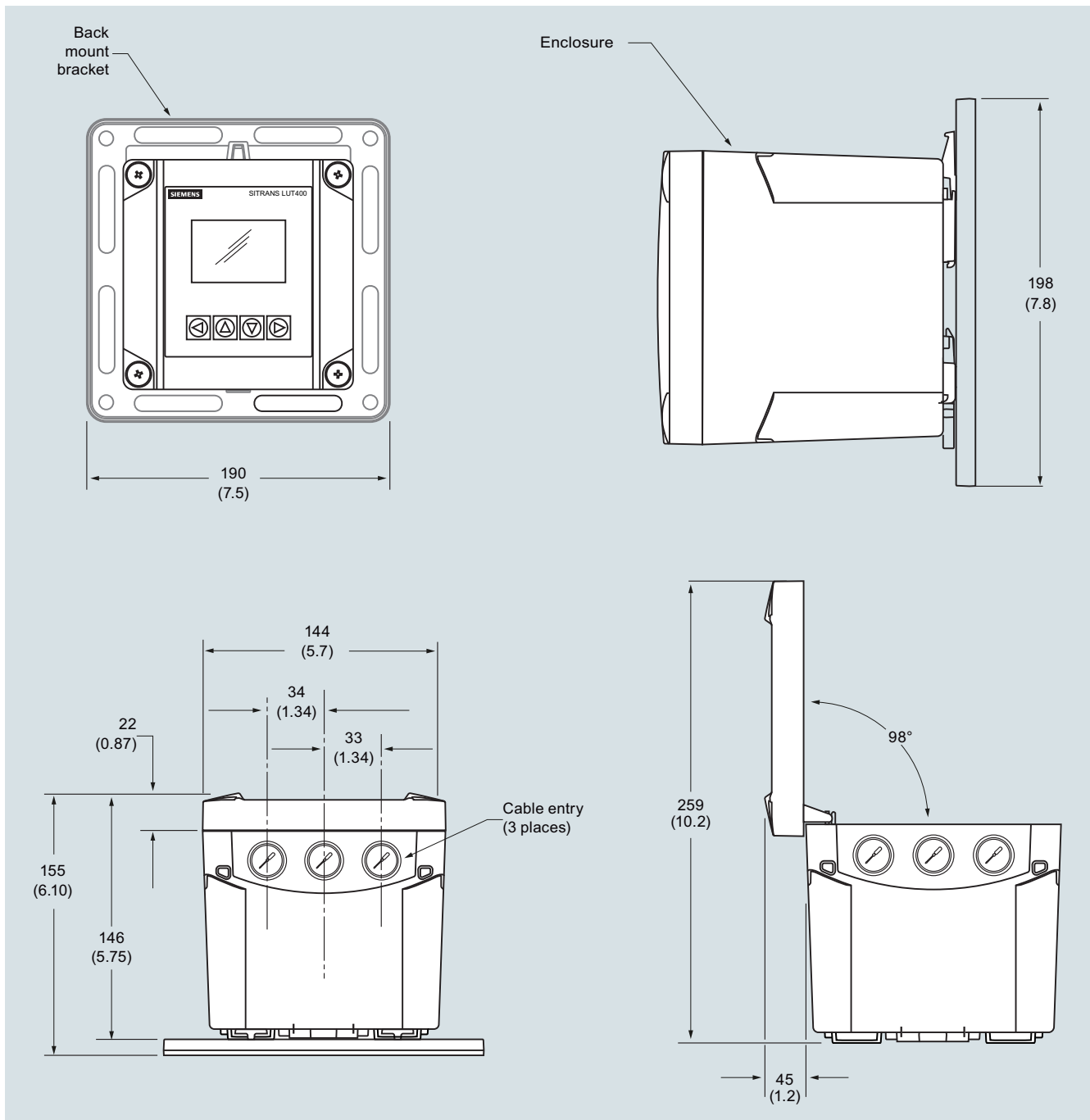
All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Article No.

A5E33329501

A5E35690863

Dimensional drawings

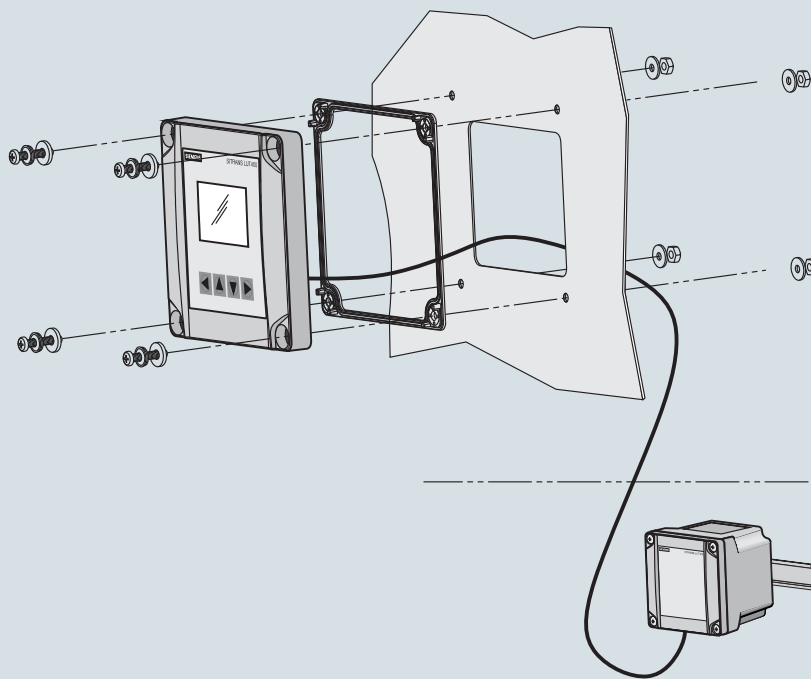
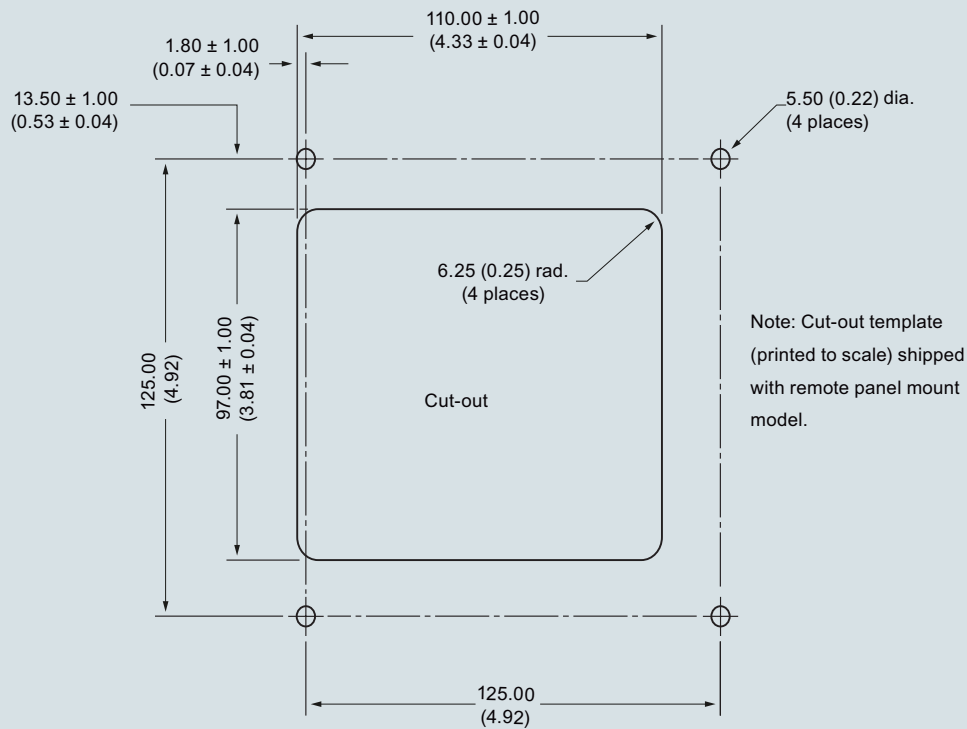


SITRANS LUT400, dimensions in mm (inch)

Level Measurement

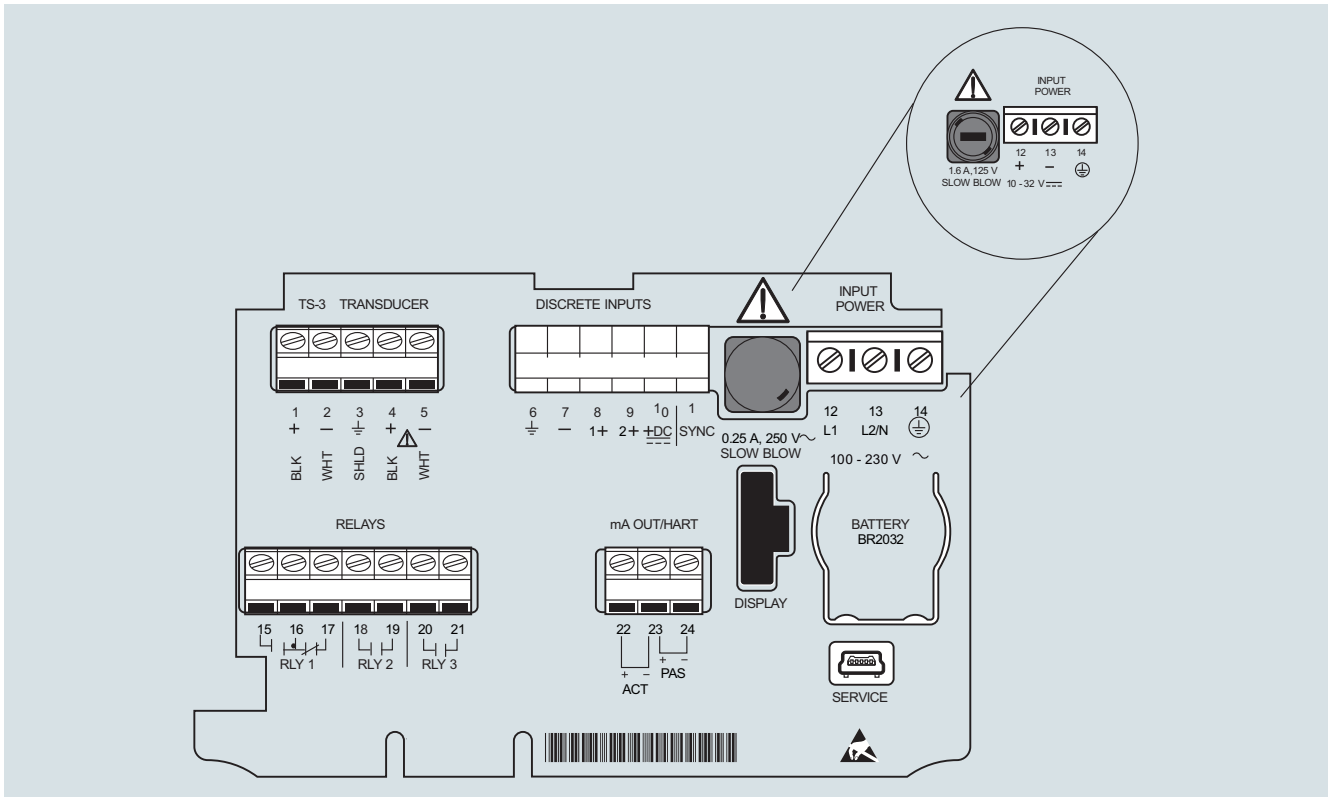
Continuous level measurement

Ultrasonic controllers

SITRANS LUT400 series

SITRANS LUT400, dimensions in mm (inch)

Circuit diagrams



SITRANS LUT400 connections

Level Measurement

Continuous level measurement
Ultrasonic controllers

MultiRanger 200 HMI

Overview



MultiRanger 200 HMI is a versatile short to medium-range ultrasonic single and multi-vessel level monitor/controller for virtually any application in a wide range of industries.

Benefits

- Easy to use HMI display with local four-button programming, menu-driven parameters, and Wizard support for key applications
- English, German, French, Spanish, Chinese, Italian, Portuguese, and Russian texts on the HMI
- Removable terminal blocks for ease of wiring
- Digital input for back-up level override from point level device
- Communication using built-in Modbus RTU via RS 485 and SIMATIC PDM configuration software
- Compatible with SmartLinx system: PROFIBUS DP, ProfiNet (cyclic access of process values only), DeviceNET, Modbus TCP/IP, and Ethernet/IP
- Single or dual point level monitoring
- Auto False-Echo Suppression for fixed obstruction avoidance
- Differential amplifier transceiver for common mode noise reduction and improved signal-to-noise ratio
- Level, volume, and flow measurements in open channels, differential control, extended pump control, and alarm functions
- Wall and panel mounting options

Application

MultiRanger 200 HMI can be used with various materials, including, water, municipal waste, acids, woodchips, or on materials with high angles of repose. MultiRanger 200 HMI offers true dual point monitoring, digital communications with built-in Modbus RTU via RS 485, as well as compatibility with SIMATIC PDM, allowing PC configuration and set-up. MultiRanger 200 HMI features Sonic Intelligence advanced echo-processing software for increased reading reliability.

MultiRanger 200 HMI will monitor open channel flow and features more advanced relay alarming and pump control functions as well as volume conversion.

It is compatible with chemical-resistant EchoMax transducers that are approved for hostile environments.

- Key Applications: wet wells, flumes/weirs, bar screen control, hoppers, chemical storage, liquid storage, crusher bins, dry solids storage

Design

The MultiRanger 200 HMI is available in wall or panel mounting options.

Technical specifications

Mode of Operation	
Measuring principle	Ultrasonic level measurement
Measuring range	0.3 ... 15 m (1 ... 50 ft)
Measuring points	1 or 2
Input	
Analog	0 ... 20 mA or 4 ... 20 mA, from alternate device, scalable
Discrete	10 ... 50 V DC switching level Logical 0 ≤ 0.5 V DC Logical 1 = 10 ... 50 V DC max. 3 mA
Output	
EchoMax transducer	44 kHz
Ultrasonic transducer	Compatible transducers: ST-H and EchoMax series XPS-10, XPS-15/15F, and XRS-5
Relays	Rating 5 A at 250 V AC, non-inductive
mA output	0 ... 20 mA or 4 ... 20 mA
• Max. load	750 Ω, isolated
• Resolution	0.1 % of range
Accuracy	
Error in measurement	0.25 % of range or 6 mm (0.24 inch), whichever is greater
Resolution	0.1 % of measuring range ¹⁾ or 2 mm (0.08 inch), whichever is greater
Temperature compensation	<ul style="list-style-type: none"> • -50 ... +150 °C (-58 ... +302 °F) • Integral temperature sensor • External TS-3 temperature sensor (optional) • Programmable fixed temperature values
Rated operating conditions	
Installation conditions	
• Location	Indoor/outdoor
• Installation category	II
• Pollution degree	4
Ambient conditions	
• Ambient temperature (housing)	-20 ... +50 °C (-4 ... +122 °F)

Design	
Weight	
• Wall mount	1.22 kg (2.68 lb)
• Panel mount	1.35 kg (2.97 lb)
Material (enclosure)	Polycarbonate
Degree of protection (enclosure)	
• Wall mount	IP65/Type 4X/NEMA 4X
• Panel mount	IP54/Type 3/NEMA 3
Electrical connection	
• Transducer and mA output signal	2-core copper conductor, twisted, shielded, 0.5 ... 0.75 mm ² (22 ... 18 AWG), Belden 8760 or equivalent is acceptable
• Max. separation between transducer and transceiver	365 m (1 200 ft)
Displays and controls	60 x 40 mm (2.36 x 1.57 inch) LCD 240 x 160 pixels resolution
Power supply	
AC version	100 ... 230 V AC ± 15 %, 50/60 Hz, 36 VA (17 W)
DC version	12 ... 30 V DC (20 W)
Certificates and approvals	<ul style="list-style-type: none"> • CE, RCM, EAC, KCC²⁾ • FM, CSA_{US/C}, UL • CSA Class I, Div. 2, Groups A, B, C, and D, Class II, Div. 2, Groups F and G, Class III (wall mount only)
Communication	<ul style="list-style-type: none"> • RS 232 with Modbus RTU or ASCII via RJ-11 connector • RS 485 with Modbus RTU or ASCII via terminal strips • Optional: SmartLinx cards for <ul style="list-style-type: none"> - PROFIBUS DPV1, ProfiNet (cyclic access of process values only) - DeviceNet, Modbus TCP/IP, Ethernet/IP

¹⁾ Program range is defined as the empty distance to the face of the transducer plus any range extension

²⁾ EMC performance available on request

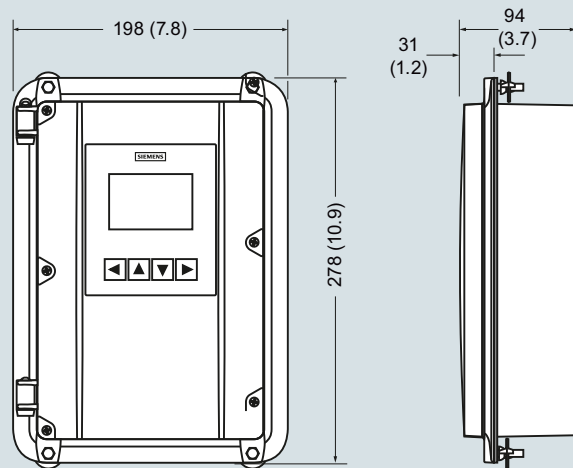
Continuous level measurement
Ultrasonic controllers

Selection and Ordering data

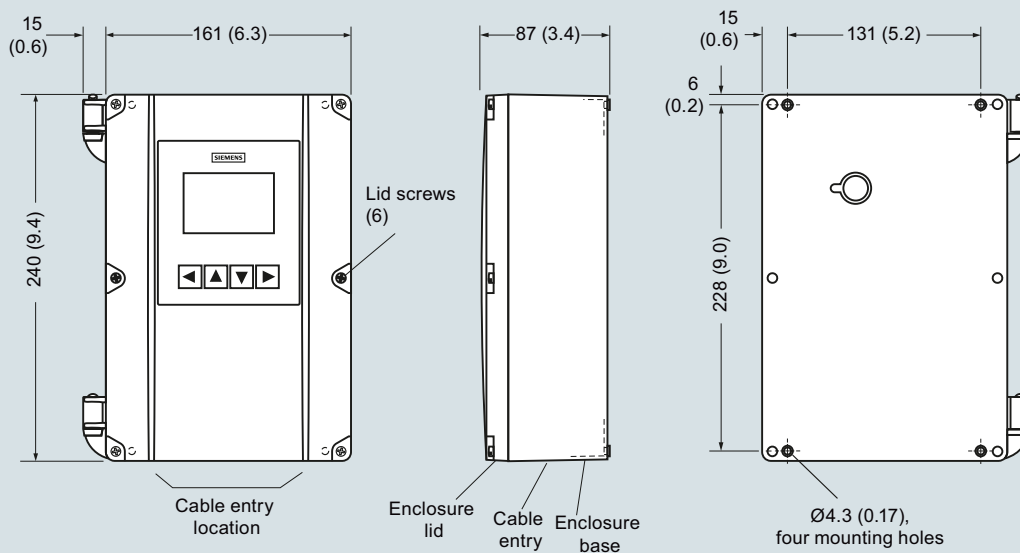
Selection and Ordering data		Article No.	Selection and Ordering data		Order code
MultiRanger 200 HMI Versatile short to medium-range ultrasonic single and multi-vessel level monitor/controller for virtually any application in a wide range of industries		7ML5033- 	Further designs Please add "-Z" to Article No. and specify Order code(s).		
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			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
Versions MultiRanger 200, level, volume, flow, and differential measurements		2	Test Certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and to ISO 9000		C11
Mounting, enclosure design 4 button HMI, Wall mount, standard enclosure 4 button HMI, Wall mount, 4 entries, 4 M20 cable glands included 4 button HMI, Panel Mount		D E F	Operating Instructions English German All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation		A5E35857004 A5E36182123
Input voltage 100 ... 230 V AC 12 ... 30 V DC		A B	Optional equipment Tag, stainless steel, 12 x 45 mm, one text line, suitable for enclosures Sunshield, 304 Stainless steel USB to RS 232 adapter RS 232 to RJ11 COMMS adapter SITRANS RD100, loop powered display - see Chapter 7 SITRANS RD200, universal input display with Modbus conversion - see Chapter 7 SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7 SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7		Article No. 7ML1930-1AC 7ML1930-1GA 7ML1930-6AK 7ML1830-1MC 7ML5741-... 7ML5740-... 7ML5744-... 7ML5750-...
Number of measurement points Single point version Dual point version		0 1			
Data communications (SmartLinX) Without module SmartLinX PROFIBUS DPV0 module SmartLinX DeviceNet module SmartLinX PROFIBUS DPV1 module SmartLinX ProfiNet SmartLinX Ethernet/IP SmartLinX Modbus TCP/IP See SmartLinX product page 4/348 for more information.		0 2 3 4 5 6 7			
Output relays 6 relays (4 Form A, 2 Form C), 250 V AC		2			
Approvals General Purpose CE, FM, CSA _{USC} , UL listed, RCM, EAC, KCC CSA Class I, Div. 2, Groups A, B, C, and D; Class II, Div. 2, Groups F and G; Class III ¹⁾		A B			
¹⁾ Available with Mounting/Enclosure design options D or E					

Dimensional drawings

Panel mount dimensions



Wall mount dimensions



MultiRanger 200 HMI, dimensions in mm (inch)

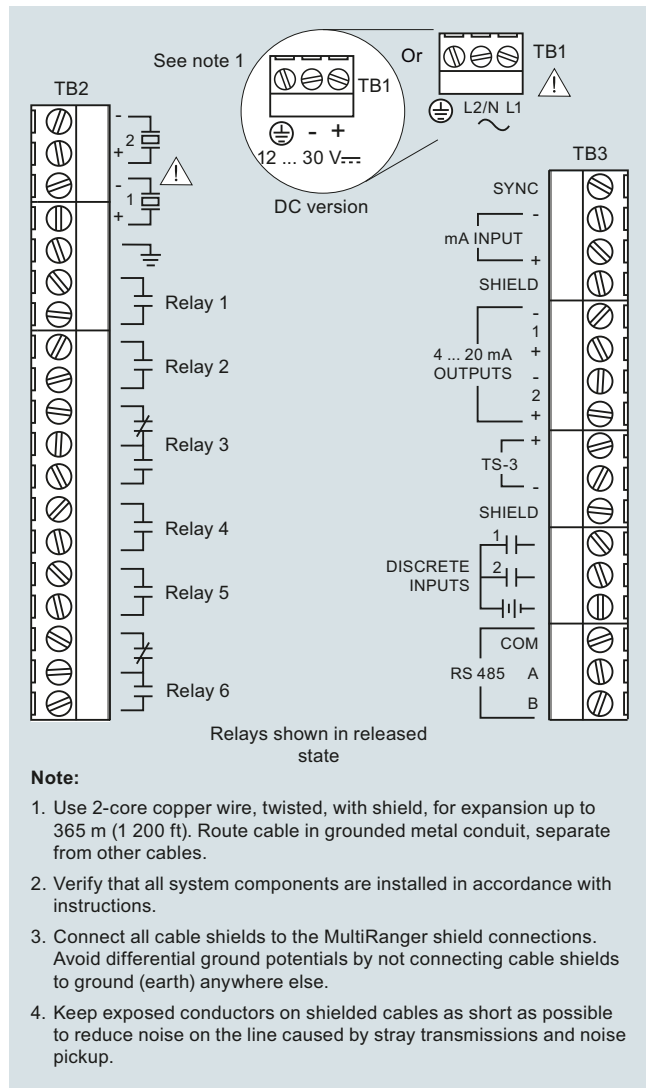
Level Measurement

Continuous level measurement

Ultrasonic controllers

MultiRanger 200 HMI

Circuit diagrams



MultiRanger 200 HMI connections

Overview



MultiRanger is a versatile short to medium-range ultrasonic single and multi-vessel level monitor/controller for virtually any application in a wide range of industries.

Benefits

- Digital input for back-up level override from point level device
- Communication using built-in Modbus RTU via RS 485
- Compatible with SmartLinx communication options or SIMATIC PDM via RS 485
- Single or dual point level monitoring
- Auto False-Echo Suppression for fixed obstruction avoidance
- Differential amplifier transceiver for common mode noise reduction and improved signal-to-noise ratio
- MultiRanger 100: level measurements, simple pump control, and level alarm functions
- MultiRanger 200: level, volume, and flow measurements in open channels, differential control, extended pump control, and alarm functions
- Wall and panel mounting options

Application

MultiRanger can be used on different materials, including fuel oil, municipal waste, acids, woodchips, or on materials with high angles of repose. MultiRanger offers true dual point monitoring, digital communications with built-in Modbus RTU via RS 485, as well as compatibility with SIMATIC PDM, allowing PC configuration and setup. MultiRanger features Sonic Intelligence advanced echo-processing software for increased reading reliability.

MultiRanger 100 offers cost-effective level alarming, as well as on/off and alternating pump control. MultiRanger 200 will monitor open channel flow and features more advanced relay alarming and pump control functions as well as volume conversion.

It is compatible with chemical-resistant EchoMax transducers that can be used in hostile environments at temperatures as high as 145 °C (293 °F).

- Key Applications: wet wells, flumes/weirs, bar screen control, hoppers, chemical storage, liquid storage, crusher bins, dry solids storage

Design

The MultiRanger is available in wall or panel mounting options.

Level Measurement

Continuous level measurement

Ultrasonic controllers

MultiRanger 100/200

Technical specifications

Mode of Operation	
Measuring principle	Ultrasonic level measurement
Measuring range	0.3 ... 15 m (1 ... 50 ft)
Measuring points	1 or 2
Input	
Analog (MultiRanger 200 only)	0 ... 20 mA or 4 ... 20 mA, from alternate device, scalable
Discrete	10 ... 50 V DC switching level Logical 0 ≤ 0.5 V DC Logical 1 = 10 ... 50 V DC Max. 3 mA
Output	
EchoMax transducer	44 kHz
Ultrasonic transducer	Compatible transducers: ST-H and EchoMax series XPS-10, XPS 15/15F, and XRS-5
Relays	Rating 5 A at 250 V AC, non-inductive 1 SPST Form A
• Version with 1 relay (MultiRanger 100 only)	
• Version with 3 relays	2 SPST Form A/1 SPDT Form C
• Version with 6 relays	4 SPST Form A/2 SPDT Form C
mA output	0 ... 20 mA or 4 ... 20 mA
• Max. load	750 Ω, isolated
• Resolution	0.1 % of range
Accuracy	
Error in measurement	0.25 % of range or 6 mm (0.24 inch), whichever is greater
Resolution	0.1 % of measuring range ¹⁾ or 2 mm (0.08 inch), whichever is greater
Temperature compensation	<ul style="list-style-type: none"> -50 ... +150 °C (-58 ... +302 °F) Integral temperature sensor External TS-3 temperature sensor (optional) Programmable fixed temperature values
Rated operating conditions	
Installation conditions	
• Location	Indoor/outdoor
• Installation category	II
• Pollution degree	4
Ambient conditions	
• Ambient temperature (housing)	-20 ... +50 °C (-4 ... +122 °F)

Design	
Weight	
• Wall mount	1.37 kg (3.02 lb)
• Panel mount	1.50 kg (3.31 lb)
Material (enclosure)	Polycarbonate
Degree of protection (enclosure)	
• Wall mount	IP65/Type 4X/NEMA 4X
• Panel mount	IP54/Type 3/NEMA 3
Electrical connection	
• Transducer and mA output signal	2-core copper conductor, twisted, shielded, 0.5 ... 0.75 mm ² (22 ... 18 AWG), Belden 8760 or equivalent is acceptable
• Max. separation between transducer and transceiver	365 m (1 200 ft)
Displays and controls	
	100 x 40 mm (4 x 1.5 inch) multi-block LCD with backlighting
Programming	Programming using hand-held programmer, SIMATIC PDM or via PC with Dolphin Plus software
Power supply	
AC version	100 ... 230 V AC ± 15 %, 50/60 Hz, 36 VA (17 W)
DC version	12 ... 30 V DC (20 W)
Certificates and approvals	
	<ul style="list-style-type: none"> CE, RCM, EAC, KCC²⁾ Lloyd's Register of Shipping ABS Type Approval FM, CSA_{US/C}, UL listed CSA Class I, Div. 2, Groups A, B, C, and D, Class II, Div. 2, Groups F and G, Class III (wall mount only), ATEX II 3D, EAC Ex
Communication	
	<ul style="list-style-type: none"> RS 232 with Modbus RTU or ASCII via RJ-11 connector RS 485 with Modbus RTU or ASCII via terminal strips Optional: SmartLinx cards for <ul style="list-style-type: none"> - PROFIBUS DP - DeviceNet

¹⁾ Program range is defined as the empty distance to the face of the transducer plus any range extension

²⁾ EMC performance available on request

Level Measurement

Continuous level measurement

Ultrasonic controllers

MultiRanger 100/200

Selection and Ordering data	Article No.	Selection and Ordering data	Order code
MultiRanger 100/200 Versatile short to medium-range ultrasonic single and multi-vessel level monitor/controller for virtually any application in a wide range of industries ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5033- 	Further designs Please add "-Z" to Article No. and specify Order code(s). 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
Versions MultiRanger 100, level measurement only MultiRanger 200, level, volume, flow, and differential measurements	1 2	Operating Instructions English German Note: The Operating Instructions should be ordered as a separate item on the order. All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	Article No. 7ML19985FB06 7ML19985FB36
Mounting, enclosure design Wall mount, standard enclosure Wall mount, 4 entries, 4 M20 cable glands included Panel mount (CE, CSA _{USC} , FM, UL)	A B C	Accessories Handheld programmer Tag, stainless steel, 12 x 45 mm (0.47 x 1.77 inch), one text line, suitable for enclosure M20 cable gland kit (4 M20 cable glands, 4 M20 nuts, 4 washers) Sunshield kit, 304 stainless steel USB to RS 232 adapter SITRANS RD100, loop powered display - see Chapter 7 SITRANS RD200, universal input display with Modbus conversion - see Chapter 7 SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7 SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7	A5E36563512 7ML1930-1AC 7ML1930-1FV 7ML1930-1GA 7ML1930-6AK 7ML5741-... 7ML5740-... 7ML5744-... 7ML5750-...
Power supply 100 ... 230 V AC 12 ... 30 V DC	A B	Spare parts Power Supply Board (100 ... 230 V AC) Power Supply Board (12 ... 30 V DC) MultiRanger 100/200/ HydroRanger 200 display, non-HMI Removable terminal blocks	7ML1830-1MD 7ML1830-1ME 7ML1830-1MF A5E38824197
Number of measurement points Single point version Dual point version	0 1		
Communication (SmartLinX) Without module SmartLinX PROFIBUS DP module SmartLinX DeviceNet module See SmartLinX product on page 4/348 for more information.	0 2 3		
Output relays 3 relays (2 Form A, 1 Form C), 250 V AC 6 relays (4 Form A, 2 Form C), 250 V AC 1 relay (1 Form A), 250 V AC (available on MultiRanger 100 model only)	1 2 3		
Approvals General Purpose CE, FM, CSA _{USC} , UL listed, RCM, EAC, KCC CSA Class I, Div. 2, Groups A, B, C, and D; Class II, Div. 2, Groups F and G; Class III ¹⁾ ATEX II 3D, EAC Ex ²⁾	A B C		

¹⁾ For wall mount applications only

²⁾ For standard enclosure wall mount, option A only

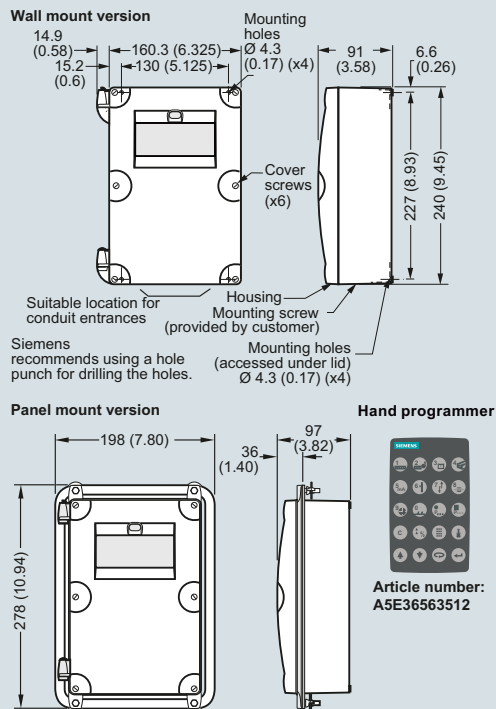
Level Measurement

Continuous level measurement

Ultrasonic controllers

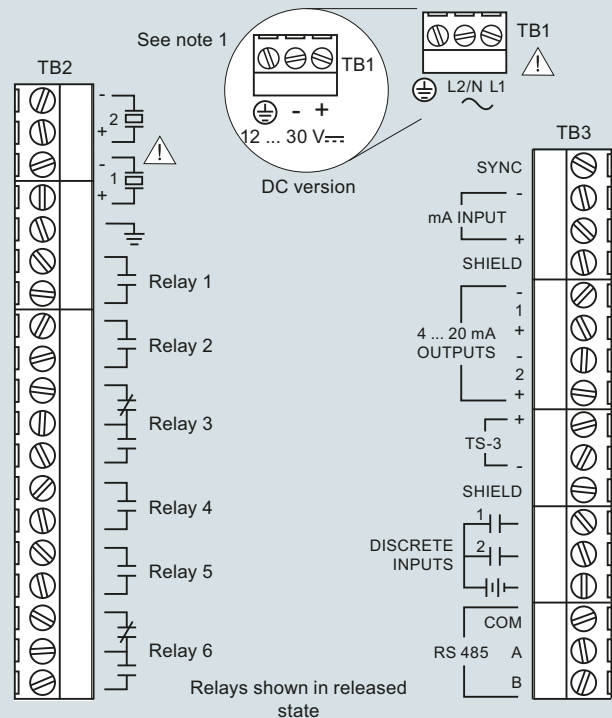
MultiRanger 100/200

Dimensional drawings



MultiRanger 100/200, dimensions in mm (inch)

Circuit diagrams



Note:

1. Use 2-core copper wire, twisted, with shield, for expansion up to 365 m (1 200 ft). Route cable in grounded metal conduit, separate from other cables.
2. Verify that all system components are installed in accordance with instructions.
3. Connect all cable shields to the MultiRanger shield connections. Avoid differential ground potentials by not connecting cable shields to ground (earth) anywhere else.
4. Keep exposed conductors on shielded cables as short as possible to reduce noise on the line caused by stray transmissions and noise pickup.

MultiRanger 100/200 connections

Overview



HydroRanger 200 HMI is an ultrasonic level controller for up to six pumps and provides control, differential control, and open channel flow monitoring.

Benefits

- Easy to use HMI display with local four-button programming, menu-driven parameters, and Wizard support for key applications
- English, German, French, Spanish, Chinese, Italian, Portuguese, and Russian texts on the HMI
- Removable terminal blocks for ease of wiring
- Monitors wet wells, weirs, and flumes
- Communication using built-in Modbus RTU via RS 485 and SIMATIC PDM configuration software
- Compatible with SmartLinx system: PROFIBUS DP, ProfiNet (cyclic access of process values only), DeviceNET, Modbus TCP/IP, and Ethernet/IP
- Single or dual point level monitoring
- 6 relays
- Auto False-Echo Suppression for fixed obstruction avoidance
- Anti-grease ring/tide mark buildup
- Differential amplifier transceiver for common mode noise rejection and improved signal-to-noise ratio
- Wall and panel mounting options

Application

For water authorities, municipal water, and wastewater plants, HydroRanger 200 HMI is an economical, low-maintenance solution delivering control efficiency and productivity needed to meet today's exacting standards. It offers single point monitoring with all models, and optional dual-point monitoring with 6 relay model. As well, it has digital communications with built-in Modbus RTU via RS 485.

The standard 6 relay HydroRanger 200 HMI will monitor open channel flow and features advanced relay alarming and pump control functions as well as volume conversion. It is compatible with SIMATIC PDM, allowing for PC configuration and set-up. Sonic Intelligence advanced echo-processing software provides increased reading reliability.

HydroRanger 200 HMI uses proven continuous ultrasonic echo ranging technology to monitor water and wastewater of any consistency up to 15 m (50 ft) in depth. Achievable resolution is 0.1 % with accuracy to 0.25 % of range. Unlike contacting devices, HydroRanger 200 HMI is immune to problems caused by suspended solids, harsh corrosives, grease or silt in the effluent, reducing downtime.

- Key Applications: wet wells, flumes/weirs, bar screen control

Technical specifications

Mode of Operation	
Measuring principle	Ultrasonic level measurement
Measuring range	0.3 ... 15 m (1 ... 50 ft), transducer dependent
Measuring points	1 or 2
Input	
Analog	0 ... 20 mA or 4 ... 20 mA, from alternate device, scalable (6 relay model)
Discrete	10 ... 50 V DC switching level Logical 0 ≤ 0.5 V DC Logical 1 = 10 ... 50 V DC max. 3 mA
Output	
EchoMax transducer	44 kHz
Ultrasonic transducer	Compatible transducers: ST-H and EchoMax series XPS-10, XPS-15/15F, and XRS-5
Relays ¹⁾	Rating 5 A at 250 V AC, non-inductive 4 SPST Form A/2 SPDT Form
• Model with 6 relays	
mA output	0 ... 20 mA or 4 ... 20 mA
• Max. load	750 Ω, isolated
• Resolution	0.1 % of range
Accuracy	
Error in measurement	0.25 % of range or 6 mm (0.24 inch), whichever is greater
Resolution	0.1 % of measuring range or 2 mm (0.08 inch), whichever is greater ²⁾
Temperature compensation	<ul style="list-style-type: none"> • -50 ... +150 °C (-58 ... +302 °F) • Integral temperature sensor in transducer • External TS-3 temperature sensor (optional) • Programmable fixed temperature values
Rated operating conditions	
Installation conditions	
• Location	Indoor / outdoor
• Installation category	II
• Pollution degree	4
Ambient conditions	
• Ambient temperature (enclosure)	-20 ... +50 °C (-4 ... +122 °F)
Design	
Weight	
• Wall mount	1.22 kg (2.68 lb)
• Panel mount	1.35 kg (2.97 lb)
Material (enclosure)	Polycarbonate
Degree of protection (enclosure)	
• Wall mount	IP65/Type 4X/NEMA 4X
• Panel mount	IP54/Type 3/NEMA 3
Cable	
• Transducer and mA output signal	2-core copper conductor, twisted, shielded, 300 Vrms, 0.82 mm ² (18 AWG), Belden 8760 or equivalent is acceptable
• Max. separation between transducer and transceiver	365 m (1 200 ft)
Displays and controls	
	60 x 40 mm (2.36 x 1.57 inch) LCD 240 x 160 pixels resolution
Power supply³⁾	
AC version	100 ... 230 V AC ± 15 %, 50/60 Hz, 36 VA (17 W)
DC version	12 ... 30 V DC (20 W)

Level Measurement

Continuous level measurement

Ultrasonic controllers

HydroRanger 200 HMI

Certificates and approvals	<ul style="list-style-type: none"> • CE, RCM, EAC, KCC⁴⁾ • FM, CSA_{US/C}, UL listed • CSA_{US/C} Class I, Div. 2, Groups A, B, C and D, Class II, Div. 2, Groups F and G, Class III (wall mount only) • MCERTS Class 2 approved for Open Channel Flow
Communication	<ul style="list-style-type: none"> • RS 232 with Modbus RTU or ASCII via RJ-11 connector • RS 485 with Modbus RTU or ASCII via terminal blocks • Optional: SmartLinx cards for <ul style="list-style-type: none"> - PROFIBUS DPV1, ProfiNet (cyclic access of process values only) - DeviceNet, Modbus TCP/IP, Ethernet/IP

- 1) All relays certified for use with equipment that fails in a state at or under the rated maximums of the relays.
- 2) Program range is defined as the empty distance to the face of the transducer plus any range extension.
- 3) Maximum power consumption is listed
- 4) EMC performance available upon request

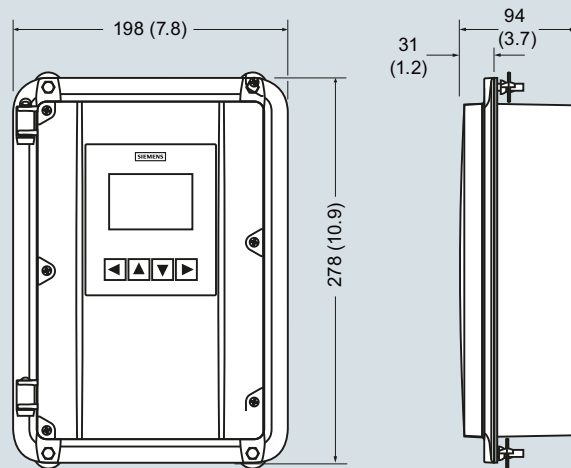
Selection and Ordering data	Article No.
Siemens HydroRanger 200 HMI Ultrasonic level controller for up to six pumps that provides control, differential control and open channel flow monitoring. Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5034-
Mounting, enclosure design	
4 button HMI, Wall mount, standard enclosure	4
4 button HMI, Wall mount, 4 entries, 4 M20 cable glands included	5
4 button HMI, Panel Mount	6
Input voltage	
100 ... 230 V AC	A
12 ... 30 V DC	B
Number of measurement points	
Single point model, 6 relays	A
Dual point model, 6 relays	B
Communication (SmartLinx)	
Without module	0
SmartLinx PROFIBUS DP V0 module	2
SmartLinx DeviceNet module	3
SmartLinx PROFIBUS DPV1 module	4
SmartLinx ProfiNet	5
SmartLinx Ethernet/IP	6
SmartLinx Modbus TCP/IP	7
See SmartLinx product page 4/348 for more information	
Approvals	
General Purpose CE, FM, CSA _{US/C} , UL listed, RCM, EAC, KCC	1
CSA Class I, Div. 2, Groups A, B, C, and D; Class II, Div. 2, Groups F and G; Class III ¹⁾	2

¹⁾ Available with Mounting/Enclosure design options 4 or 5

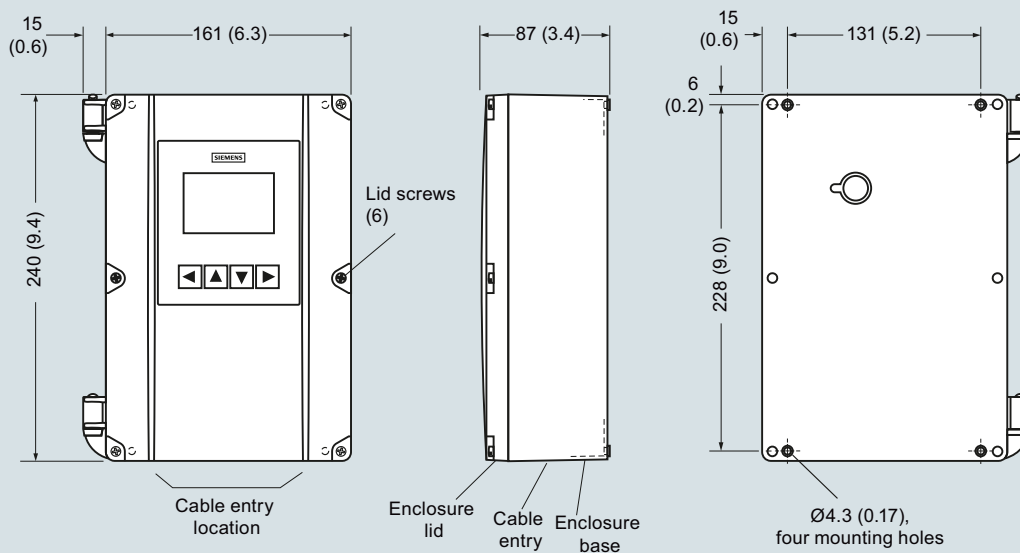
Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Article No. and specify Order code(s).	
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters), specify in plain text	Y15
Test Certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and to ISO 9000	C11
Operating Instructions	
English	A5E36281317
German	A5E36281391
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories	Article No.
Tag, stainless steel, 12 x 45 mm (0.47 x 1.77 inch), one text line, suitable for enclosure	7ML1930-1AC
Sunshield kit, 304 stainless steel	7ML1930-1GA
USB to RS 232 adapter	7ML1930-6AK
RS 232 to RJ11 COMMS adapter	7ML1830-1MC
SITRANS RD100, loop powered display - see Chapter 7	7ML5741-...
SITRANS RD200, universal input display with Modbus conversion - see Chapter 7	7ML5740-...
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7	7ML5744-...
SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7	7ML5750-...
Spare parts	
Power Supply Board (100 ... 230 V AC)	7ML1830-1MD
Power Supply Board (12 ... 30 V DC)	7ML1830-1ME
Removable terminal blocks	A5E38824197
Spare lid with HMI, MultiRanger 200 HMI/ HydroRanger 200 HMI, wall	A5E35778738
Spare lid with HMI, MultiRanger 200 HMI/ HydroRanger 200 HMI, panel	A5E35778740
SmartLinx DeviceNet module	7ML1830-1HT
SmartLinx PROFIBUS DP V1 module	A5E35778741
SmartLinx ProfiNet IO module	7ML1830-1PM
SmartLinx Modbus TCP/IP, Ethernet/IP module	7ML1830-1PN

Dimensional drawings

Panel mount dimensions



Wall mount dimensions



HydroRanger 200 HMI, dimensions in mm (inch)

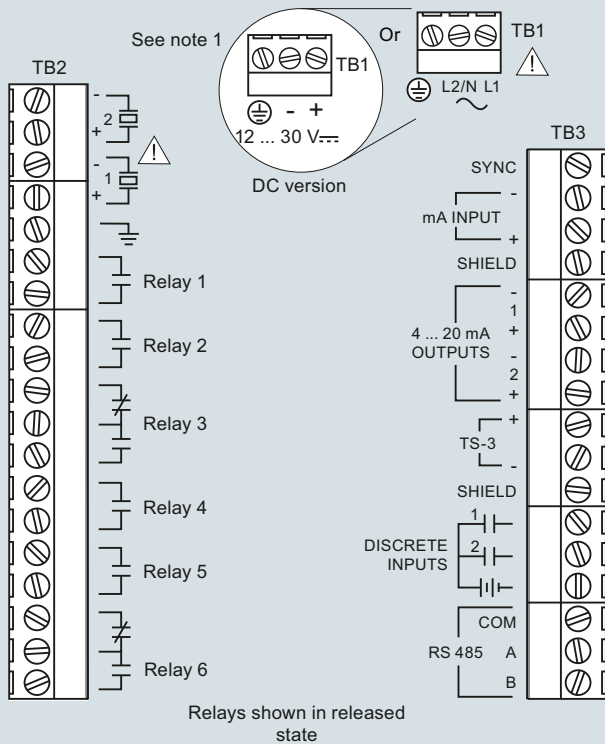
Level Measurement

Continuous level measurement

Ultrasonic controllers

HydroRanger 200 HMI

Circuit diagrams



Note:

1. Use 2-core copper wire, twisted, with shield, for expansion up to 365 m (1 200 ft). Route cable in grounded metal conduit, separate from other cables.
2. Verify that all system components are installed in accordance with instructions.
3. Connect all cable shields to the HydroRanger shield connections. Avoid differential ground potentials by not connecting cable shields to ground (earth) anywhere else.
4. Keep exposed conductors on shielded cables as short as possible to reduce noise on the line caused by stray transmissions and noise pickup.

HydroRanger 200 HMI connections

Overview



HydroRanger 200 is an ultrasonic level controller for up to six pumps and provides control, differential control, and open channel flow monitoring.

Benefits

- Monitors wet wells, weirs and flumes
- Digital communications with built-in Modbus RTU via RS 485
- Compatible with SmartLinX communication options or SIMATIC PDM via RS 485
- Single or dual point level monitoring
- 6 relay (standard), 1 or 3 relay (optional)
- Auto False-Echo Suppression for fixed obstruction avoidance
- Anti-grease ring/tide mark buildup
- Differential amplifier transceiver for common mode noise rejection and improved signal-to-noise ratio
- Wall and panel mounting options

Application

For water authorities, municipal water, and wastewater plants, HydroRanger 200 is an economical, low-maintenance solution delivering control efficiency and productivity needed to meet today's exacting standards. It offers single point monitoring with all models, and optional dual-point monitoring with 6 relay model. As well, it has digital communications with built-in Modbus RTU via RS 485.

The standard 6 relay HydroRanger 200 will monitor open channel flow and features more advanced relay alarming and pump control functions as well as volume conversion. It is compatible with SIMATIC PDM, allowing for PC configuration and setup. Sonic Intelligence advanced echo-processing software provides increased reading reliability. The optional 1 or 3 relay models provide accurate level measurement functions only; these two models do not provide open channel flow, differential level measurement or volume conversion functions.

HydroRanger 200 uses proven continuous ultrasonic echo ranging technology to monitor water and wastewater of any consistency up to 15 m (50 ft) in depth. Achievable resolution is 0.1 % with accuracy to 0.25 % of range. Unlike contacting devices, HydroRanger 200 is immune to problems caused by suspended solids, harsh corrosives, grease or silt in the effluent, reducing downtime.

- Key Applications: wet wells, flumes/weirs, bar screen control

Level Measurement

Continuous level measurement

Ultrasonic controllers

HydroRanger 200

Technical specifications

Mode of Operation	
Measuring principle	Ultrasonic level measurement
Measuring range	0.3 ... 15 m (1 ... 50 ft), transducer dependent
Measuring points	1 or 2
Input	
Analogue	0 ... 20 mA or 4 ... 20 mA, from alternate device, scalable (6 relay model)
Discrete	10 ... 50 V DC switching level Logical 0 ≤ 0.5 V DC Logical 1 = 10 ... 50 V DC Max. 3 mA
Output	
EchoMax transducer	44 kHz
Ultrasonic transducer	Compatible transducers: ST-H and EchoMax series XPS-10, XPS 15/15F, and XRS-5
Relays ¹⁾	Rating 5 A at 250 V AC, non-inductive
• Model with 1 relay ²⁾	1 SPST Form A
• Model with 3 relays ²⁾	2 SPST Form A/1 SPDT Form C
• Model with 6 relays	4 SPST Form A/2 SPDT Form C
mA output	0 ... 20 mA or 4 ... 20 mA
• Max. load	750 Ω, isolated
• Resolution	0.1 % of range
Accuracy	
Error in measurement	0.25 % of range or 6 mm (0.24 inch), whichever is greater
Resolution	0.1 % of measuring range or 2 mm (0.08 inch), whichever is greater ³⁾
Temperature compensation	<ul style="list-style-type: none"> • -50 ... +150 °C (-58 ... +302 °F) • Integral temperature sensor in transducer • External TS-3 temperature sensor (optional) • Programmable fixed temperature values
Rated operating conditions	
Installation conditions	
• Location	Indoor / outdoor
• Installation category	II
• Pollution degree	4
Ambient conditions	
• Ambient temperature (enclosure)	-20 ... +50 °C (-4 ... +122 °F)

Design	
Weight	
• Wall mount	1.37 kg (3.02 lb)
• Panel mount	1.50 kg (3.31 lb)
Material (enclosure)	Polycarbonate
Degree of protection (enclosure)	
• Wall mount	IP65/Type 4X/NEMA 4X
• Panel mount	IP54/Type 3/NEMA 3
Cable	
• Transducer and mA output signal	2-core copper conductor, twisted, shielded, 300 Vrms, 0.82 mm ² (18 AWG), Belden 8 760 or equivalent is acceptable
• Max. separation between transducer and transceiver	365 m (1 200 ft)
Displays and controls	
	100 x 40 mm (4 x 1.5 inch) multi-block LCD with backlighting
Programming	Programming using handheld programmer or via PC with SIMATIC PDM software
Power supply⁴⁾	
AC version	100 ... 230 V AC ± 15 %, 50/60 Hz, 36 VA (17 W)
DC version	12 ... 30 V DC (20 W)
Certificates and approvals	
	<ul style="list-style-type: none"> • CE, RCM, EAC, KCC⁵⁾ • Lloyd's Register of Shipping • ABS Type Approval • FM, CSA_{US/C}, UL listed • CSA_{US/C} Class I, Div. 2, Groups A, B, C, and D, Class II, Div. 2, Groups F and G, Class III, EAC Ex (wall mount only) • MCERTS Class 3 approved for Open Channel Flow
Communication	
	<ul style="list-style-type: none"> • RS 232 with Modbus RTU or ASCII via RJ-11 connector • RS 485 with Modbus RTU or ASCII via terminal blocks • Optional: SmartLinx cards for <ul style="list-style-type: none"> - PROFIBUS DP - DeviceNet

¹⁾ All relays certified for use with equipment that fails in a state at or under the rated maximums of the relays

²⁾ This model is level control only; no open channel flow, differential level or volume conversion functions

³⁾ Program range is defined as the empty distance to the face of the transducer plus any range extension

⁴⁾ Maximum power consumption is listed

⁵⁾ EMC performance available upon request

Selection and Ordering data		Article No.	Selection and Ordering data		Order code
Siemens HydroRanger 200 Ultrasonic level controller for up to six pumps that provides control, differential control and open channel flow monitoring. The HydroRanger 200 is also available as a level measurement controller only. Select option from number of measurement points options below.		7ML5034-	Further designs Please add "-Z" to Article No. and specify Order code(s).		
➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			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
Mounting Wall mount, standard enclosure Wall mount, 4 entries, 4 M20 cable glands included Panel mount ¹⁾		1 2 3	Operating Instructions English German French Note: The Operating Instructions should be ordered as a separate item on the order. All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation		Article No. 7ML19985FC03 7ML19985FC33 7ML19985FC11
Power supply 100 ... 230 V AC 12 ... 30 V DC		A B	Accessories Handheld programmer Tag, stainless steel, 12 x 45 mm (0.47 x 1.77 inch), one text line, suitable for enclosure Sunshield kit, 304 stainless steel USB to RS 232 adapter SITRANS RD100, loop powered display - see Chapter 7 SITRANS RD200, universal input display with Modbus conversion - see Chapter 7 SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7 SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7		A5E36563512 7ML1930-1AC 7ML1930-1GA 7ML1930-6AK 7ML5741-... 7ML5740-... 7ML5744-... 7ML5750-...
Number of measurement points Single point model, 6 relays Dual point model, 6 relays Single point model, level only, 1 relay ²⁾ Single point model, level only, 3 relays ²⁾		A B C D	Spare parts Power Supply Board (100 ... 230 V AC) Power Supply Board (12 ... 30 V DC) MultiRanger 100/200/ HydroRanger 200 display, non-HMI Siemens FI 01 · 2018 Removable terminal blocks		7ML1830-1MD 7ML1830-1ME 7ML1830-1MF A5E38824197
Communication (SmartLinx) Without module SmartLinx PROFIBUS DP module SmartLinx DeviceNet module See SmartLinx product on page 4/348 for more information.		0 2 3			
Approvals General Purpose CE, FM, CSA _{US/CA} , UL listed, RCM, EAC, KCC CSA Class I, Div. 2, Groups A, B, C, and D; Class II, Div. 2, Groups F and G; Class III, EAC Ex (for wall mount applications only)		1 2			

¹⁾ Available with approval option 1 only

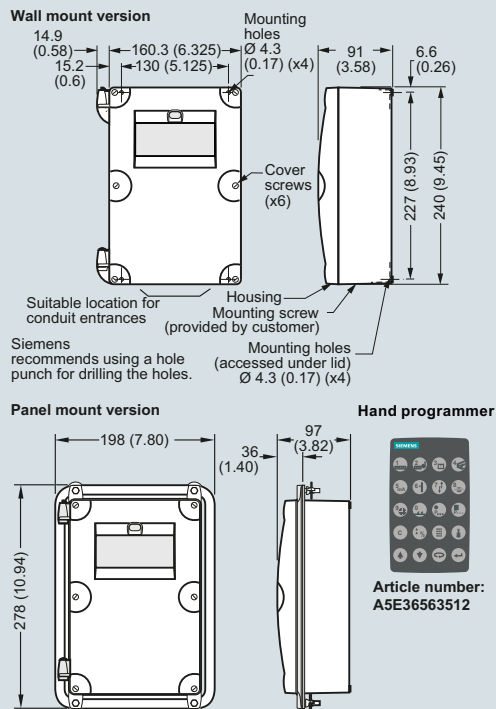
²⁾ This model is level control only; no open channel flow, differential level, or volume conversion functions.

Level Measurement

Continuous level measurement
Ultrasonic controllers

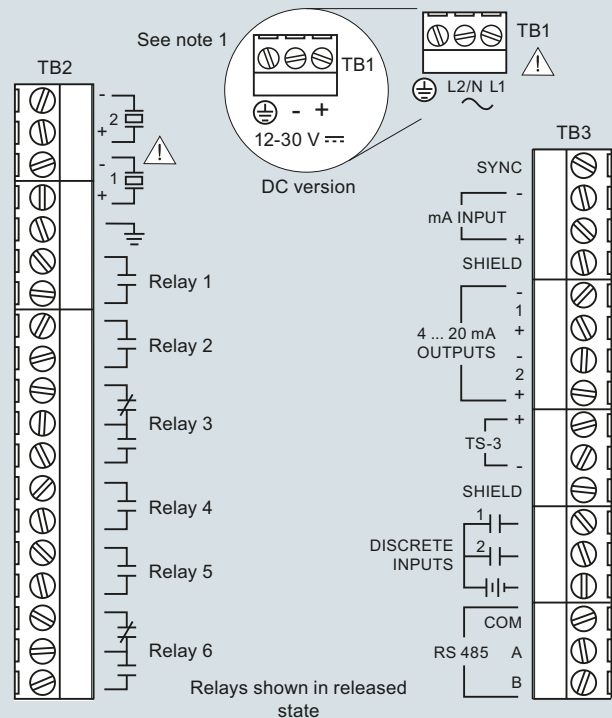
HydroRanger 200

Dimensional drawings



HydroRanger 200, dimensions in mm (inch)

Circuit diagrams



Notes

1. Use 2-core copper wire, twisted, with shield, for expansion up to 365 m (1 200 ft.). Route cable in grounded metal conduit, separate from other cables.
2. Verify that all system components are installed in accordance with instructions.
3. Connect all cable shields to the HydroRanger 200 shield connections. Avoid differential ground potentials by not connecting cable shields to ground (earth) anywhere else.
4. Keep exposed conductors on shielded cables as short as possible to reduce noise on the line caused by stray transmissions and noise pickup.

HydroRanger 200 connections

Overview

Ultrasonic Transducers

Ultrasonic measuring systems are the cost-effective choice for monitoring and control in short- to long-range applications for liquids, slurries, and solids in a wide range of industries. Transducers are impervious to dust, moisture, corrosion, vibration, flooding, and extreme temperature. They are easy to install and virtually maintenance-free. Choose from a wide selection of models designed for short or long range applications on liquids or solids.

Technical specifications

EchoMax Transducers					
	Liquids		Liquids and Solids		
	XRS-5	ST-H	Standard XPS-10	XPS-15	XPS-30
Max. range¹⁾	8 m (26 ft)	10 m (33 ft)	10 m (33 ft)	15 m (50 ft)	30 m (100 ft)
Min. range	0.3 m (1 ft)	0.3 m (1 ft)	0.3 m (1 ft)	0.3 m (1 ft)	0.6 m (2 ft)
Max. temperature	65 °C (149 °F)	73 °C (164 °F)	95 °C (203 °F)	95 °C (203 °F)	95 °C (203 °F)
Min. temperature	-20 °C (-4 °F)	-40 °C (-40 °F)	-40 °C (-40 °F)	-40 °C (-40 °F)	-40 °C (-40 °F)
Typical Applications	Wet wells and open channels	Chemical storage and liquid tanks	Dusty solids and slurries	Deep wet wells and solids	Powders, pellets and solids
Frequency	44 kHz	44 kHz	44 kHz	44 kHz	30 kHz
Beam angle (-3dB)	10°	12°	12°	6°	6°
Thread size	R 1" [(BSPT), EN 10226] 1" NPT	1" and 2" NPT R 2" [(BSPT), EN 10226] 2" [(BSPP), EN ISO 228-1]	R 1" [(BSPT), EN 10226] 1" NPT	R 1" [(BSPT), EN 10226] 1" NPT	R 1.5" [(BSPT), EN 10226] Universal thread 1.5" NPT
Enclosure	<ul style="list-style-type: none"> PVDF Copolymer CSM Option: Flange with PTFE facing 	<ul style="list-style-type: none"> ETFE Option: PVDF 	<ul style="list-style-type: none"> PVDF Option: foam facing Flange with PTFE facing 	<ul style="list-style-type: none"> PVDF Option: foam facing Flange with PTFE facing 	<ul style="list-style-type: none"> PVDF Option: foam facing Flange with PTFE facing
Compatible with:					
SITRANS LUT400	•	•	•	•	•
HydroRanger 200	•	•	•	•	
MultiRanger 100/200	•	•	•	•	

¹⁾ Application conditions such as extreme dust or angle of repose may reduce the usable maximum range. Consult a local sales person for more details.

Level Measurement

Continuous level measurement
Ultrasonic transducers

ST-H

Overview



ST-H transducers use ultrasonic technology to measure level in chemical storage and liquid tanks.

Benefits

- Can be mounted on a narrow standpipe
- Immune to corrosive and harsh environments
- Integral temperature sensor

Application

The narrow design of the ST-H allows the transducer to be mounted on a narrow standpipe. When mounted correctly, it is completely protected from the process and can even be used in harsh, corrosive environments.

During operation, the ultrasonic transducer emits acoustic pulses in a narrow beam perpendicular to the transducer face. The level transceiver measures the propagation time between pulse emission and reception of the echo to calculate the distance from the transducer to the material. Variations in sound velocity due to changes in temperature within the permissible range are automatically compensated by the integral temperature sensor.

- Key Applications: chemical storage, liquid tanks

Technical specifications

Mode of operation	
Measuring principle	Ultrasonic transducer
Input	
Measuring range	0.3 ... 10 m (1 ... 33 ft)
Output	
Frequency	44 kHz
Beam angle	12°
Accuracy	
Temperature compensation	Compensated by integral temperature sensor
Rated operating conditions	
Pressure	Normal atmospheric pressure
Ambient conditions	
Ambient temperature	-20 ... +60 °C (-5 ... +140 °F) (ATEX approved model) -40 ... +73 °C (-40 ... +163 °F) (CSA/FM approved model)
Design	
Weight ¹⁾	1.4 kg (3 lb)
Material (enclosure)	Base and lid made of ETFE or PVDF (epoxy fitted joint) ²⁾
Process connection	2" NPT [(Taper), ANSI/ASME B1.20.1], R 2" [(BSPT), EN 10226] or G 2" [(BSPP), EN ISO 228-1]
Degree of protection	IP68
Cable connection	2-core shielded/twisted, 0.519 mm ² (20 AWG), PVC sheath
Cable (max. length)	365 m (1 200 ft) with RG 62 A/U coaxial cable
Options	
Flange adapter	3" Universal (fits DN 65, PN 10 and 3" ASME)
Certificates and approvals	
CE, CSA Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G T3 (ETFE only), FM Class I, II, Div. 1, Groups C, D, E, F, G T4A, ATEX II 2G / INMETRO Ex mb IIC T5 Gb, RCM, KCC	

¹⁾ Approximate shipping weight of transducer with standard cable length

²⁾ When measuring chemicals, check compatibility of ETFE or PVDF and epoxy, or mount joint external to process.

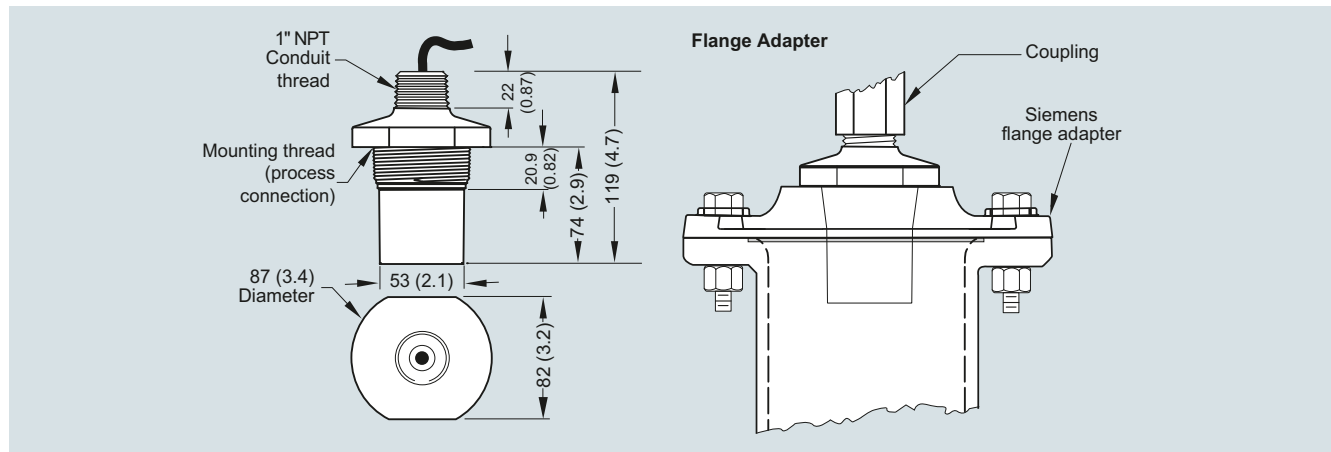
Selection and Ordering data		Article No.	Selection and Ordering data		Order code
EchoMax ST-H ultrasonic transducer		7ML1100-	Further designs		
Level measurement in chemical storage and liquid tanks. The narrow design of the ST-H allows the transducer to be mounted on a 2 inch standpipe. Measuring range: min. 0.3 m (1 ft), max. 10 m (33 ft).		A 0	Please add "-Z" to Article No. and specify Order code(s).		
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			Acrylic coated, stainless steel tag [13 x 45 mm (0.5 x 1.75 inch)]: Measuring-point number/identification (max. 16 characters) specify in plain text		Y17
Process connection			Accessories		Article No.
ETFE, 2" NPT [(Taper), ANSI/ASME B1.20.1]		0	Universal box bracket, mounting kit		7ML1830-1BK
ETFE, R 2" [(BSPT), EN 10226]		1	3" ASME, DN 65 PN 10, JIS 10K 3B ETFE flange adapter for 2" NPT		7ML1830-1BT
ETFE, G 2" [(BSPP), EN ISO 228-1]		2	3" ASME, DN 65 PN 10, JIS 10K 3B ETFE flange adapter for 2" BSPT		7ML1830-1BU
PVDF copolymer, 2" NPT [(Taper), ANSI/ASME B1.20.1]		3	Easy Aimer 2, aluminum, NPT with ¾" x 1" PVC coupling		7ML1830-1AQ
PVDF copolymer, R 2" [(BSPT), EN 10226]		4	Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings		7ML1830-1AX
PVDF copolymer, G 2" [(BSPP), EN ISO 228-1]		5	Easy Aimer 304, NPT with 1" stainless steel coupling		7ML1830-1AU
Cable length			Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 stainless steel couplings		7ML1830-1GN
5 m (16.40 ft)		A	Plastic adapter 1" NPT		7ML1930-1FX
10 m (32.81 ft)		B	Plastic adapter 1" NPT/M20		7ML1830-1EF
30 m (98.43 ft)		C			
50 m (164.04 ft)		D			
100 m (328.08 ft)		E			
Approvals					
CE, FM Class I, II, Div. 1, Groups C,D,E,F,G T4A ³⁾		2			
ATEX 2G / INMETRO Ex mb IIC T5 Gb, RCM, KCC		3			
CSA Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G T3 ¹⁾		4			
CE, ATEX 2G / INMETRO Ex mb IIC T5 Gb, RCM, KCC ²⁾					
Operating Instructions		Article No.			
Multi-language		A5E43390688			
Note: The Operating Instructions should be ordered as a separate line item on the order.					
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation					
¹⁾ Available with Process connection options 0 ... 2 only					
²⁾ Available with Process connection options 3 ... 5 only					
³⁾ Not suitable for Ketone, Hexane, Ester or Ethyl Acetate atmospheres					

Level Measurement

Continuous level measurement
Ultrasonic transducers

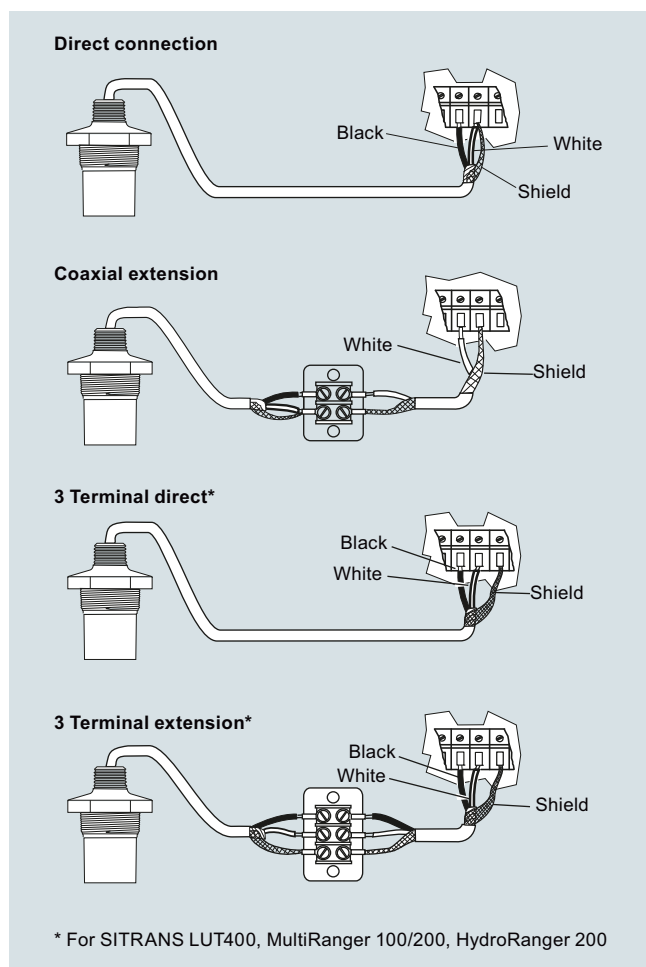
ST-H

Dimensional drawings



ST-H ultrasonic transducer, dimensions in mm (inch)

Circuit diagrams



ST-H ultrasonic transducer connections

Overview



EchoMax XRS-5 ultrasonic transducer provides reliable, continuous level monitoring of liquids and slurries in narrow lift stations/wet wells, flumes, weirs and filter beds using a beam angle of just 10° and a CSM rubber face.

Benefits

- Narrow beam angle of only 10°
- Chemically resistant PVDF copolymer enclosure and CSM rubber face
- Measuring range: 8 m (26 ft) for measurement of liquids and slurries
- Fully submersible: IP68 degree of protection
- Easy installation with 1" NPT or R 1" BSPT connection

Application

The XRS-5 is non-contacting with a measuring range from 0.3 to 8 m (1 to 26 ft). Advanced echo processing ensures reliable data even in conditions with obstructions, turbulence, and foam.

The hermetically sealed CSM rubber face and the PVDF copolymer enclosure are designed for maximum resistance to methane, salt water, caustics, and harsh chemicals common to wastewater installations. With an IP68 degree of protection, this rugged sensor is fully submersible in the event of flood conditions. Use a submergence shield if full submergence is possible in the application. A submergence shield will maintain a high level reading output during submerged conditions.

The low-cost XRS-5 transducer is compatible with a full range of Siemens controllers, from a basic system for high/low alarm or simple pump control, up to advanced control systems with communications, telemetry and SCADA integration capabilities.

- Key Applications: wet wells, flumes, weirs, filter beds

Technical specifications

Mode of operation	
Measuring principle	Ultrasonic transducer
Input	
Measuring range	0.3 ... 8 m (1 ... 26 ft), dependent on application
Output	
Frequency	44 kHz
Beam angle	10°
Accuracy	
Temperature error	Compensated by integral temperature sensor
Rated operating conditions	
Vessel pressure	Normal atmospheric pressure
Ambient Conditions	
• Ambient temperature	-20 ... +65 °C (-4 ... +149 °F)
Design	
Weight (approximate shipping weight of sensor with standard cable length)	1.2 kg (2.6 lb)
Material (enclosure)	PVDF copolymer enclosure and CSM face
Process connection	1" NPT [(Taper), ANSI/ASME B1.20.1] or R 1" [(BSPT), EN 10226]
Degree of protection	IP65/IP68
Cable connection	2-core shielded/twisted, 0.5 mm ² (20 AWG), PVC sheath
Cable (max. length)	<ul style="list-style-type: none"> • 365 m (1 200 ft) with RG 62 A/U coaxial cable • 365 m (1 200 ft) with 2-core twisted pair, foil shield, 0.5 mm² (20 AWG), PVC sheath, only for MultiRanger 100/200
Options	
Flange version	Factory flange with PTFE face for ASME, EN or JIS configuration
Submergence shield	For applications with flooding possible
Certificates and approvals	
CE, RCM, KCC CSA Class I, Div. 2, Groups A, B, C, D, Class II, Div. 1 Groups E, F, G FM Class I, Zone 1, AEx m IIC, T6 Class II, III, Div. 1, Groups E, F, G T6 ATEX II 2GD / IECEx / INMETRO Ex mb IIC T6 Gb, Ex tb IIIC T85 °C Db	

Level Measurement

Continuous level measurement
Ultrasonic transducers

EchoMax XRS-5

Selection and Ordering data

EchoMax XRS-5 transducer

With a beam angle of 10°, the XRS-5 provides reliable, continuous level monitoring of liquids and slurries in narrow lift stations/wet wells, flumes, weirs and filter beds.

Measuring range: min. 0.3 m (1 ft), max. 8 m (26 ft)

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Process connection

1" NPT [(Taper), ANSI/ASME B1.20.1]

R 1" [(BSPT), EN 10226]

Cable length

5 m (16.40 ft)

10 m (32.81 ft)

30 m (98.43 ft)

Facing

Standard (CSM rubber)

PTFE (flange versions)

Approvals

CE, RCM, KCC, CSA Class I, Div. 2, Groups A, B, C, D, Class II, Div. 1, Groups E, F, G FM Class I, Zone 1, AEx m IIC, T6 Class II, III, Div. 1, Groups E, F, G T6 ATEX II 2GD / IECEx / INMETRO Ex mb IIC T6 Gb, Ex tb IIIC T85 °C Db

Mounting flange (flush mount)

None

3" ASME, 150 lb, flat faced

4" ASME, 150 lb, flat faced

6" ASME, 150 lb, flat faced

DN 80, PN 10/16, Type A, flat faced

DN 100, PN 10/16, Type A, flat faced

DN 150, PN 10/16, Type A, flat faced

JIS10K 3B style

JIS10K 4B style

JIS10K 6B style

Note: flange bolting patterns and facings dimensionally correspond to the applicable

ASME B16.5 or EN 1092-1, or JIS B 2220 standard.

Operating Instructions

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Article No.

7ML1106-

0 - 0

1

2

A

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2

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B

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D

J

K

L

Q

R

S

Selection and Ordering data

Further designs

Please add "-Z" to Article No. and specify Order code(s).

Acrylic coated, stainless steel tag [13 x 45 mm (0.5 x 1.75 inch)]: Measuring-point number/identification (max. 16 characters) specify in plain text

Accessories

Tag, stainless steel with hole, 12 x 45 mm (0.47 x 1.77 inch), one text line for fastening on sensors

Submergence shield kit

Easy Aimer 2, aluminum, NPT with ¾" x 1" PVC coupling

Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings

Easy Aimer 304, NPT with 1" stainless steel coupling

Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 stainless steel couplings

FMS-200 universal box bracket, mounting kit

FMS-210 channel bracket, wall mount

FMS-220 extended channel bracket, wall mount

FMS-310 channel bracket, floor mount

FMS-320 extended channel bracket, floor mount

FMS-350 bridge channel bracket, floor mount (see Mounting Brackets on page 4/186 for more information)

1" NPT locknut, plastic

1" BSPT locknut, plastic

Plastic adapter 1" BSP - 20 mm

Plastic adapter 1" NPT

Plastic adapter 1" NPT/M20

Order code

Y17

Article No.

7ML1930-1BJ

7ML1830-1BH

7ML1830-1AQ

7ML1830-1AX

7ML1830-1AU

7ML1830-1GN

7ML1830-1BK

7ML1830-1BL

7ML1830-1BM

7ML1830-1BN

7ML1830-1BP

7ML1830-1BQ


7ML1830-1DS

7ML1830-1DR

7ML1830-1EA

7ML1930-1FX

7ML1830-1EF

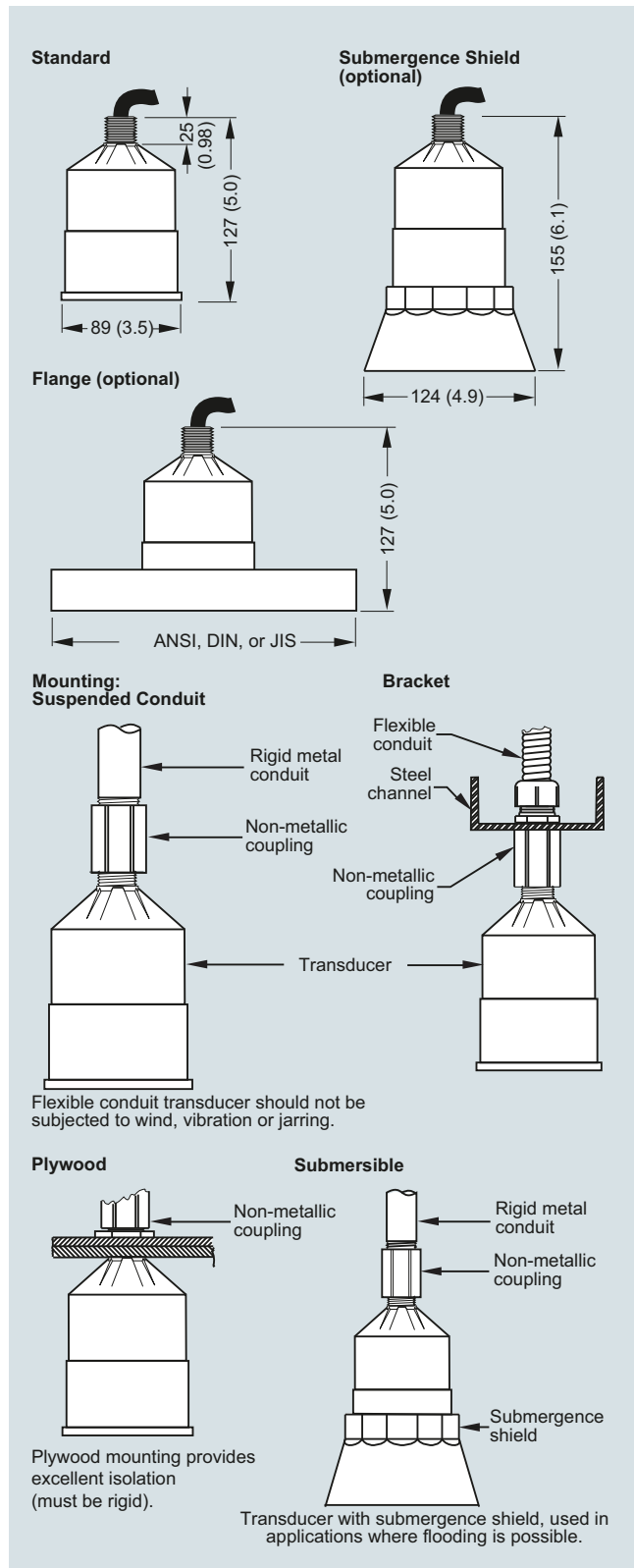
Selection and Ordering data		Article No.	Selection and Ordering data		Order code
EchoMax XRS-5C transducer		7ML1105-	Further designs		
With a beam angle of 10°, the XRS-5 provides reliable, continuous level monitoring of liquids and slurries in narrow lift stations/wet wells, flumes, weirs and filter beds. Measuring range: min. 0.3 m (1 ft), max. 8 m (26 ft)			Please add "-Z" to Article No. and specify Order code(s).		
➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			Acrylic coated, stainless steel tag [13 x 45 mm (0.5 x 1.75 inch)]: Measuring-point number/identification (max. 16 characters) specify in plain text		Y17
Process connection 1" NPT [(Taper), ANSI/ASME B1.20.1]		1	Accessories		Article No.
Cable length 5 m (16.40 ft) 10 m (32.81 ft) 30 m (98.43 ft)		A B C	Submergence shield kit		7ML1830-1BH
Facing Standard (CSM rubber) PTFE (flange versions)		A B	Easy Aimer 2, aluminum, NPT with ¾" x 1" PVC coupling		7ML1830-1AQ
Approvals CSA Class I Div. 1, Groups A, B, C, D; Class II Div. 1, Groups E, F, G; Class III		1	Easy Aimer 304, NPT with 1" stainless steel coupling		7ML1830-1AU
Mounting flange (flush mount) None 3" ASME, 150 lb, flat faced 4" ASME, 150 lb, flat faced 6" ASME, 150 lb, flat faced Note: flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1, or JIS B 2220 standard.		A B C D	FMS-200 universal box bracket, mounting kit		7ML1830-1BK
Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation			FMS-210 channel bracket, wall mount		7ML1830-1BL
			FMS-220 extended channel bracket, wall mount		7ML1830-1BM
			FMS-310 channel bracket, floor mount		7ML1830-1BN
			FMS-320 extended channel bracket, floor mount		7ML1830-1BP
			FMS-350 bridge channel bracket, floor mount (see Mounting Brackets on page 4/186 for more information)		7ML1830-1BQ

Level Measurement

Continuous level measurement
Ultrasonic transducers

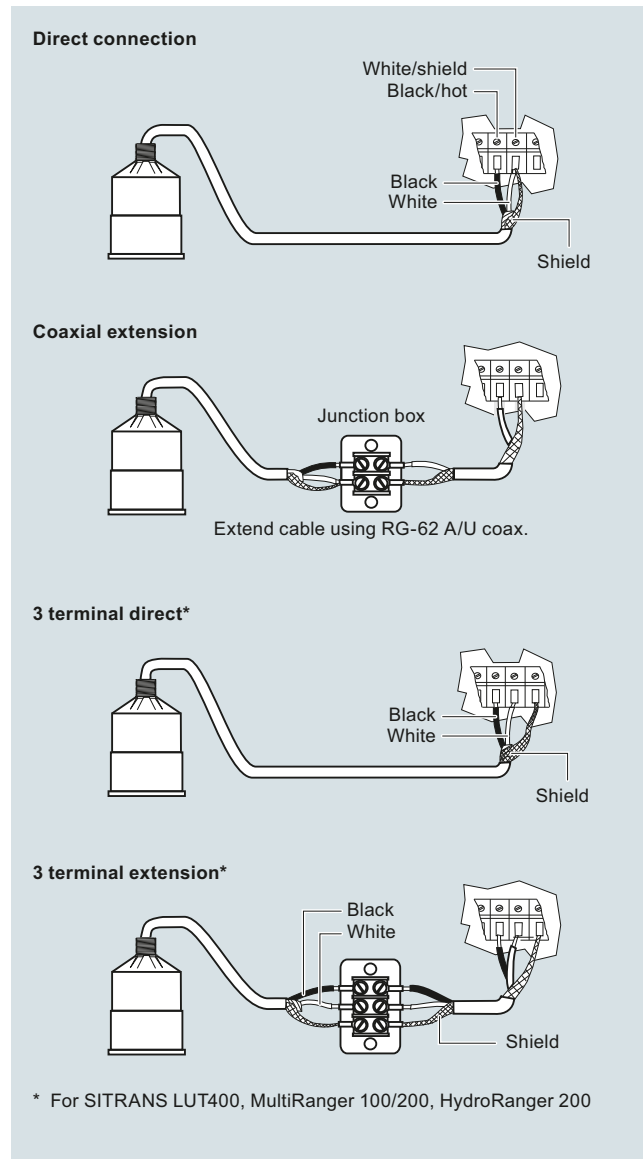
EchoMax XRS-5

Dimensional drawings



XRS-5 ultrasonic transducer, dimensions in mm (inch)

Circuit diagrams



XRS-5 ultrasonic transducer connections

Overview

EchoMax XPS transducers use ultrasonic technology to measure level in a wide range of liquids and solids.

Benefits

- Integral temperature compensation
- Low ringing effect reduces blanking distance
- Optional foam facing for dusty applications
- Self-cleaning and low-maintenance
- Chemically resistant
- Hermetically sealed

Application

XPS transducers can be fully immersed, are resistant to steam and corrosive chemicals, and can be installed without flanges.

The XPS series offers versions for various measuring ranges up to 30 m (100 ft) and up to a max. temperature of 95 °C (203 °F).

During operation, the EchoMax transducers emit acoustic pulses in a narrow beam. The level monitor measures the propagation time between pulse emission and its reflection (echo) to calculate the distance.

Level Measurement


Continuous level measurement
Ultrasonic transducers

EchoMax XPS

Technical specifications

Input	XPS-10	XPS-15 (standard and F models)	XPS-30
Measuring range	0.3 ... 10 m (1 ... 33 ft)	<u>Standard:</u> 0.3 ... 15 m (1 ... 50 ft) <u>XPS-15F:</u> 0.45 ... 15 m (1.5 ... 50 ft)	0.6 ... 30 m (2 ... 100 ft)
Output			
Frequency	44 kHz	44 kHz	30 kHz
Beam angle	12°	6°	6°
Environmental			
Location	Indoors/outdoors		
Ambient temperature	-40 ... +95 °C (-40 ... +203 °F)	<u>Standard:</u> -40 ... +95 °C (-40 ... +203 °F) <u>XPS-15F:</u> -20 ... +95 °C (-4 ... +203 °F)	-40 ... +95 °C (-40 ... +203 °F)
Pollution degree	4		
Pressure	8 bar g (120 psi g) <u>Flanged:</u> 0.5 bar g (7.25 psi g)	8 bar g (120 psi g) <u>Flanged:</u> 0.5 bar g (7.25 psi g)	0.5 bar g (7.25 psi g) <u>Flanged:</u> 0.5 bar g (7.25 psi g)
Design			
Weight	0.8 kg (1.8 lb)	1.3 kg (2.8 lb) <u>Flanged:</u> 2 kg (4.4 lb)	4.3 kg (9.5 lb)
Power supply	Operation of transducer only with approved Siemens controllers		
Material	<u>Standard:</u> PVDF <u>Flanged:</u> PVDF with CPVC flange <u>Option:</u> PTFE face with CPVC flange	<u>Standard:</u> PVDF <u>Flanged:</u> PVDF with CPVC flange <u>Option:</u> PTFE face with CPVC flange	<u>Standard:</u> PVDF <u>Flanged:</u> PVDF with CPVC flange <u>Option:</u> PTFE face with CPVC flange
Color	Blue	<u>Standard:</u> Blue <u>XPS-15F:</u> Gray	Blue
Process connection	1" NPT or 1" BSPT	<u>Standard:</u> 1" NPT or 1" BSPT <u>XPS-15F:</u> 1" NPT	1.5" universal thread (NPT or BSPT)
Degree of protection	IP66/68	IP66/68	IP66/68
Cable	2-wire twisted pair/braided and foil shielded 0.5 mm ² (20 AWG) PVC jacket		
Separation	Max. 365 m (1 200 ft)		
Certificates and approvals	<u>Standard:</u> CE, CSA, FM, ATEX, IECEx	<u>Standard:</u> CE, CSA, FM, ATEX, IECEx <u>XPS-15F:</u> FM Class I, Div. 1, Groups A, B, C, and D, Class II Div. 1, Groups E, F, and G, Class III	CE, CSA, FM, ATEX, IECEx

¹⁾ EMC certificate available on request.

Selection and Ordering data		Article No.	Selection and Ordering data		Order code
EchoMax XPS-10 ultrasonic transducer		7ML1115-	Further designs		
High-frequency ultrasonic transducer designed for a wide variety of liquid and solid applications, for use with approved controllers. Includes integral temperature sensor. Measuring range: min. 0.3 m, max. 10 m			Please add "-Z" to Article No. and specify Order code(s).		
➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			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
Mounting thread and facing			Operating Instructions		Article No.
1" NPT [(Taper), ANSI/ASME B1.20.1]		0	Multi-language		A5E43390688
1" NPT [(Taper), ANSI/ASME B1.20.1] with foam facing ¹⁾		1	Note: The Operating Instructions should be ordered as a separate line item on the order.		
1" NPT [(Taper), ANSI/ASME B1.20.1] with PTFE facing ²⁾		2	All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation		
R 1" [(BSPT), EN 10226]		3	Accessories		
R 1" [(BSPT), EN 10226] with foam facing ¹⁾		4	Tag, stainless steel with hole, 12 x 45 mm (0.47 x 1.77 inch), one text line for fastening on sensors		7ML1930-1BJ
R 1" [(BSPT), EN 10226] with PTFE facing ²⁾		5	Submergence shield kit		7ML1830-1BH
Cable length			Easy Aimer 2, aluminum, NPT with ¾" x 1" PVC coupling		7ML1830-1AQ
5 m (16.40 ft)		B	Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings		7ML1830-1AX
10 m (32.81 ft)		C	Easy Aimer 304, NPT with 1" stainless steel coupling		7ML1830-1AU
30 m (98.43 ft)		E	Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 stainless steel couplings		7ML1830-1GN
50 m (164.04 ft)		F	Universal box bracket, mounting kit		7ML1830-1BK
100 m (328.08 ft)		K	Channel bracket, wall mount		7ML1830-1BL
Mounting flange			Extended channel bracket, wall mount		7ML1830-1BM
None		A	Channel bracket, floor mount		7ML1830-1BN
3" ASME, 150 lb, flat faced		C	Extended channel bracket, floor mount		7ML1830-1BP
4" ASME, 150 lb, flat faced		D	Bridge channel bracket, floor mount (see Mounting Brackets on page 4/186 for more information)		7ML1830-1BQ
6" ASME, 150 lb, flat faced		E	1" NPT locknut, plastic		7ML1830-1DS
8" ASME, 150 lb, flat faced		F	1" BSPT locknut, plastic		7ML1830-1DR
DN 80, PN 10/16, Type A, flat faced		G	Plastic adapter 1" BSP - 20 mm		7ML1830-1EA
DN 100, PN 10/16, Type A, flat faced		J	Plastic adapter 1" NPT		7ML1930-1FX
DN 150, PN 10/16, Type A, flat faced		L	Plastic adapter 1" NPT/M20		7ML1830-1EF
JIS10K3B Style		M			
JIS10K4B Style		P			
JIS10K6B Style		R			
(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1, or JIS B 2220 standard.)					
Approvals					
ATEX 2GD Ex mb IIC T4 Gb, Ex tb IIIC T135 °C Db; IECEx SIR 13.0009X Ex mb IIC T4 Gb, Ex tb IIIC T135 °C Db; FM Class I, Div. 2, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III		3			
CSA Class I, Div. 1, Groups A, B, C, D, Class II, Div. 1, Groups E, F, G, Class III ³⁾		4			

¹⁾ Not available with flanged versions

²⁾ Available with flanged versions only

³⁾ Valid with mounting thread and facing options 0 ... 2 only

Level Measurement

Continuous level measurement

Ultrasonic transducers

EchoMax XPS

Selection and Ordering data

Article No.

EchoMax XPS-15 ultrasonic transducer

High-frequency ultrasonic transducer designed for a wide variety of liquid and solid applications, for use with approved controllers. Includes integral temperature sensor.

Measuring range: min. 0.3 m, max. 15 m

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

7ML1118-

0

Mounting thread and facing

1" NPT [(Taper), ANSI/ASME B1.20.1]

1" NPT [(Taper), ANSI/ASME B1.20.1]
with foam facing¹⁾

1" NPT [(Taper), ANSI/ASME B1.20.1]
with PTFE facing²⁾

R 1" [(BSPT), EN 10226]

R 1" [(BSPT), EN 10226] with foam facing¹⁾

R 1" [(BSPT), EN 10226] with PTFE facing²⁾

0

1

2

3

4

5

Cable length

5 m (16.40 ft)

10 m (32.81 ft)

30 m (98.43 ft)

50 m (164.04 ft)

100 m (328.08 ft)

B

C

E

F

K

Mounting flange

None

6" ASME, 150 lb, flat faced

8" ASME, 150 lb, flat faced

DN 150, PN 10/16, Type A, flat faced

DN 200, PN 10, Type A, flat faced

JIS10K 6B

JIS10K 8B

(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1, or JIS B 2220 standard.)

A

D

E

J

K

N

P

Approvals

ATEX 2GD Ex mb IIC T4 Gb, Ex tb IIIC T135 °C Db;

IECEX SIR 13.0009X Ex mb IIC T4 Gb, Ex tb IIIC

T135 °C Db; FM Class I, Div. 2, Groups A, B, C, D;

Class II, Div. 1, Groups E, F, G; Class III

CSA Class I, Div. 1, Groups A, B, C, D, Class II,

Div. 1, Groups E, F, G, Class III³⁾

3

4

¹⁾ Not available with flanged versions

²⁾ Available with flanged versions only

³⁾ Available with mounting options 0 ... 2 only

Selection and Ordering data

Order code

Further designs

Please add "-Z" to Article No. and specify Order code(s).

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

Operating Instructions

Multi-language

Note: The Operating Instructions should be ordered as a separate line item on the order.

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Article No.

A5E43390688

Accessories

Tag, stainless steel with hole, 12 x 45 mm
(0.47 x 1.77 inch), one text line for fastening on sensors

7ML1930-1BJ

Submergence shield kit

7ML1830-1BJ

Universal box bracket, mounting kit

7ML1830-1BK

Channel bracket, wall mount

7ML1830-1BL

Extended channel bracket, wall mount

7ML1830-1BM

Channel bracket, floor mount

7ML1830-1BN

Extended channel bracket, floor mount

7ML1830-1BP

Bridge channel bracket, floor mount
(see Mounting Brackets on page 4/186 for more information)

7ML1830-1BQ

1" NPT locknut, plastic

7ML1830-1DS

1" BSPT locknut, plastic

7ML1830-1DR

Easy Aimer 2, aluminum, NPT with ¾" x 1" PVC coupling

7ML1830-1AQ

Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings

7ML1830-1AX

Easy Aimer 304, NPT with 1" stainless steel coupling

7ML1830-1AU

Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 stainless steel couplings

7ML1830-1GN

Plastic adapter 1" BSP - 20 mm

7ML1830-1EA

Plastic adapter 1" NPT

7ML1930-1FX

Plastic adapter 1" NPT/M20

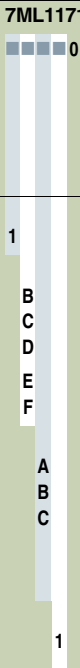
7ML1830-1EF

Level Measurement

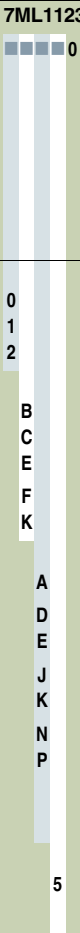
Continuous level measurement

Ultrasonic transducers

EchoMax XPS

Selection and Ordering data	Article No.
EchoMax XPS-15F ultrasonic transducer High-frequency ultrasonic transducer designed for a wide variety of liquid and solid applications, for use with approved controllers. Includes integral temperature sensor. Measuring range: min. 0.45 m, max. 15 m Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML1171- 
Mounting thread and facing 1" NPT [(Taper), ANSI/ASME B1.20.1]	1
Cable length 5 m (16.40 ft) 10 m (32.81 ft) 30 m (98.43 ft) 50 m (164.04 ft) 100 m (328.08 ft)	B C D E F
Mounting flange, flush mount None 6" ASME, 150 lb, flat faced 8" ASME, 150 lb, flat faced (Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5, or EN 1092-1, or JIS B 2220 standard.)	A B C
Approvals FM Class I, Div. 1, Groups A, B, C, and D, Class II Div. 1, Groups E, F, and G, Class III	1

Selection and Ordering data	Order code
Further designs Please add "-Z" to Article No. and specify Order code(s). 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
Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories Tag, stainless steel with hole, 12 x 45 mm (0.47 x 1.77 inch), one text line for fastening on sensors Submergence shield kit Universal box bracket, mounting kit Channel bracket, wall mount Extended channel bracket, wall mount Channel bracket, floor mount Extended channel bracket, floor mount Bridge channel bracket, floor mount (see Mounting Brackets on page 4/186 for more information) 1" NPT locknut, plastic Easy Aimer 2, aluminum, NPT with 3/4" x 1" PVC coupling Easy Aimer 304, NPT with 1" stainless steel coupling	Article No. 7ML1930-1BJ 7ML1830-1BJ 7ML1830-1BK 7ML1830-1BL 7ML1830-1BM 7ML1830-1BN 7ML1830-1BP 7ML1830-1BQ 7ML1830-1DS 7ML1830-1AQ 7ML1830-1AU

Selection and Ordering data	Article No.
EchoMax XPS-30 ultrasonic transducer High-frequency ultrasonic transducer designed for a wide variety of liquid and solid applications, for use with approved controllers. Includes integral temperature sensor. 1½" universal thread compatible with 1½" NPT and R 1½" [(BSPT), EN 10226] Measuring range: min. 0.6 m (1.97 ft), max. 30 m (98.43 ft) Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML1123- 
Mounting thread and facing 1½" universal thread 1½" universal thread, foam facing ¹⁾ 1½" universal thread, PTFE facing ²⁾	0 1 2
Cable length 5 m (16.40 ft) 10 m (32.81 ft) 30 m (98.43 ft) 50 m (164.04 ft) 100 m (328.08 ft)	B C E F K
Mounting flange None 6" ASME, 150 lb, flat faced 8" ASME, 150 lb, flat faced DN 150, PN 10/16, Type A, flat faced DN 200, PN 10, Type A, flat faced JIS10K 6B JIS10K 8B (Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1, or JIS B 2220 standard.)	A D E J K N P
Approvals ATEX 2G 1D Ex mb IIC T4 Gb, Ex ta IIIC T135 °C Da; IECEx SIR 13.0009X Ex mb IIC T4 Gb, Ex ta IIIC T135 °C Da	5
¹⁾ Not available with flanged versions ²⁾ Available with flanged versions only	

Level Measurement

Continuous level measurement
Ultrasonic transducers

EchoMax XPS

Selection and Ordering data

Order code

Further designs

Please add **"-Z"** to Article No. and specify Order code(s).

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

Operating Instructions

Multi-language

Note: The Operating Instructions should be ordered as a separate line item on the order.

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Article No.

A5E43390688

Accessories

Tag, stainless steel with hole, 12 x 45 mm (0.47 x 1.77 inch), one text line for fastening on sensors

7ML1930-1BJ

1½" BSPT locknut, plastic

7ML1830-1DP

Easy Aimer 2, aluminum, NPT with 1½" galvanized coupling

7ML1830-1AN

Easy Aimer 304, NPT with 1½" stainless steel coupling

7ML1830-1AT

Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings

7ML1830-1AX

Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 stainless steel couplings

7ML1830-1GN

Adapter 1½" BSP

7ML1830-1EB

Selection and Ordering data

Article No.

EchoMax XPS-30C ultrasonic transducer

High-frequency ultrasonic transducer designed for a wide variety of liquid and solid applications, for use with approved controllers. Includes integral temperature sensor.

1½" universal thread compatible with 1½" NPT and R 1½" [(BSPT), EN 10226]

Measuring range: min. 0.6 m (1.97 ft), max. 30 m (98.43 ft)

➔ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

7ML1155-

1

Mounting thread and facing

1½" universal thread

0

1½" universal thread, foam facing¹⁾

1

1½" universal thread, PTFE facing²⁾

2

Cable length

5 m (16.40 ft)

10 m (32.81 ft)

30 m (98.43 ft)

50 m (164.04 ft)

100 m (328.08 ft)

**B
C
E
F
K**

Mounting flange

None

**A
D
E
J
K
N
P**

6" ASME, 150 lb, flat faced

8" ASME, 150 lb, flat faced

DN 150, PN 10/16, Type A, flat faced

DN 200, PN 10, Type A, flat faced

JIS10K 6B

JIS10K 8B

(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1, or JIS B 2220 standard.)

Approvals

CSA, Class I, Div. 2, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III

4

Selection and Ordering data

Order code

Further designs

Please add **"-Z"** to Article No. and specify Order code(s).

Stainless steel tag [69 mm x 50 mm (2.71 x 1.97 inch)]: Measuring-point number / identification (max. 27 characters) specify in plain text

Y15

Operating Instructions

Multi-language

Note: The Operating Instructions should be ordered as a separate line item on the order.

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Article No.

A5E43390688

Accessories

Easy Aimer 2, aluminum, NPT with 1½" galvanized coupling

7ML1830-1AN

Easy Aimer 304, NPT with 1½" stainless steel coupling

7ML1830-1AT

1½" BSPT locknut, plastic

7ML1830-1DP

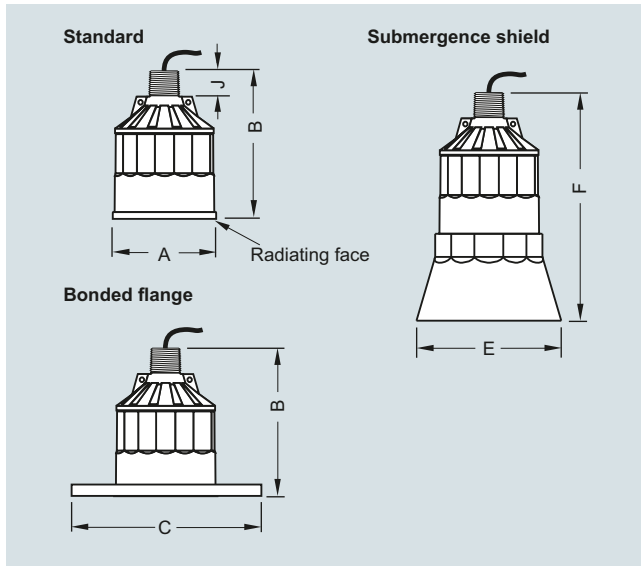
Adapter 1½" BSP

7ML1830-1EB

¹⁾ Not available with flanged version

²⁾ Available for flanged versions only

Dimensional drawings

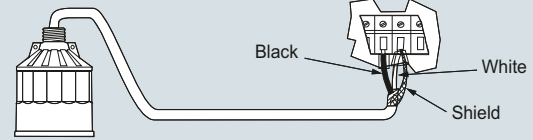


XPS ultrasonic transducer

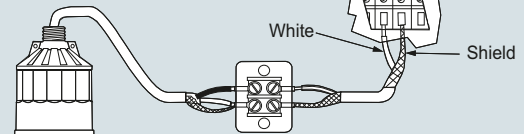
Version			
Dimension	XPS-10	XPS-15	XPS-30
A	88 mm (3.464 inch)	121 mm (4.764 inch)	175 mm (6.890 inch)
B	122 mm (4.803 inch)	132 mm (5.197 inch)	198 mm (7.795 inch)
C	According to ASME, DIN, and JIS		
E	124 mm (4.882 inch)	158 mm (6.220 inch)	n/a
F	152 mm (5.984 inch)	198 mm (7.795 inch)	n/a
J	28 mm (1.1 inch)	28 mm (1.1 inch)	28 mm (1.1 inch)

Circuit diagrams

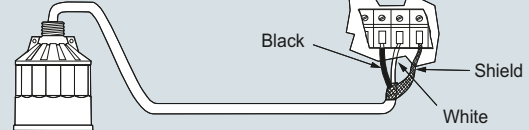
Direct connection



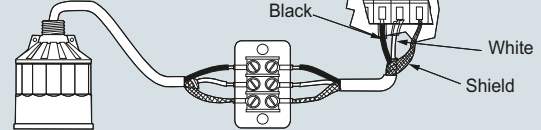
Coaxial connection



3 terminal direct*



3 terminal extension*



* For SITRANS LUT400, MultiRanger 100/200, HydroRanger 200

Mounting

Make particularly sure that the radiating face of the transducer is protected from damage. Mount the transducer so that it is above the maximum material level by at least the blanking value. On liquid applications, the transducer must be mounted so that the axis of transmission is perpendicular to the liquid surface. On solids applications, an Easy Aimer should be used to facilitate aiming the transducer. Consider the optional temperature sensor when mounting the transducer.

Interconnection

Do not route cable openly or near high voltage or current runs, contactors and SCR control drives. For optimum isolation against electrical noise, run cable separately in a grounded metal conduit. Seal all thread connections to prevent ingress of moisture.

XPS ultrasonic transducer connections

Level Measurement

Continuous level measurement
Accessories for ultrasonic

EA aiming devices

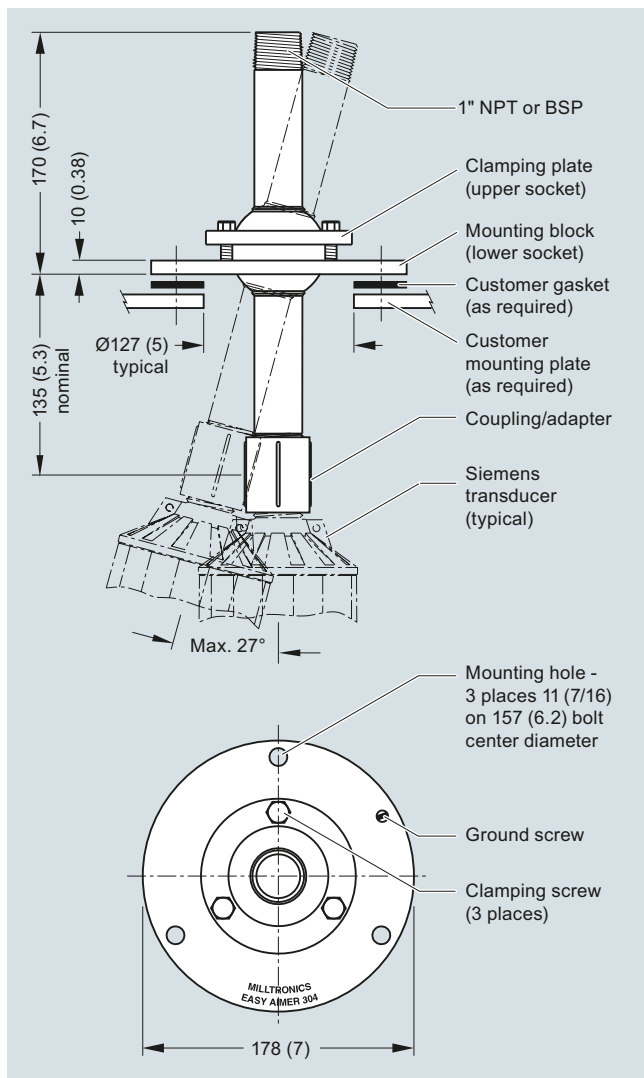
Application

EA 304 aiming device

The Easy Aimer 304 flange is a stainless steel aiming device for alignment of Siemens ultrasonic transducers used for level measurement of bulk solids.

The sensor must be mounted aimed towards the low level draw point in the silo. The sensor can be rotated through 360° and angled at 0 to 27° off vertical. It must be mounted using an access plate with welded studs or a flange in order to isolate the mounting holes from the pressurized environment. When installed properly, the EA 304 aiming device is capable of withstanding pressures up to 0.5 bar (Europe) or 15 psi (North America). It can even be used in corrosive and aggressive environments.

Dimensional drawings



EA 304 aiming device, dimensions in mm (inch)

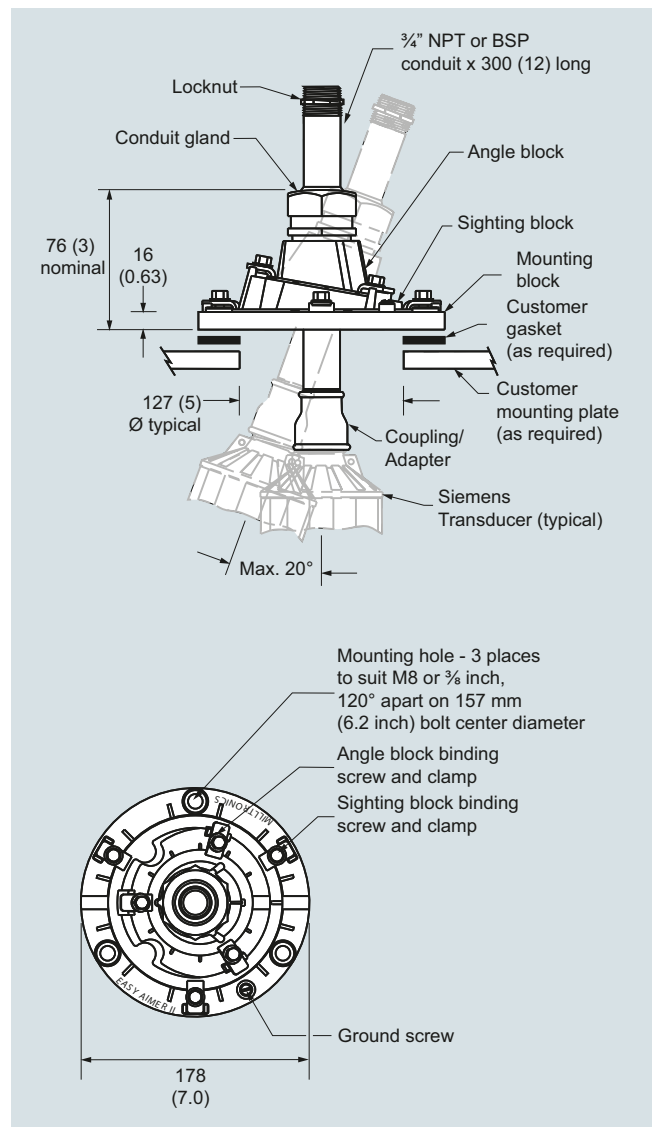
Application

EA 2 aiming device

The Easy Aimer 2 flange is a cast aluminum aiming device for alignment of Siemens ultrasonic transducers.

The flange has graduated adjustments and an adjustable insertion length. When used for applications with bulk solids, the sensor is mounted so that it is aimed towards the lower level draw point in the silo. The sensor can be rotated through 360° and angled at 0 to 20° off vertical. It must be mounted using an access plate with welded studs or a flange in order to isolate the mounting holes from the pressurized environment. When installed properly, the EA 2 aiming device is capable of withstanding pressures up to 0.5 bar (Europe) or 15 psi (North America). It can even be used in corrosive and aggressive environments.

Dimensional drawings



EA 2 aiming device, dimensions in mm (inch)

Selection and Ordering data	Article No.
Easy aimer Used on solids applications to aim transducers for optimal performance. Available in a 304 stainless steel model, or a cast aluminum model.	
Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings	7ML1830-1AX
Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 stainless steel couplings	7ML1830-1GN
Easy Aimer 2, aluminum, BSPT conduit	7ML1830-1AL
Easy Aimer 2, aluminum, NPT with 1½" galvanized coupling ¹⁾	7ML1830-1AN
Easy Aimer 2, aluminum, NPT with 1" galvanized coupling	7ML1830-1AP
Easy Aimer 2, aluminum, NPT with ¾" x 1" PVC coupling	7ML1830-1AQ
Easy Aimer 304, BSPT conduit	7ML1830-1AS
Easy Aimer 304, NPT with 1½" stainless steel coupling ¹⁾	7ML1830-1AT
Easy Aimer 304, NPT with 1" stainless steel coupling	7ML1830-1AU
Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	

¹⁾ For use with XPS-30 transducers only

Level Measurement

Continuous level measurement

Accessories for ultrasonic

FMS mounting brackets

Application

Siemens mounting brackets permit simple, fast installation of ultrasonic transducers. These rugged, high quality mounting brackets are constructed of 304 (1.4301) stainless steel and are suitable for use indoors and outdoors. They adjust to fit almost any application, saving you the time and expense of building custom brackets. Each kit includes all mounting parts.

FMS-200 **universal box bracket system**

Mounting of units with 1 inch or 2 inch threaded connection.

Distance from sensor to wall or beam: 20 ... 31 cm (8 ... 12 inch).

The unique box design also acts as a sun shield for transducers with 1 inch threaded connections.

FMS-210 **wall mounting set**

Mounting of transducers with 1 inch threaded connection.

Distance from transducer to wall or beam:
12 ... 48 cm (5 ... 19 inch).

FMS-220 **extended wall mounting set**

Mounting of transducers with 1 inch threaded connection.

Distance from transducer to wall or beam:
32 ... 98 cm (13 ... 39 inch).

FMS-310 **floor mounting set**

Mounting of transducers with 1 inch threaded connection.

Distance from transducer to floor: 20 ... 48 cm (8 ... 19 inch).

Distance from mounting support: 5 ... 57 cm (2 ... 22 inch).

FMS-320 **extended floor mounting set**

Mounting of transducers with 1 inch threaded connection.

Distance from transducer to floor: 20 ... 48 cm (8 ... 19 inch).

Distance from mounting support: 41 ... 108 cm (16 ... 43 inch).

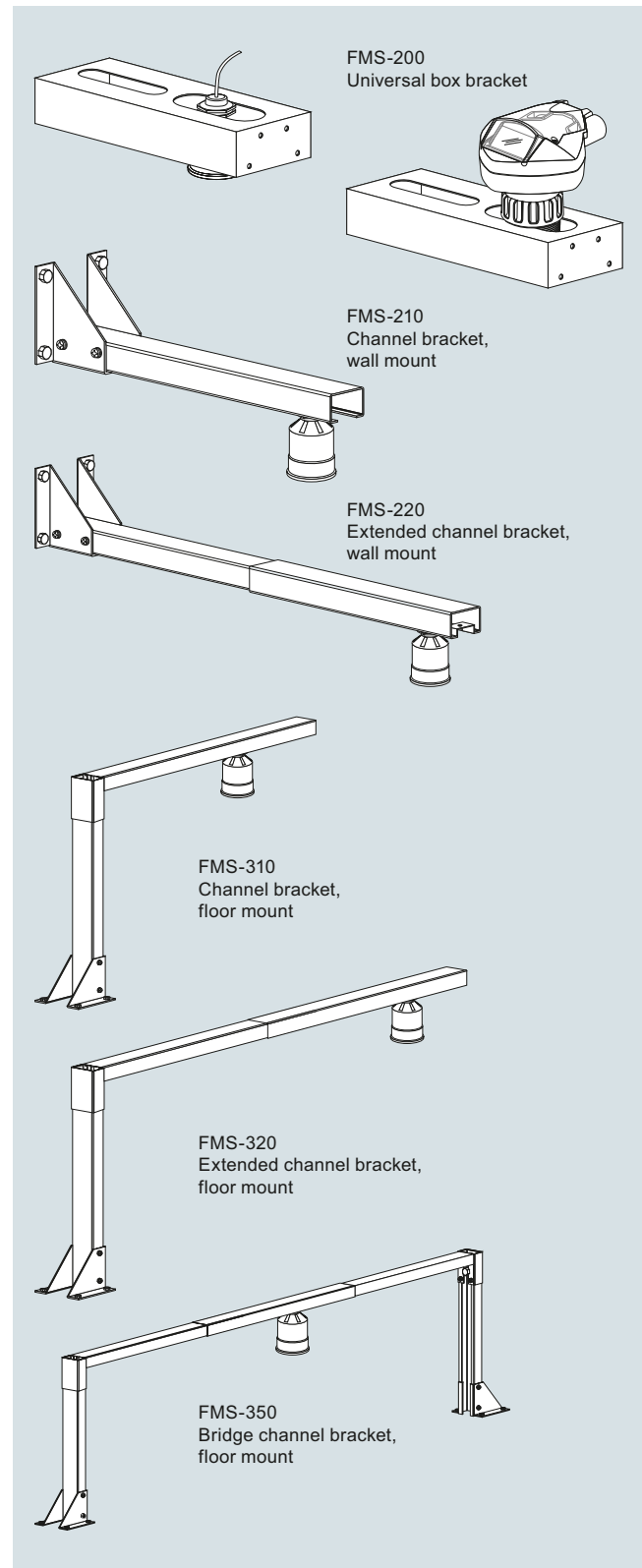
FMS-350 **floor mounting set, bridge**

Mounting of transducers with 1 inch threaded connection.

Distance from transducer to floor: 20 ... 48 cm (8 ... 19 inch),
anywhere along the complete width of the bridge [166 cm
(65 inch)].

This kit is particularly suitable for measurements on open channels (OCM) by providing a very stable mount for the transducer above a flume or weir.

Integration



FMS mounting brackets

Selection and Ordering data	Article No.
Mounting brackets for XPS-10 sensors	
FMS-200 universal box bracket set	7ML1830-1BK
FMS-210 wall mounting set	7ML1830-1BL
FMS-220 extended wall mounting set	7ML1830-1BM
FMS-310 floor mounting set	7ML1830-1BN
FMS-320 extended floor mounting set	7ML1830-1BP
FMS-350 floor mounting set, bridge	7ML1830-1BQ
<i>Additional Operating Instructions</i>	
FMS-200	7ML1998BK61
FMS-210	7ML19985BL61
FMS-220	7ML19985BM61
FMS-310	7ML19985BN61
FMS-320	7ML19985BP61
FMS-350	7ML19985BQ61
<p>Note: The Operating Instructions should be ordered as a separate line item on the order.</p> <p>All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation</p>	

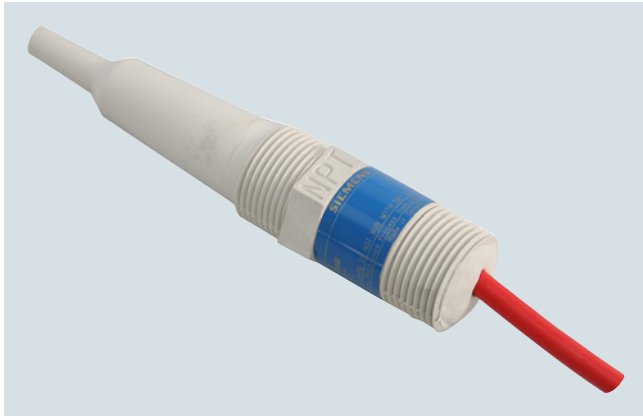
Level Measurement

Continuous level measurement

Accessories for ultrasonic

TS-3 temperature sensor

Overview



The TS-3 temperature sensor provides an input signal for temperature compensation of specific Siemens ultrasonic level controllers.

Benefits

- Chemically resistant ETFE enclosure
- Fast response time
- Approved for use in potentially explosive atmospheres

Application

Temperature compensation is essential in applications where temperature variations of the sound medium are expected.

By installing the temperature sensor close to the sound path of the associated ultrasonic transducer, a signal representative of the sound medium's ambient temperature is obtained. The temperature sensor should not be mounted in direct sunlight.

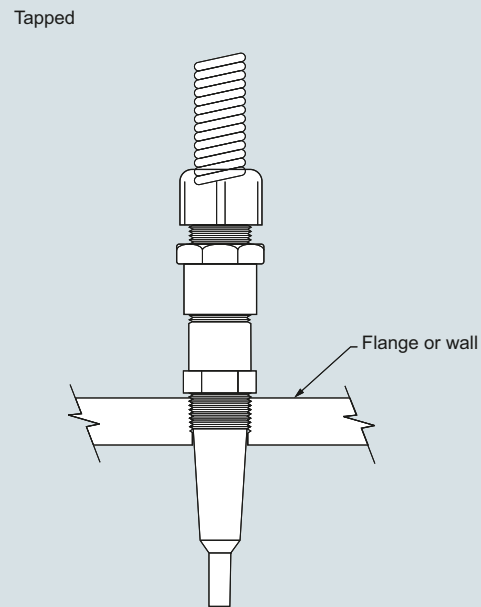
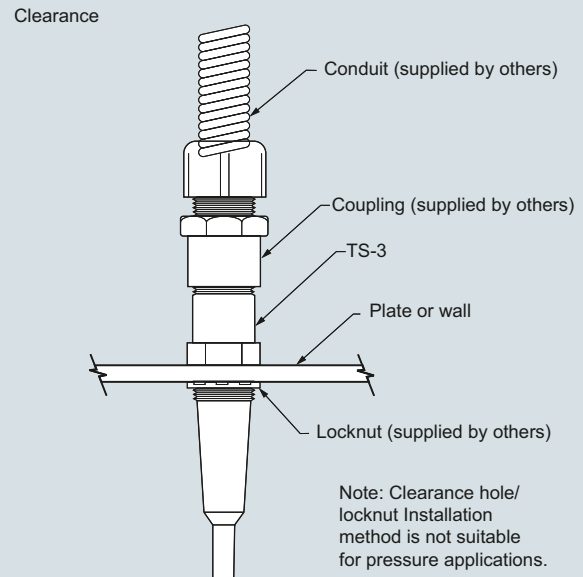
The TS-3 is used in conjunction with ultrasonic transducers that do not have an integral temperature sensor. It is also recommended in cases where the integral temperature sensor of the transducer cannot be used.

The following conditions are typical for use of the TS-3 sensor: where a fast reaction to temperature variations is required, where a flanged ultrasonic transducer is used, or where high temperatures are encountered.

The TS-3 is not compatible with devices using the TS-2 or LTS-1 temperature sensors. Refer to the associated controller manual for more details.

- Key Applications: for use in applications where temperature sensor measurement from transducer does not accurately represent vessel temperature. Used for applications requiring quick temperature response (open channel monitoring).

Design



TS-3 temperature sensor

Level Measurement

Continuous level measurement

Accessories for ultrasonic

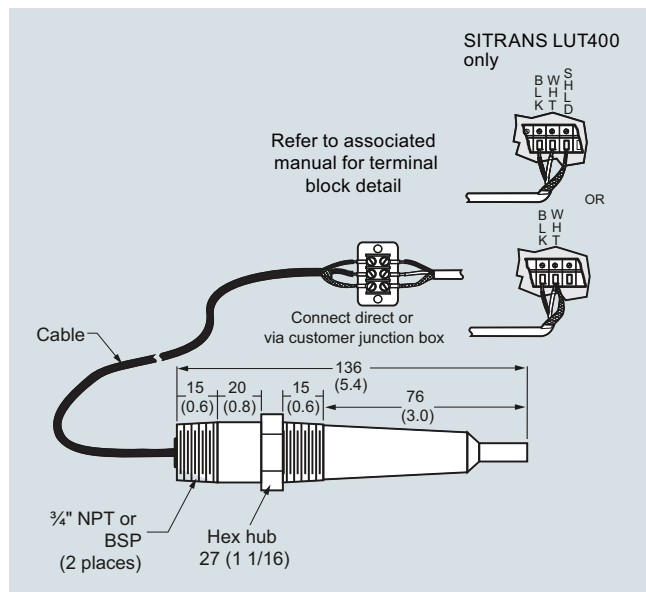
TS-3 temperature sensor

Technical specifications

Mode of operation	
Measuring principle	Temperature sensor
Input	
Measuring range	-40 ... +100 °C (-40 ... +212 °F)
Output	
Response time	
• Forced circulation (temperature variation: 63 %)	55 s
• Flange, forced circulation	90 s
• Natural convection	150 s
Rated operating conditions	
Installation instructions	Mounted indoors/outdoors, but not exposed to direct sunlight
Pressure	Max. 4 bar (60 psi/400 kPa)
Design	
Material (enclosure)	ETFE ¹⁾
Cable connection	2-core, 0.5 mm ² (20 AWG), shielded, silicone sheath
Process connection	¾" NPT [(Taper), ANSI/ASME B1.20.1] R ¾" [(BSPT), EN 10226], totally encapsulated
Certificates and approvals	
	CE, IEC Ex, FM, CSA, ATEX

¹⁾ ETFE is a fluoropolymer inert to most chemicals. For exposure to specific environments, check the chemical compatibility charts before installing the TS-3 in your application.

Dimensional drawings



TS-3 temperature sensor, dimensions in mm (inch)

Selection and Ordering data

TS-3 temperature sensor

TS-3 provides an input signal for temperature compensation of specific Siemens ultrasonic level controllers.

Compensation is essential in applications where variation in temperature of the sound medium is expected.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Cable length

1 m (3.28 ft)
5 m (16.40 ft)
10 m (32.81 ft)
30 m (98.43 ft)
50 m (164.04 ft)
70 m (229.66 ft)
90 m (295.28 ft)

Process connection

¾" NPT [(Taper), ANSI/ASME B1.20.1]
R ¾" [(BSPT), EN 10226]

Approvals

CSA, FM
CE, ATEX, IEC Ex

Operating Instructions

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Accessories

¾" NPT locknut, aluminum

Tag, stainless steel with hole, 12 x 45 mm (0.47 x 1.77 inch) for fastening on sensors

Article No.

7ML1813-

B

1

2

3

4

5

6

7

A

B

3

4

7ML1930-1BE

7ML1930-1BJ

Level Measurement

Continuous level measurement

Radar transmitters

Radar transmitters

Overview

Radar measurement technology is non-contacting and low maintenance. Because microwaves require no carrier medium, they are virtually unaffected by the process atmosphere (vapor, pressure, dust, or temperature extremes). Siemens offers a variety of models to meet the specific needs of your application.

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).

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).

SITRANS LR250 is a 2-wire, 25 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, corrosive or aggressive materials, to a range of 20 m (66 ft). Ideal for small vessels and low dielectric media.

SITRANS LR260 is a 2-wire, 25 GHz pulse radar level transmitter for continuous monitoring of solids and liquids in vessels, to a range of 30 m (98.4 ft). It is ideal for level measurement with quick response or intrinsically safe requirements.

SITRANS LR460 is a 4-wire, 24 GHz FMCW radar level transmitter with extremely high signal to noise ratio and advanced signal processing for continuous monitoring of solids, up to 100 m (328 ft). It is ideal for measurement in extreme dust and high temperature applications.

SITRANS LR560 2-wire, 78 GHz FMCW radar level transmitter for continuous monitoring of solids and liquids, to a range of 100 m (328 ft). It is easy to install, plug and play, and there is virtually no maintenance.

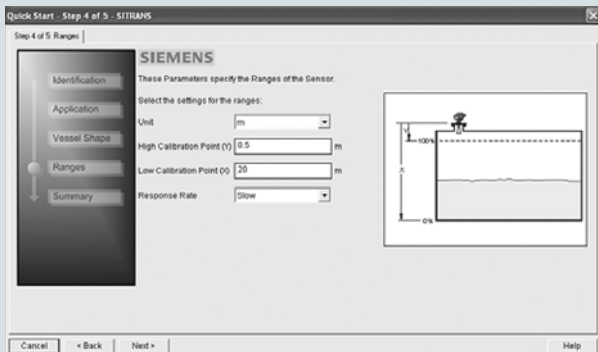
Auto False-Echo Suppression

SITRANS LR instruments offer the unique advantage of Process Intelligence signal processing technology. This in-depth knowledge and experience is built into the software's advanced algorithms to provide intelligent processing of echo profiles. The result is repeatable, fast and reliable measurement.

A special feature of SITRANS radar devices is Auto False-Echo Suppression, an echo processing technique that automatically detects and suppresses false echoes from vessel obstructions. You can implement this feature using two parameters on the local interface or SIMATIC PDM communicating over HART or PROFIBUS PA.



Local display interface – graphically displays echo profiles and diagnostic information (available with LR200, LR250, LR260 and LR560)
Quick to configure – Quick Start Wizard via SIMATIC PDM guides you during setup (available with LR200, LR250, LR260, LR460, LR560)



Mode of operation

Principle of Operation

Radar measurement technology measures the time of flight from the transmitted signal to the return signal. From this time, distance measurement and level are determined.

Unlike ultrasonic measurement, radar technology does not require a carrier medium and travels at the speed of light (300 000 000 m/s). Most industrial radar devices operate from 6 to 78 GHz.

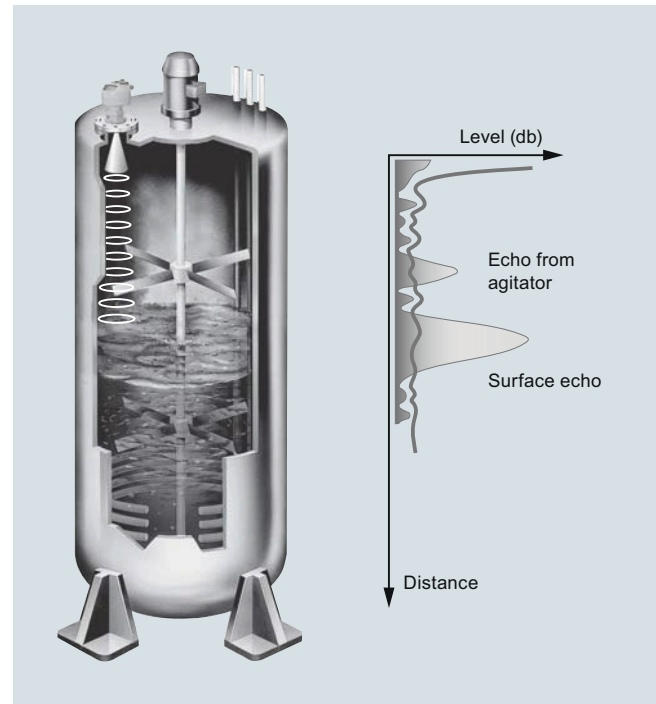
Siemens offers pulse radar transmitters (SITRANS Probe LR, SITRANS LR200, SITRANS LR250, SITRANS LR260) and FMCW (Frequency Modulated Continuous Wave) radar transmitters (SITRANS LR460, SITRANS LR560).

Pulse radar emits a microwave pulse from the antenna at a fixed repetition rate that reflects off the interface between the two materials with different dielectric constants (the atmosphere and the material being monitored).

The echo is detected by a receiver and the transmit time is used to calculate level.

Reflected echoes are digitally converted to an echo profile. The profile is analyzed to determine the distance from the material surface to the reference point on the instrument.

FMCW (Frequency Modulated Continuous Wave) radar devices send microwaves to the surface of the material. The wave frequency is modulated continuously. At the same time, the receiver is also receiving continuously and the difference in frequency between the transmitter and the receiver is directly proportional to the distance to the material.



Radar operation in a reactor vessel

Level Measurement

Continuous level measurement

Radar transmitters

Radar transmitters

Technical specifications

Radar Selection Guide

Criteria	SITRANS Probe LR	SITRANS LR200	SITRANS LR250	SITRANS LR260	SITRANS LR460	SITRANS LR560
Typical industries	Chemicals, petrochemicals, water/waste-water, drilling mud	Chemicals, petrochemicals, aluminum, wastewater	Chemicals, petrochemicals, oil and gas, mining, marine, food and beverage, pharmaceutical	Cement, power generation, chemical, petrochemical, food processing, mineral processing, mining	Cement, power generation, food processing, mineral processing, mining	Cement, chemical, power generation, grain, food processing, mineral processing, mining
Typical applications	Liquids, storage vessels, wet wells, drilling mud tanks	Liquids, process vessels with agitators, buildup, high temperatures	Liquids, storage and process vessels with agitators, vaporous liquids, high temperatures, low dielectric media, crude oil produced water	Cement, plastics, grain, flour, coal, fast moving solids, liquids, low dielectric liquids	Cement, fly ash, grain, coal, flour, plastics	Cement, fly ash, chemical fertilizer, grain, coal, flour, plastics, environmental water level monitoring
Range	0.3 ... 20 m (1 ... 65 ft)	0.4 ... 20 m (1.3 ... 65 ft)	50 mm (2 inch) from end of horn to 20 m (65 ft), horn dependent	30 m (98.4 ft)	100 m (328 ft)	40 m (131 ft) 100 m (328 ft)
Frequency	6.3 GHz	6.3 GHz	K-band (25.0 GHz)	K-band (25.0 GHz)	24 ... 25 GHz FMCW	78 ... 79 GHz
Performance accuracy	0.1 % of range or 10 mm (0.4 inch)	0.1 % of range or 10 mm (0.4 inch)	≤ 3 mm (0.118 inch)	<ul style="list-style-type: none"> 25 mm (1 inch) from minimum detectable distance to 300 mm (11.8 inch) Remainder of range = 6 mm (0.23 inch) or 0.05 % of spa (whichever is greater) 	0.25 %	5 mm (0.2 inch)
Temperature	Ambient: -40 ... +80 °C (-40 ... +176 °F) Process: -40 ... +80 °C (-40 ... +176 °F)	Ambient: -40 ... +80 °C (-40 ... +176 °F) Process: -40 ... +200 °C (-40 ... +392 °F), dependent on antenna type	Ambient: -40 ... +80 °C (-40 ... +176 °F) Process: -40 ... +200 °C (-40 ... +392 °F), dependent on antenna type	Ambient: -40 ... +80 °C (-40 ... +176 °F) Process: -40 ... +200 °C (-40 ... +392 °F), dependent on antenna type	Ambient: 65 °C (149 °F) Process: 200 °C (392 °F)	Ambient: -40 ... +80 °C (-40 ... +176 °F) Process: -40 ... +100 °C (-40 ... 212 °F) Optional: 200 °C (392 °F)
Output/communications/remote configuration and diagnostics	<ul style="list-style-type: none"> 4 ... 20 mA/HART SIMATIC PDM 	<ul style="list-style-type: none"> 4 ... 20 mA/HART PROFIBUS PA SIMATIC PDM AMS SITRANS DTM/FDT for PACTware, Fieldcare, etc. 	<ul style="list-style-type: none"> 4 ... 20 mA/HART PROFIBUS PA FOUNDATION Fieldbus SIMATIC PDM AMS SITRANS DTM/FDT for PACTware, Fieldcare, etc. 	<ul style="list-style-type: none"> 4 ... 20 mA/HART PROFIBUS PA SIMATIC PDM 	<ul style="list-style-type: none"> 4 ... 20 mA/HART PROFIBUS PA SIMATIC PDM 	<ul style="list-style-type: none"> 4 ... 20 mA/HART PROFIBUS PA FOUNDATION Fieldbus SIMATIC PDM AMS SITRANS DTM/FDT for PACTware, Fieldcare, etc.
Power	<ul style="list-style-type: none"> 24 V DC nominal Loop powered 	<ul style="list-style-type: none"> 24 V DC nominal Loop powered 	<ul style="list-style-type: none"> 24 V DC nominal Loop powered 	<ul style="list-style-type: none"> 24 V DC nominal Loop powered 	<ul style="list-style-type: none"> 100 ... 230 V AC, ± 15 %, 50/60 Hz, 6 W 24 V DC, +25/-20 %, 6 W 	<ul style="list-style-type: none"> 24 V DC nominal Loop powered
Approvals	CE, RCM, Lloyds Register of Shipping, ABS, FCC, Industry Canada, RED ATEX, CSA, FM, INMETRO, EAC, IECEx, ANZEx, TIIS	CE, RCM, Lloyds Register of Shipping, ABS, FCC, Industry Canada, RED ATEX, CSA, FM, INMETRO, EAC, IECEx, ANZEx, TIIS, NEPSI	CE, RCM, Lloyds Register of Shipping, ABS, BV, FCC, Industry Canada, RED ATEX, CSA, FM, INMETRO, EAC, IECEx, TIIS, NEPSI Functional safety SIL-2, EHEDG, 3-A, USP Class VI	CE, RCM, FCC, Industry Canada, RED ATEX, CSA, FM, INMETRO, EAC, IECEx	CE, RCM, FCC, Industry Canada, RED ATEX, CSA, FM, INMETRO, IECEx, EAC	CE, RCM, FCC, Industry Canada, RED ATEX, CSA, FM, INMETRO, IECEx, NEPSI, EAC

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 Intrinsic Safe handheld programmer, SIMATIC PDM or HART handheld communicator
- Communication using HART
- Process Intelligence signal processing
- 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.

Startup 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.

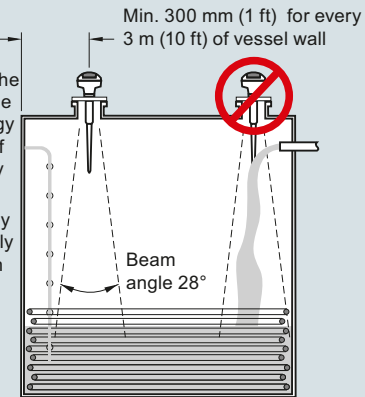
- Key Applications: chemical storage, wastewater wet well, and drilling mud

Configuration

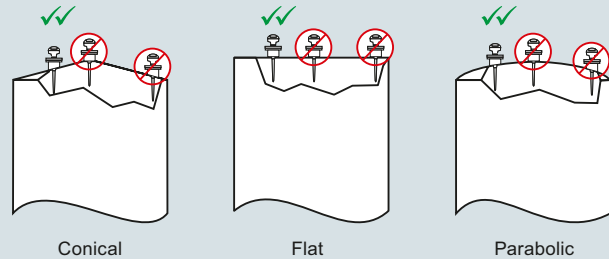
Installation

Note:

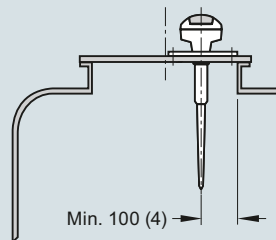
- Beam angle is the width of the cone where the energy density is half of the peak energy density.
- The peak energy density is directly in front of and in line with the rod antenna.



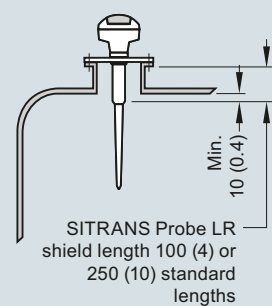
Mounting unit on vessel



Mounting on a manhole cover



Mounting on a nozzle



SITRANS Probe LR installation, dimensions in mm (inch)

Technical specifications

Mode of operation		Power supply	
Measuring principle	Pulse radar level measurement	<ul style="list-style-type: none"> Nominal 24 V DC with max. 550 Ω, maximum 30 V DC 4 ... 20 mA 	
Frequency	C-band, approx. 6 GHz	Certificates and approvals	
Measuring range	0.3 ... 20 m (1.0 ... 65 ft)	General	CSA _{US/C} , CE, FM, RCM
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, RED, RCM
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 ATEX II 1G EEx ia IIC T4
Communications	HART	<ul style="list-style-type: none"> Intrinsically Safe (Europe) Intrinsically Safe (International) Intrinsically Safe (Russia/Kazakhstan) Intrinsically Safe (USA) 	IECEx Ex ia IIC T4 EAC 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
<ul style="list-style-type: none"> From end of antenna to 600 mm (23.62 inch) Remainder of range 10 mm (0.4 inch) or 0.1 % of span (whichever is greater) 	40 mm (1.57 inch) 10 mm (0.4 inch) or 0.1 % of span (whichever is greater)	PC	SIMATIC PDM
Influence of ambient temperature	0.003 %/K	Intrinsically safe Siemens handheld programmer (optional)	Infrared receiver
Repeatability	± 5 mm (2 inch)	<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
Fail-safe	mA signal programmable as high, low or hold (LOE)	Display (local)	Multi-segment alphanumeric liquid crystal with bar graph (representing level) available in four languages
Rated operating conditions			
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	> 3.0		
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 M20 x 1.5 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

Continuous level measurement Radar transmitters

SITRANS Probe LR

Selection and Ordering data

SITRANS Probe LR

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)

➔ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Enclosure/Cable inlet

Plastic, (PBT), 2 x 1/2" NPT
Plastic, (PBT), 2 x M20 x 1.5

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

Approvals

General Purpose, CE, RED, RCM
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, RED, RCM, Intrinsically Safe;
INMETRO Ex ia IIC T4 Ga; EAC

Communication/Output

4 ... 20 mA, HART

Article No.

7ML5430-

0

1
2

A
B
C
D
E
F

A
B
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D
E

1

Selection and Ordering data

Further designs

Please add "-Z" to Article No. and specify Order code(s).

Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]:
Measuring-point number/identification
(max. 27 characters) specify in plain text

Manufacturer's test certificate:
M to DIN 55350, Part 18 and to ISO 9000

Operating Instructions

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Accessories

Handheld programmer, Intrinsically Safe, ATEX II 1G, Ex ia

HART modem/USB
(for use with a PC and SIMATIC PDM)

One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F)

SITRANS RD100, loop powered display - see Chapter 7

SITRANS RD200, universal input display with Modbus conversion - see Chapter 7

SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7

SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7

For applicable back up point level switch - see point level measurement section

Spare parts

Plastic lid

For applicable back up point level switch - see point level measurement section

Order code

Y15

C11

Article No.

7ML5830-2AH

7MF4997-1DB

7ML1930-1AP

7ML5741-...

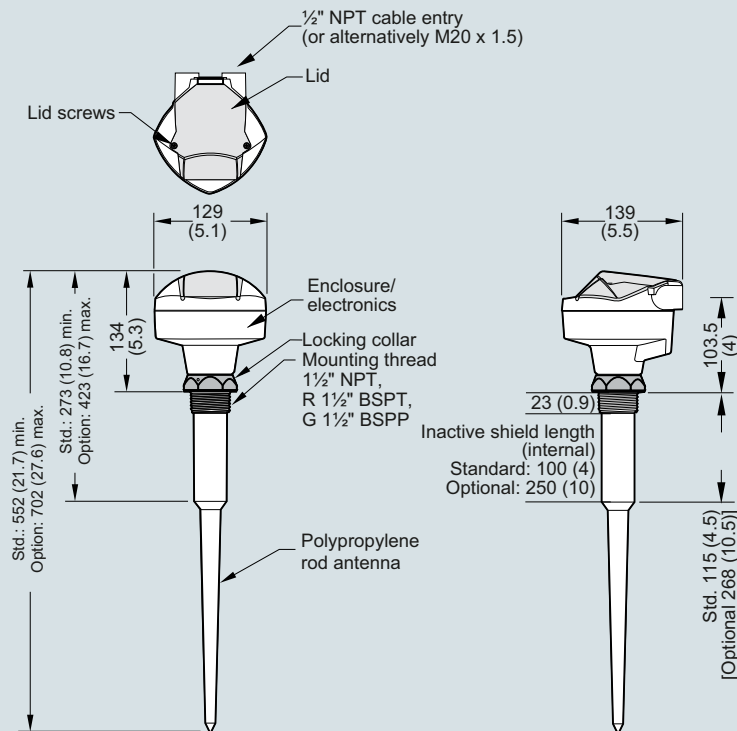
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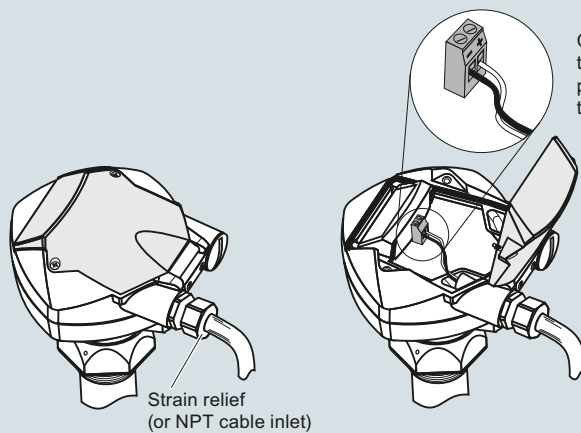
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Dimensional drawings



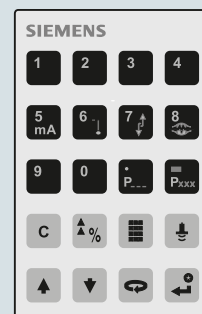
SITRANS Probe LR, dimensions in mm (inch)

Circuit diagrams



Connect the wires to the terminals as shown: the polarity is identified on the terminal block.

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

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.

Startup 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

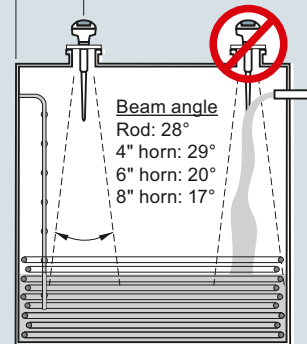
Configuration

Installation

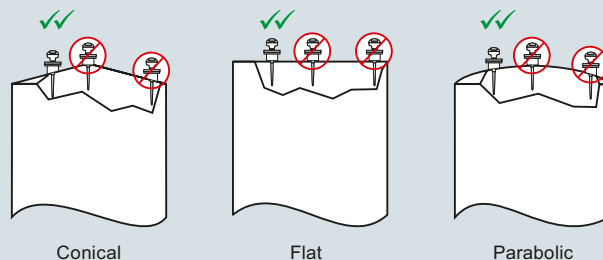
Note:

- 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.

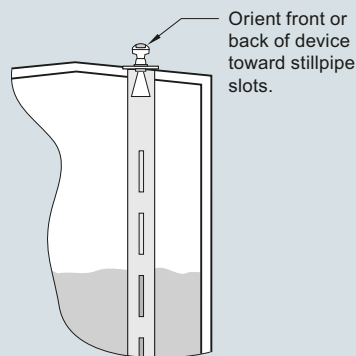
Min. 300 mm (1 ft) for every 3 m (10 ft) of vessel wall.



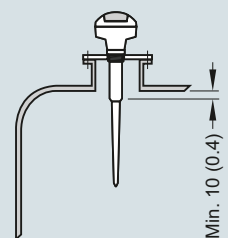
Mounting unit on vessel



Mounting unit on stilling well

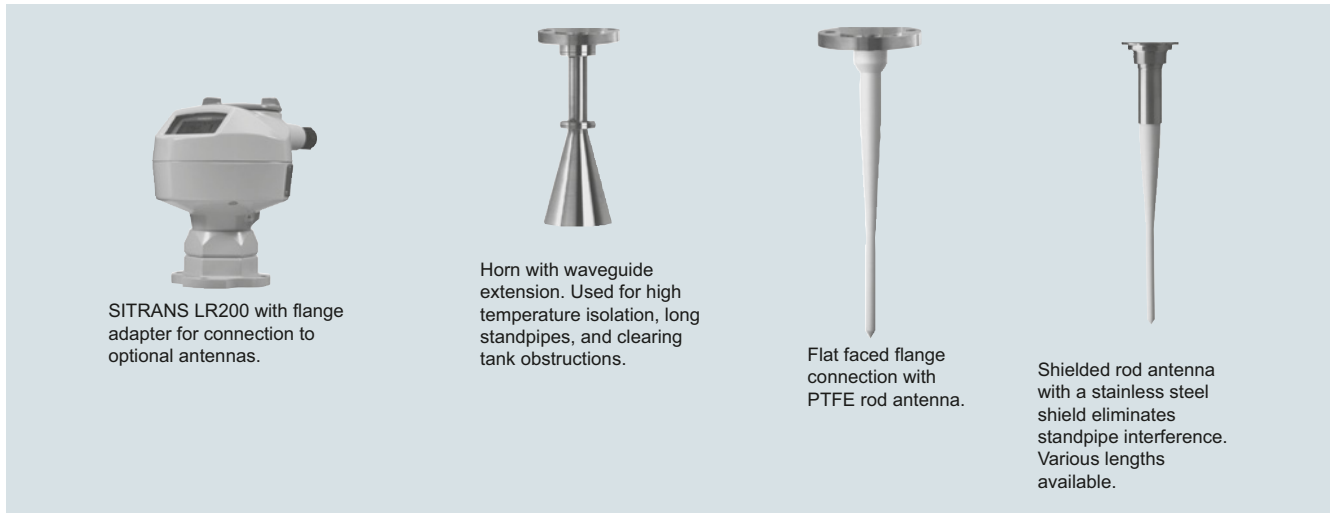


Mounting on a nozzle



SITRANS LR200 installation, dimensions in mm (inch)

Integration



Antenna configurations for SITRANS LR200

Antenna types	Flat Faced Flange with Rod	Shielded Rod	Horn (4", 6", 8" sizes available)
Connection type	Flat faced flange nominal pipe sizes 50, 80, 100, 150 mm (2, 3, 4, 6 inch)	Threaded 2" NPT, R 2" (BSPT), G 2" (BSPP) or flat faced flange nominal pipe sizes 80, 100 mm (3, 4 inch)	Flat faced flange nominal pipe sizes 50, 80, 100, 150 mm (2, 3, 4, 6 inch)
Wetted parts	PTFE	PTFE, 316L stainless steel, FKM O-ring	316L stainless steel PTFE, FKM O-ring
Extensions	50 or 100 mm (2 or 4 inch) PTFE or UHMW-PE	100, 150, 200 or 250 mm (4, 6, 8 or 10 inch) standard shield length	Use waveguide for extensions to 6 m (20 ft) long
Dielectric constant	> 3	> 3	> 3
Insertion length (max.)	41 cm (16.3 inch)	Variable	Variable with extension
Purging option (liquid or gas)	No	No	Yes
Sliding waveguide option for digesters¹⁾	Yes	No	Yes
Weight²⁾	6.5 kg (14.3 lb)	5.0 kg (11 lb)	7.5 kg (16.5 lb)

¹⁾ Maximum pressure 0.5 bar g at 60 °C (7.25 psi g at 140 °F)

²⁾ Not including extensions, includes SITRANS LR200 and smallest process connection

Level Measurement

Continuous level measurement

Radar transmitters

SITRANS LR200

Technical specifications

Mode of operation Measuring principle Frequency Measuring range		Radar level measurement C-band, approx. 6 GHz 0.3 ... 20 m (1.0 ... 65 ft)
Output Analog output Accuracy Span Communications Fail-safe		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)
Performance (according to reference conditions IEC60770-1) 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)
Rated operating conditions Installation conditions • Location Ambient conditions (enclosure) • Ambient temperature • Installation category • Pollution degree		Indoor/outdoor -40 ... +80 °C (-40 ... +176 °F) I 4
Medium conditions 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 • Material • Cable inlet Degree of protection Weight Display (local) Antenna • Material • Dimensions • Optional rods and horn Process connections • Process connection • Flange connection		Aluminum, polyester powder coated 2 x M20 x 1.5 or 2 x 1/2" NPT Type 4X/NEMA 4X, Type 6/ NEMA 6, IP67, IP68 < 2.82 kg (6.21 lb) (polypropylene rod antenna) Multi-segment alphanumeric liquid crystal with bar graph (representing level) available in four languages Polypropylene rod, hermetically sealed construction, optional PTFE Standard 100 mm (4 inch) shield for maximum 100 mm (4 inch) nozzle, or optional 250 mm (10 inch) long shield Refer to SITRANS LR200 Antennas for optional rods and horns 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) Refer to SITRANS LR200 Antennas for more connections
Power supply 4 ... 20 mA/HART • General Purpose, Non-incendive, Intrinsically Safe • Flame proof, Increased safety, Explosion proof PROFIBUS PA		Nominal 24 V DC (max. 30 V DC) with max. 550 Ω Nominal 24 V DC (max. 30 V DC) with max. 250 Ω • 10.5 mA • Per IEC 61158-2
Certificates and approvals General Marine Radio Hazardous • 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/Kazakhstan)		CSA _{US/C} , CE, FM, RCM • Lloyd's Register of Shipping • ABS Type Approval FCC, Industry Canada, and European (RED), RCM 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 EAC Ex ia
Programming Intrinsically Safe Siemens handheld programmer • Approvals for handheld programmer Handheld communicator PC Display (local)		Infrared receiver IS model: 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 • SITRANS DTM (for connecting to FDT such as PACTware or Field-care) Multi-segment alphanumeric liquid crystal with bar graph (representing level) available in four languages

Selection and Ordering data		Article No.	Selection and Ordering data		Order code
SITRANS LR200, Uni-Construction polypropylene rod antenna version		7ML5422-	Further designs		
2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in process vessels including high temperature and pressure, to a range of 20 m (66 ft).			Please add "-Z" to Article No. and specify Order code(s).		
Max. 3 bar g (43.5 psi g) pressure and 80 °C (176 °F)			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
➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000		C11
Enclosure/Cable inlet			Namur NE43 compliant, device preset to failsafe < 3.6 mA ¹⁾		N07
Aluminum, epoxy painted			Operating Instructions		
2 x ½" NPT		2	All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation		
2 x M20 x 1.5		3	Accessories		Article No.
Polypropylene antenna type - (Max. 3 Bar pressure and 80 °C)			Handheld programmer, Intrinsically safe, EEx ia		7ML1930-1BK
1½" NPT [(Taper), ANSI/ASME B1.20.1], c/w integral 100 mm shield		A	HART modem/USB (for use with a PC and SIMATIC PDM)		7MF4997-1DB
R 1½" [(BSPT), EN 10226], c/w integral 100 mm shield		B	One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), HART ²⁾		7ML1930-1AP
G 1½" [(BSPP), EN ISO 228-1], c/w integral 100 mm shield		C	One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), PROFIBUS PA ²⁾		7ML1930-1AQ
1½" NPT [(Taper), ANSI/ASME B1.20.1], c/w integral 250 mm shield		D	One general purpose polymeric cable gland M20 x 1.5, rated -20 ... +80 °C (-40 ... +176 °F)		7ML1930-1AM
R 1½" [(BSPT), EN 10226], c/w integral 250 mm shield		E	SITRANS RD100, loop powered display - see Chapter 7		7ML5741-...
G 1½" [(BSPP), EN ISO 228-1], c/w integral 250 mm shield		F	SITRANS RD200, universal input display with Modbus conversion - see Chapter 7		7ML5740-...
Approvals			SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7		7ML5744-...
General Purpose, CE, RED, RCM		A	SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7		7ML5750-...
General Purpose, CSA, FM, Industry Canada, FCC		B	For applicable back up point level switch - see point level measurement section		
Intrinsically Safe, CSA Class I, II, Div. 1, Groups A, B, C, D, E, F, G, Industry Canada		C	¹⁾ Available with communication option 3 only		
Intrinsically Safe, FM Class I, II, Div. 1, Groups A, B, C, D, E, F, G, FCC		D	²⁾ Product shipped with plastic cable gland, rated to -20 °C. If -40 °C rating required, then metallic cable gland is recommended.		
Intrinsically Safe, IECEx/ATEX II 1G Ex ia IIC T4, INMETRO Ex ia IIC T4, CE, RED, RCM; EAC		E			
Non incandive, FM Class I, Div. 2, Groups A, B, C, D, FCC ¹⁾		F			
Increased Safety, ATEX II 1/2G Ex e mb ia IIC T4 Ga/Gb, CE, RED, RCM; EAC ²⁾³⁾		G			
Flame Proof, ATEX II 1/2G Ex d mb ia IIC T4 Ga/Gb, CE, RED, RCM; EAC ³⁾		H			
Explosion Proof, CSA/FM Class I, II, III, Groups A, B, C, D, E, F, G, Industry Canada, FCC ¹⁾³⁾		J			
Communication/Output					
PROFIBUS PA		2			
4 ... 20 mA, HART, start-up at < 3.6 mA		3			

¹⁾ Available with enclosure option 2 only²⁾ Available with enclosure option 3 only³⁾ Available with communication option 3 only

Level Measurement

Continuous level measurement
Radar transmitters

SITRANS LR200

Selection and Ordering data	Article No.
SITRANS LR200, Flange Adapter/PTFE Rod Antenna Version	7ML5423-
2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in process vessels including high temperature and pressure, to a range of 20 m (66 ft).	
➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Antenna material (uses antenna adapter)	1
PTFE, uses antenna adapter and additional process connection below	
Process connection (refer to Pressure/Temperature curves, page 4/204)	
Flanges (316L stainless steel)	
DN 50 PN 16, Type A, flat faced	AA
DN 80 PN 16, Type A, flat faced	BA
DN 100 PN 16, Type A, flat faced	CA
DN 150 PN 16, Type A, flat faced	DA
2" ASME 150 lb, flat faced	FB
3" ASME 150 lb, flat faced	GB
4" ASME 150 lb, flat faced	HB
6" ASME 150 lb, flat faced	JB
DN 50 PN 40, flat faced	AC
DN 80 PN 40, flat faced	BC
DN 100 PN 40, flat faced	CC
DN 150 PN 40, flat faced	DC
2" ASME 300 lb, flat faced, available with Pressure rating option 1 only due to flange hole spacing	FD
3" ASME 300 lb, flat faced	GD
4" ASME 300 lb, flat faced	HD
6" ASME 300 lb, flat faced	JD
JIS DN 50 10K	AE
JIS DN 80 10K	BE
JIS DN 100 10K	CE
JIS DN 150 10K	DE
(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5, or EN 1092-1, or JIS B 2220 standard.)	
Threaded connection (316L stainless steel)	
1½" NPT [(Taper), ANSI/ASME B1.20.1]	LA
2" NPT [(Taper), ANSI/ASME B1.20.1]	MA
R 1½" [(BSPT), EN 10226]	LC
R 2" [(BSPT), EN 10226]	MC
G 1½" [(BSPP), EN ISO 228-1]	LE
G 2" [(BSPP), EN ISO 228-1]	ME
Antenna extensions or Inactive shield length	
No antenna extension	0
50 mm (2 inch) extension, PTFE	1
100 mm (4 inch) extension, PTFE	2
100 mm (4 inch) extension, 316L stainless steel shield ¹⁾	3
150 mm (6 inch) extension, 316L stainless steel shield ¹⁾	4
200 mm (8 inch) extension, 316L stainless steel shield ¹⁾	5
250 mm (10 inch) extension, 316L stainless steel shield ¹⁾	6
Process seal/gasket	
Integral Gasket, for flat faced flange process connections only, not for Antenna extension options 3 ... 6	0
FKM O-ring, not available for combination of flat faced flanges with Antenna extension options 0, 1 or 2	1

Selection and Ordering data	Article No.
SITRANS LR200, Flange Adapter/PTFE Rod Antenna Version	7ML5423-
2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in process vessels including high temperature and pressure, to a range of 20 m (66 ft).	
Enclosure/Cable inlet	
Aluminum, Epoxy painted	
2 x ½" NPT	2
2 x M20 x 1.5	3
Communication/Output	
PROFIBUS PA	B
4 ... 20 mA, HART, start-up at < 3.6 mA	C
Approvals	
General Purpose, CE, RED, RCM	A
General Purpose, CSA FM, Industry Canada, FCC	B
Intrinsically Safe, CSA Class I, II, Div. 1, Groups A, B, C, D, E, F, G, Industry Canada	C
Intrinsically Safe, FM Class I, II, Div. 1, Groups A, B, C, D, E, F, G, FCC	D
Intrinsically Safe, IECEx/ATEX II 1G Ex ia IIC T4, INMETRO Ex ia IIC T4, CE, RED, RCM; EAC	E
Non incensive, FM Class I, Div. 2, Groups A, B, C, D, FCC ²⁾	F
Increased Safety, ATEX II 1/2G Ex e mb ia IIC T4 Ga/Gb, CE, RED, RCM; EAC ^{3/4)}	G
Flame Proof, ATEX II 1/2G Ex d mb ia IIC T4 Ga/Gb, CE, RED, RCM; EAC ⁴⁾	H
Explosion Proof, CSA/FM Class I, II, III, Groups A, B, C, D, E, F, G, Industry Canada, FCC ^{2/4)}	J
Pressure rating	
Rating per Pressure/Temperature curves in manual	0
0.5 bar g (7.25 psi g) maximum	1

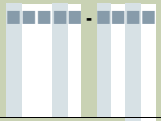
¹⁾ Available with process connection options BA, CA, DA, GB, HB, JB, BC, CC, DC, GD, HD, JD, BE, CE, DE, MA, MC, ME only

²⁾ Available with enclosure option 2 only

³⁾ Available with enclosure option 3 only

⁴⁾ Available with communication option C only

Selection and Ordering data	Order code
Further designs	
Please add *-Z* to Article No. and specify Order code(s).	
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
Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000	C11
Material inspection Certificate Type 3.1 per EN 10204	C12
Namur NE43 compliant, device preset to failsafe < 3.6 mA ³⁾	N07
Operating Instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories	Article No.
Handheld programmer, Intrinsically safe, EEx ia	7ML1930-1BK
Antenna, rod, PTFE	7ML1830-1HC
Antenna extension, 50 mm (2 inch), PTFE	7ML1830-1CH
Antenna extension, 100 mm (4 inch), PTFE	7ML1830-1CG
HART modem / USB (for use with PC and SIMATIC PDM)	7MF4997-1DB
Metallic cable gland M20 x 1.5, rated -40 °C (-40 °F) ... 80 °C (176 °F), HART (two are required)	7ML1930-1AP
Metallic cable gland M20 x 1.5, rated -40 °C (-40 °F) ... 80 °C (176 °F), PROFIBUS PA (two required)	7ML1930-1AQ
One General Purpose polymeric cable gland M20 x 1.5, rating for -20 °C (-4°F) ... + 80 °C (176 °F)	7ML1930-1AM
SITRANS RD100, loop powered display - see Chapter 7	7ML5741-...
SITRANS RD200, universal input display with Modbus conversion - see Chapter 7	7ML5740-...
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7	7ML5744-...
SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7	7ML5750-...
For applicable back up point level switch - see point level measurement section	

Selection and Ordering data		Article No.	Selection and Ordering data		Order code
SITRANS LR200, Flange adapter/Horn Antenna version		7ML5425-	Further designs		
2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in process vessels including high temperature and pressure, to a range of 20 m (66 ft).			Please add "-Z" to Article No. and specify Order code(s).		
Approvals			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
General Purpose, CE, RED, RCM		A	Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000		C11
General Purpose, CSA, FM, Industry Canada, FCC		B	Material inspection Certificate Type 3.1 per EN 10204		C12
Intrinsically Safe, CSA Class I, II, Div. 1, Groups A, B, C, D, E, F, G, Industry Canada		C	Namur NE43 compliant, device preset to failsafe < 3.6 mA ¹⁾		N07
Intrinsically Safe, FM Class I, II, Div. 1, Groups A, B, C, D, E, F, G, FCC		D	Operating Instructions		
Intrinsically Safe, IECEx/ATEX II 1G Ex ia IIC T4, INMETRO Ex ia IIC T4, CE, RED, RCM; EAC		E	All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation		
Non incandive, FM Class I, Div. 2, Groups A, B, C, D, FCC ⁴⁾		F	Accessories		Article No.
Increased Safety, ATEX II 1/2G Ex e mb ia IIC T4 Ga/Gb, CE, RED, RCM; EAC ⁵⁾⁶⁾		G	Handheld programmer, Intrinsically safe, EEx ia		7ML1930-1BK
Flame Proof, ATEX II 1/2G Ex d mb ia IIC T4 Ga/Gb, CE, RED, RCM; EAC ⁶⁾		H	HART modem/USB (for use with a PC and SIMATIC PDM)		7MF4997-1DB
Explosion Proof, CSA/FM Class I, II, III, Groups A, B, C, D, E, F, G, Industry Canada, FCC ⁵⁾⁶⁾		J	One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), HART ²⁾		7ML1930-1AP
Pressure rating			One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), PROFIBUS PA ³⁾		7ML1930-1AQ
Rating per Pressure/Temperature curves in manual 0.5 bar g (7.25 psi g) maximum		0 1	One general purpose polymeric cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F)		7ML1930-1AM
1) Available with pressure rating option 1 only			SITRANS RD100, loop powered display - see Chapter 7		7ML5741-...
2) Available with Antenna Material options 0 and 1 only			SITRANS RD200, universal input display with Modbus conversion - see Chapter 7		7ML5740-...
3) For stillpipe applications only			SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7		7ML5744-...
4) Available with enclosure option 2 only			SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7		7ML5750-...
5) Available with enclosure option 3 only			For applicable back up point level switch - see point level measurement section		
6) Available with communication option 2 only			1) Available with communication option 2 only		
			2) Product shipped with plastic cable gland, rated to -20 °C. If -40 °C rating required, then metallic cable gland is recommended.		
			3) Available with enclosure option 2 only		

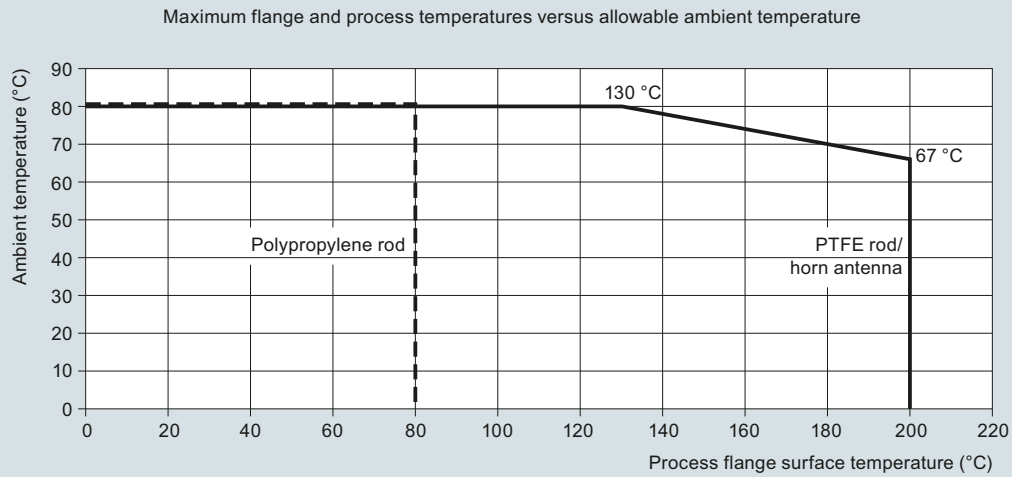
Level Measurement

Continuous level measurement

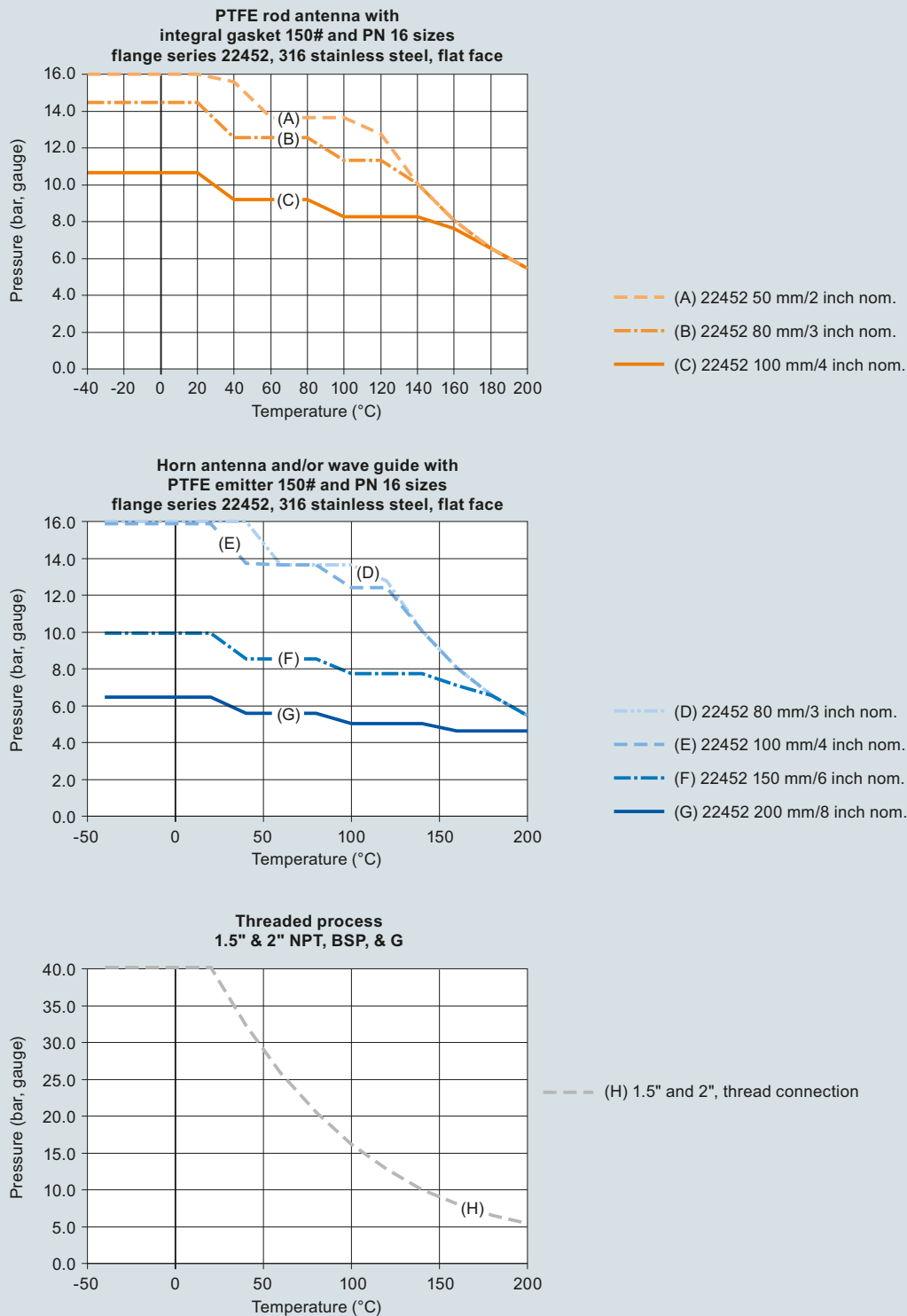
Radar transmitters

SITRANS LR200

Characteristic curves



SITRANS LR200 ambient/process flange surface temperature curve



SITRANS LR200 process pressure/temperature derating curves

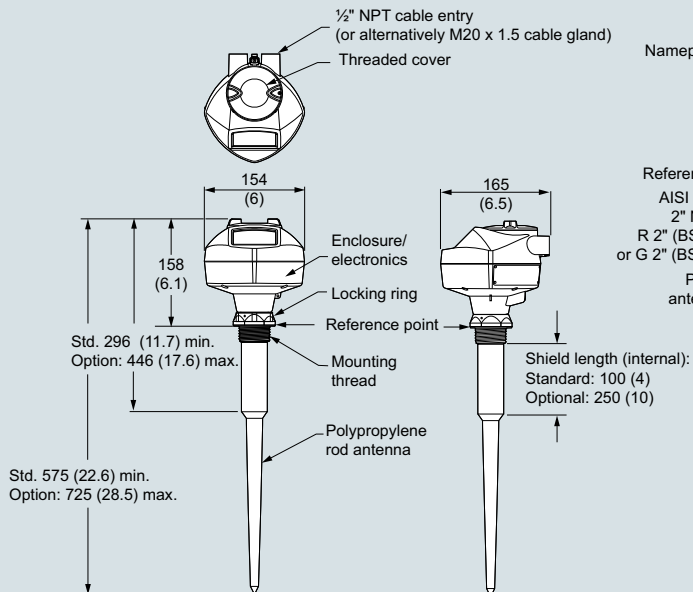
Level Measurement

Continuous level measurement
Radar transmitters

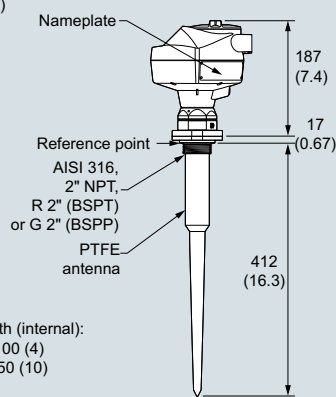
SITRANS LR200

Dimensional drawings

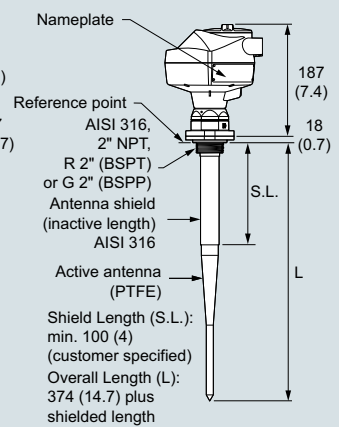
SITRANS LR200 with polypropylene shielded rod antenna



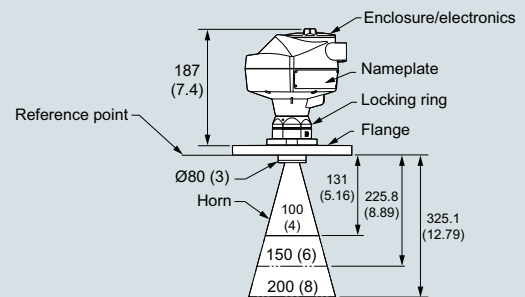
PTFE rod antenna, threaded



**Threaded connection
PTFE rod, external shield**

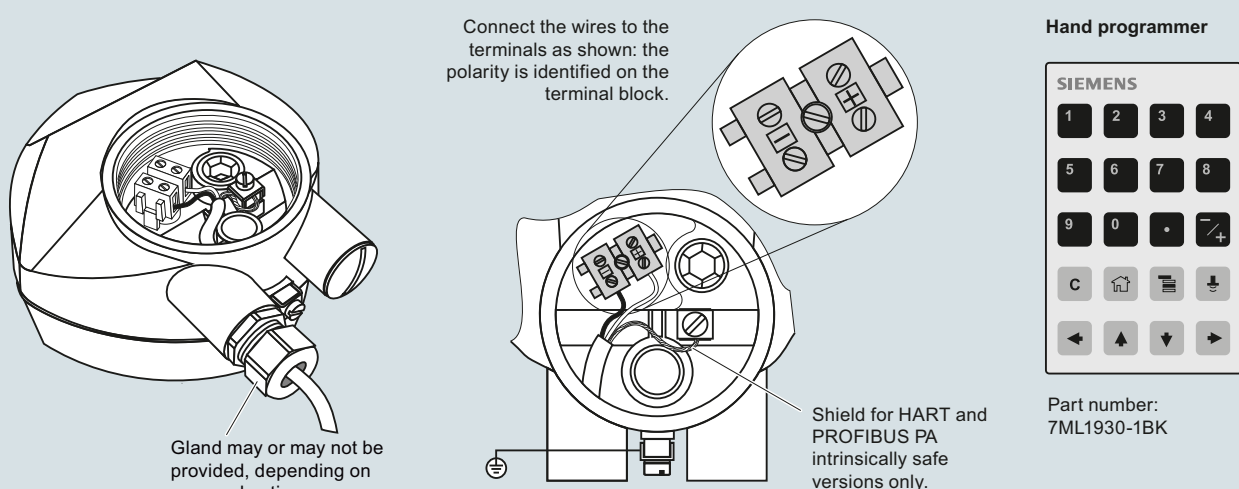


Horn antenna with flat faced flange



SITRANS LR200, dimensions in mm (inch)

Circuit diagrams



Connect the wires to the terminals as shown: the polarity is identified on the terminal block.

Gland may or may not be provided, depending on approval option.

Shield for HART and PROFIBUS PA intrinsically safe versions only.

Hand programmer

SIEMENS

1	2	3	4
5	6	7	8
9	0	.	+/−
C	⏮	⏭	⏪
⏩	⏴	⏵	⏶

Part number:
7ML1930-1BK

Notes:

1. DC terminal shall be supplied from an SELV source in accordance with IEC 1010-1 Annex H.
2. All field wiring must have insulation suitable for rated input voltages.
3. Use shielded twisted pair cable (14 ... 22 AWG) for HART version.
4. Separate cables and conduit may be required to conform to standard instrumentation wiring practices or electrical codes.



SITRANS LR200 connections

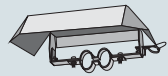

Level Measurement

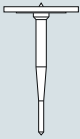
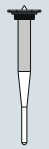

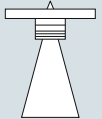
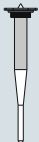
Continuous level measurement
Radar transmitters

SITRANS LR200 Specials

Selection and ordering data

SITRANS LR200 Specials	Article No.
SITRANS LR200 PROFIBUS PA Aluminum Enclosure Kit with electronics and covers (7ML5422, 7ML5423, 7ML5424, 7ML5425), calibrated for use with standard rod antenna	
SITRANS LR200 aluminum enclosure with board stack, LUI display, 5.8 GHz, M20 cable inlet, approval option A, with PROFIBUS PA communication, no process connection.	A5E01483420
SITRANS LR200 aluminum enclosure with board stack, LUI display, 5.8 GHz, M20 cable inlet, approval option A, with PROFIBUS PA communication, no process connection.	A5E01483440
SITRANS LR200 aluminum enclosure with board stack, LUI display, 6.3 GHz, M20 cable inlet, approval option C, with PROFIBUS PA communication, no process connection.	A5E01483456
SITRANS LR200 aluminum enclosure with board stack, LUI display, 6.3 GHz, NPT cable inlet, approval option C, with PROFIBUS PA communication, no process connection.	A5E01483547
SITRANS LR200 aluminum enclosure with board stack, LUI display, 5.8 GHz, NPT cable inlet, approval option E, with PROFIBUS PA communication, no process connection.	A5E01483559
SITRANS LR200 HART aluminum enclosure kit with electronics and covers (7ML5422, 7ML5423, 7ML5424, 7ML5425), calibrated for use with standard rod antenna	
SITRANS LR200 aluminum enclosure with board stack, LUI display, 5.8 GHz, M20 cable inlet, approval option A, with HART communication start-up at < 3.6 mA, no process connection.	A5E02956419
SITRANS LR200 aluminum enclosure with board stack, LUI display, 5.8 GHz, M20 cable inlet, approval option E, with HART communication start-up at < 3.6 mA, no process connection.	A5E02956420
SITRANS LR200 aluminum enclosure with board stack, LUI display, 5.8 GHz, M20 cable inlet, approval option G, with HART communication start-up at < 3.6 mA, no process connection.	A5E02956421
SITRANS LR200 aluminum enclosure with board stack, LUI display, 5.8 GHz, M20 cable inlet, approval option H, with HART communication start-up at < 3.6 mA, no process connection.	A5E02956422


SITRANS LR200 Specials	Article No.
SITRANS LR200 aluminum enclosure with board stack, LUI display, 5.8 GHz, NPT cable inlet, approval option A, with HART communication start-up at < 3.6 mA, no process connection.	A5E03617085
SITRANS LR200 aluminum enclosure with board stack, LUI display, 6.3 GHz, NPT cable inlet, approval option B, with HART communication start-up at < 3.6 mA, no process connection.	A5E03617086
SITRANS LR200 aluminum enclosure with board stack, LUI display, 5.8 GHz, NPT cable inlet, approval option C, with HART communication start-up at < 3.6 mA, no process connection.	A5E03617087
SITRANS LR200 aluminum enclosure with board stack, LUI display, 6.3 GHz, NPT cable inlet, approval option E, with HART communication start-up at < 3.6 mA, no process connection.	A5E03617088
Sun shield for SITRANS LR200 enclosure, stainless steel	
	A5E39142556
SITRANS LR200 Horn Antenna Kits with mounting screws (no emitter supplied)	
80 mm (3 inch) horn antenna kit	PBD:25500K02A
100 mm (4 inch) horn antenna kit	PBD:25500K03A
150 mm (6 inch) horn antenna kit	PBD:25500K05A
SITRANS LR200 Extension Kits for Horn Antenna with mounting screws	
100 mm (4 inch) extension kit for horn antenna	PBD:25501K0100A
150 mm (6 inch) extension kit for horn antenna	PBD:25501K0150A
200 mm (8 inch) extension kit for horn antenna	PBD:25501K0200A
250 mm (10 inch) extension kit for horn antenna	PBD:25501K0250A
500 mm (20 inch) extension kit for horn antenna	PBD:25501K0500A
1 000 mm (40 inch) extension kit for horn antenna	PBD:25501K1000A

SITRANS LR200 Specials		SITRANS LR200 Specials	
	Article No.		Article No.
SITRANS LR200 Flanged Rod Antenna Kit with 316L stainless steel flat faced flanges		SITRANS LR200 PTFE Rod Antenna Kit (100 mm shield) with 316L stainless steel 2" pipe thread process connection	
Flanged PTFE rod antenna kit, 2" ASME, 150 lb. See drawing 51003 on http://www.siemens.com/radar ¹⁾⁴⁾	PBD: 51003K020AAAA	PTFE rod antenna shielded kit, 2" NPT 316L stainless steel process connection, FKM O-ring, 100 mm 316L stainless steel shield. See drawing 51002 on http://www.siemens.com/radar ³⁾⁴⁾	PBD: 51002K0100AAA
Flanged PTFE rod antenna kit, DN 50 PN 16. See drawing 51003 on http://www.siemens.com/radar ¹⁾⁴⁾	PBD: 51003K050AJAA	PTFE rod antenna shielded kit, R 2" (BSPT), EN 10226 316L stainless steel process connection, FKM O-ring, 100 mm 316L stainless steel shield. See drawing 51002 on http://www.siemens.com/radar ³⁾⁴⁾	PBD: 51002K0100BAA
Flanged PTFE rod antenna kit, JIS 10K DN 50. See drawing 51003 on http://www.siemens.com/radar ¹⁾⁴⁾	PBD: 51003K050AOAA	PTFE rod antenna shielded kit, 2" G 316L stainless steel process connection, FKM O-ring, 100 mm 316L stainless steel shield. See drawing 51002 on http://www.siemens.com/radar ³⁾⁴⁾	PBD: 51002K0100CAA
SITRANS LR200 PTFE Rod Antenna Kit with 316L stainless steel 1½" pipe thread process connection		SITRANS LR200 Horn Antenna Kit with 316L stainless steel flat faced flange, with PTFE emitter (without waveguide)	
PTFE rod antenna kit, R 1½" (BSPT), EN 10226 316L stainless steel process connection, FKM O-ring; see drawing 51004 on http://www.siemens.com/radar ⁴⁾	PBD: 51004K2AAA	Horn antenna kit, 2" ASME 316L stainless steel flange 3 inch horn, PTFE emitter ¹⁾⁴⁾	PBD: 51006K020AAAA
PTFE rod antenna kit, 1½" G 316L stainless steel process connection, FKM O-ring; see drawing 51004 on http://www.siemens.com/radar ⁴⁾	PBD: 51004K3AAA	Horn antenna kit, 2" ASME 316L stainless steel flange 4 inch horn, PTFE emitter ¹⁾²⁾	PBD: 51006K020AABA
SITRANS LR200 PTFE Rod Antenna Kit with 316L stainless steel 2" pipe thread process connection		Horn antenna kit, 2" ASME 316L stainless steel flange 6 inch horn, PTFE emitter ¹⁾²⁾	PBD: 51006K020AACA
PTFE rod antenna kit, 2" NPT 316L stainless steel process connection, FKM O-ring; see drawing 51005 on http://www.siemens.com/radar ⁴⁾	PBD: 51005K1AAA	Horn antenna kit, 2" ASME 316L stainless steel flange 8 inch horn, PTFE emitter ¹⁾²⁾	PBD: 51006K020AADA
PTFE rod antenna kit, R 2" (BSPT), EN 10226 316L stainless steel process connection, FKM O-ring; see drawing 51005 on http://www.siemens.com/radar ⁴⁾	PBD: 51005K2AAA	Horn antenna kit, DN 50 PN 16 316L stainless steel flange 80 mm horn, PTFE emitter ¹⁾²⁾	PBD: 51006K050AJAA
PTFE rod antenna kit, 2" G 316L stainless steel process connection, FKM O-ring; see drawing 51005 on http://www.siemens.com/radar ⁴⁾	PBD: 51005K3AAA	Horn antenna kit, DN 50 PN 16 316L stainless steel flange 100 mm horn, PTFE emitter ¹⁾²⁾	PBD: 51006K050AJBA
		Horn antenna kit, DN 50 PN 16 316L stainless steel flange 150 mm horn, PTFE emitter ¹⁾²⁾	PBD: 51006K050AJCA
		Horn antenna kit, DN 50 PN 16 316L stainless steel flange 200 mm horn, PTFE emitter ¹⁾²⁾	PBD: 51006K050AJDA

Level Measurement

Continuous level measurement
Radar transmitters

SITRANS LR200 Specials

SITRANS LR200 Specials	
	Article No.
SITRANS LR200 PTFE flanged rod antenna kit with 316L stainless steel shield and 316L stainless steel flat faced flange	
PTFE shielded rod antenna kit, flanged, 3" ASME 150 lb 316L stainless steel flange, 100 mm 316L stainless steel shield. ¹⁾⁴⁾	PBD: 51014K0100AAA
PTFE shielded rod antenna kit, flanged, DN 80 PN 16 316L stainless steel flange, 100 mm 316L stainless steel shield. ¹⁾⁴⁾	PBD: 51014K0100EJA
PTFE shielded rod antenna kit, flanged, 3" ASME 150 lb 316L stainless steel flange, 150 mm 316L stainless steel shield. ¹⁾⁴⁾	PBD: 51014K0150AAA
PTFE shielded rod antenna kit, flanged, DN 80 PN 16 316L stainless steel flange, 150 mm 316L stainless steel shield. ¹⁾⁴⁾	PBD: 51014K0150EJA
PTFE shielded rod antenna kit, flanged, 3" ASME 150 lb 316L stainless steel flange, 200 mm 316L stainless steel shield. ¹⁾⁴⁾	PBD: 51014K0200AAA
PTFE shielded rod antenna kit, flanged, DN 80 PN 16 316L stainless steel flange, 200 mm 316L stainless steel shield. ¹⁾⁴⁾	PBD: 51014K0200EJA
PTFE shielded rod antenna kit, flanged, 3" ASME 150 lb 316L stainless steel flange, 250 mm 316L stainless steel shield. ¹⁾⁴⁾	PBD: 51014K0250AAA
PTFE shielded rod antenna kit, flanged, DN 80 PN 16 316L stainless steel flange, 250 mm 316L stainless steel shield. ¹⁾⁴⁾	PBD: 51014K0250EJA
PTFE grease	
Kit, PTFE grease, 5 Dupont 1 GR Polypack	A5E01151626
Cable gland	
One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), HART	7ML1930-1AP
One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), PROFIBUS PA	7ML1930-1AQ
Ex-proof plugs	
Ex-proof plugs kit, 1/2" NPT, qty 5	A5E39979991
Ex-proof plugs kit, M20, qty 5	A5E39979992

¹⁾ Available in flange sizes including ASME, DIN and JIS.
Please consult a local sales person for details.

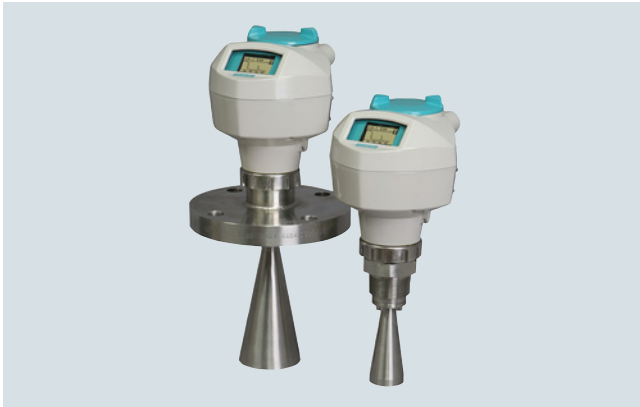
²⁾ Available with no pressure rating.
Please consult a local sales person for details.

³⁾ Available in other shield lengths.
Please consult a local sales person for details.

⁴⁾ Available with Pressure rating.
Please consult a local sales person for details.

Customers interested in a custom designed device should consult a local sales person. For more information, please visit http://www.automation.siemens.com/aspa_app.

Overview



SITRANS LR250 is a 2-wire, 25 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, to a range of 20 m (66 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
- 25 GHz high frequency allows for small antennas for easy mounting in nozzles
- Insensitive to mounting location and obstructions, and less sensitive to nozzle interference
- Short blanking distance for improved minimum measuring range to 50 mm (2 inch) from the end of the antenna
- Communication using HART, PROFIBUS PA, or FOUNDATION Fieldbus
- Process Intelligence signal processing for improved measurement reliability and Auto False-Echo Suppression of fixed obstructions
- Programming using infrared Intrinsically Safe handheld programmer or over a network using SIMATIC PDM, Emerson AMS, or Field Device Tools such as PACTware or Fieldcare via SITRANS DTM
- Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511
- 3 mm (0.118 inch) accuracy in accordance with IEC 60770-1
- Suitable for API 2350

Application

SITRANS LR250 includes a graphical local user interface (LUI) that improves setup and operation by including an intuitive Quick Start Wizard, and echo profile displays for diagnostic support. Startup is easy using the Quick Start wizard with a few parameters required for basic operation.

The 25 GHz frequency creates a narrow, focused beam allowing for smaller horn antenna options and decreasing sensitivity to obstructions.

SITRANS LR250's unique design allows safe and simple programming using the Intrinsically Safe handheld programmer without having to open the instrument's lid.

SITRANS LR250 measures superbly on low dielectric media, and in small vessels, as well as tall and narrow vessels.

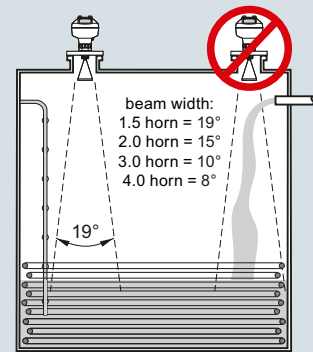
- Key Applications: liquid bulk storage tanks, process vessels, vaporous liquids, high temperatures, low dielectric media and applications with functional safety requirements

Configuration

Installation

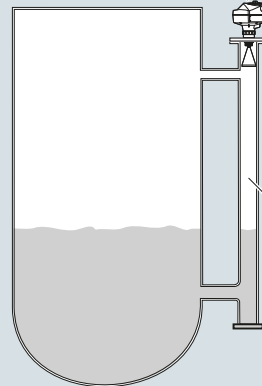
Note:

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



Mounting on bypass

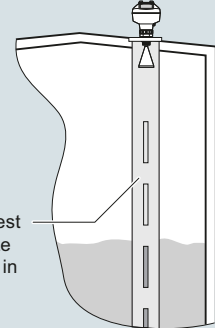
Orient front or back of device toward vent.



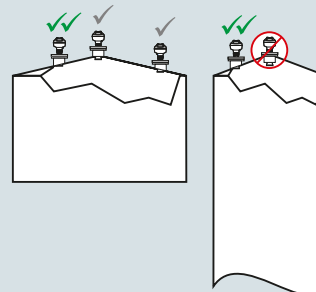
Mounting on stilling well

Orient front or back of device toward stillpipe slots.

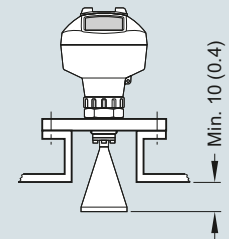
Use largest horn size possible in pipe.



Mounting on vessel



Mounting on a nozzle



SITRANS LR250 installation, dimensions in mm (inch)

Level Measurement

Continuous level measurement

Radar transmitters

SITRANS LR250 Horn Antenna

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
Frequency	K-band (25.0 GHz)	PROFIBUS PA	<ul style="list-style-type: none"> 15 mA Per IEC 61158-2
Minimum measuring range	50 mm (2 inch) from end of antenna	FOUNDATION Fieldbus	<ul style="list-style-type: none"> 20.0 mA Per IEC 61158-2
Maximum measuring range	20 m (65 ft), antenna dependent		
Output		Certificates and approvals	
HART	Version 5.1	General	CSA _{US/C} , CE, FM, RCM
<ul style="list-style-type: none"> Analog output Accuracy Fail-safe 	4 ... 20 mA ± 0.02 mA <ul style="list-style-type: none"> Programmable as high low or hold (loss of echo) NE 43 programmable 	Radio	FCC, Industry Canada, RED, RCM
PROFIBUS PA	Profile 3.01	Hazardous	
<ul style="list-style-type: none"> Function blocks 	2 Analog Input (AI)	<ul style="list-style-type: none"> Explosion Proof (Brazil) 	INMETRO Ex d ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da
FOUNDATION Fieldbus	H1	<ul style="list-style-type: none"> Increased Safety (Brazil) 	INMETRO Ex e ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da
<ul style="list-style-type: none"> Functionality Version Function blocks 	Basic or LAS ITK 5.2.0 2 Analog Input (AI)	<ul style="list-style-type: none"> Intrinsically Safe (Brazil) 	INMETRO Ex ia IIC T4 Ga, Ex ia ta IIIC T100 °C Da
Performance (according to reference conditions IEC60770-1)		<ul style="list-style-type: none"> Explosion Proof (Canada/USA) 	CSA/FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III T4
Maximum measured error	3 mm (0.118 inch)	<ul style="list-style-type: none"> Intrinsically Safe (Canada/USA) 	CSA/FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III T4
Influence of ambient temperature	< 0.003 %/K	<ul style="list-style-type: none"> Non-incendive (Canada/USA) 	CSA/FM Class I, Div. 2, Groups A, B, C, D T5
Rated operating conditions		<ul style="list-style-type: none"> Flame Proof/Increased Safety (China) 	NEPSI Ex d ia mb IIC T4 Ga/Gb, Ex e ia mb IIC T4 Ga/Gb, Ex iaD tD A20 IP67 T100 °C
Installation conditions		<ul style="list-style-type: none"> Intrinsically Safe (China) 	NEPSI Ex ia IIC T4 Ga, Ex iaD tD A20 IP67 T100 °C
<ul style="list-style-type: none"> Location 	Indoor/outdoor	<ul style="list-style-type: none"> Non-sparking (China) 	NEPSI Ex nA IIC T4 Gc
Ambient conditions (enclosure)		<ul style="list-style-type: none"> Intrinsically Safe (Europe) 	ATEX II 1G Ex ia IIC T4 Ga
<ul style="list-style-type: none"> Ambient temperature Installation category Pollution degree 	-40 ... +80 °C (-40 ... +176 °F) I 4	<ul style="list-style-type: none"> Non-sparking (Europe) 	ATEX II 1D Ex ia IIIC T100 °C Da
Medium conditions		<ul style="list-style-type: none"> Flame Proof (International/Europe) 	ATEX II 3G Ex nA IIC T4 Gc
Dielectric constant ϵ_r	> 1.6, antenna and application dependent	<ul style="list-style-type: none"> Increased Safety (International/Europe) 	IECEX/ATEX II 1/2 GD, 1D, 2D, Ex d mb ia IIC T4 Ga/Gb, Ex ia ta IIC T100 °C Da
Process temperature	-40 ... +200 °C (-40 ... +392 °F) (at process connection with FKM O-ring) -20 ... +200 °C (-4 ... +392 °F) (at process connection with FFKM O-ring)	<ul style="list-style-type: none"> Intrinsically Safe (International) 	IECEX/ATEX II 1/2 GD, 1D, 2D, Ex e mb ia IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da
Process pressure	Up to 40 bar g (580 psi g), process connection and temperature dependent. See Pressure/Temperature curves for more information	<ul style="list-style-type: none"> Explosion Proof (Russia/Kazakhstan) Increased Safety (Russia/Kazakhstan) Intrinsically Safe (Russia/Kazakhstan) Marine 	IECEX/ATEX II 1 G Ex ia IIC T4 Ga, IECEX/ATEX II 1D Ex ia ta IIC T100 °C Da
Design			EAC Ex d
Enclosure			EAC Ex e
<ul style="list-style-type: none"> Material Cable inlet 	Aluminum, polyester powder-coated 2 x M20 x 1.5 or 2 x 1/2" NPT		EAC Ex ia
Degree of protection	Type 4X/NEMA 4X, Type 6/NEMA 6, IP67, IP68	<ul style="list-style-type: none"> Functional Safety 	<ul style="list-style-type: none"> Lloyd's Register of Shipping ABS Type Approval Bureau Veritas
Weight	< 3 kg (6.6 lb) 3.75 mm (1/2 inch) threaded connection with 1/2" horn antenna		SIL-2 suitable in accordance with IEC 61508/61511
Display (local)	Graphic local user interface including quick start wizard and echo profile display		
Antenna			
<ul style="list-style-type: none"> Material 	316L stainless steel [optional alloy N06022/2.4602 (Hastelloy C-22 or equivalent)]		
<ul style="list-style-type: none"> Dimensions (nominal horn sizes) 	Standard 1.5 inch (40 mm), 2 inch (48 mm), 3 inch (75 mm), 4 inch (95 mm) horn, and optional 100 mm (4 inch) horn extension		
Process connections			
<ul style="list-style-type: none"> Process connection 	1/2", 2" or 3" NPT [(Taper), ANSI/ASME B1.20.1] R 1/2", 2" or 3" [(BSPT), EN 10226] G 1/2", 2" or 3" [(BSPP), EN ISO 228-1]		
<ul style="list-style-type: none"> Flange connection 	2", 3", 4" (ANSI 150, 300 lb), 50, 80, 100 mm (PN 16, 40, JIS 10K)		

Programming	
Intrinsically Safe Siemens handheld programmer	Infrared receiver
• Approvals for handheld programmer	IS model: ATEX II 1 GD Ex ia IIC T4 Ga Ex ia D 20 T135 °C T _a = -20 ... +50 °C CSA/FM Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G, T6 T _a = +50 °C IECEX SIR 09.0073
Handheld communicator	HART communicator 375/475
PC	• SIMATIC PDM • Emerson AMS • SITRANS DTM (for connection into FDT such as PACTware or Field-care)
Display (local)	Graphic local user interface including quick start wizard and echo profile displays

Level Measurement

Continuous level measurement
Radar transmitters

SITRANS LR250 Horn Antenna

Selection and Ordering data

Article No.

SITRANS LR250 horn antenna

7ML5431-

2-wire, 25 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, to a range of 20 m (66 ft) (antenna dependent). Ideal for small vessels and low dielectric media.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Process Connection and Antenna Material

316L (1.4435 or 1.4404) stainless steel, PTFE emitter, FKM seal¹⁾ **0**
 316L (1.4435 or 1.4404) stainless steel, PTFE emitter, FFKM seal¹⁾ **1**
 Hastelloy C-22/2.4602 (or equivalent), PTFE emitter, FKM seal²⁾ **2**
 Hastelloy C-22/2.4602 (or equivalent), PTFE emitter, FFKM seal²⁾ **3**

Process Connection Type

Threaded connection 316L

1½" NPT (ASME B1.20.1) (tapered thread)³⁾ **A A**
 R 1½" [(BSPT), EN 10226-1] (tapered thread)³⁾ **A B**
 G 1½" [(BSPP), EN ISO 228-1] (parallel thread)³⁾ **A C**
 2" NPT (ASME B1.20.1) (tapered thread)⁴⁾ **A D**
 R 2" [(BSPT), EN 10226-1] (tapered thread)⁴⁾ **A E**
 G 2" [(BSPP), EN ISO 228-1] (parallel thread)⁴⁾ **A F**
 3" NPT (ASME B1.20.1) (tapered thread)⁴⁾ **A G**
 R 3" [(BSPT), EN 10226-1] (tapered thread)⁴⁾ **A H**
 G 3" [(BSPP), EN ISO 228-1] (parallel thread)⁴⁾ **A J**

Flanged connection 316L⁴⁾

2" Class 150 ASME B16.5, raised face **B D**
 3" Class 150 ASME B16.5, raised face **B E**
 4" Class 150 ASME B16.5, raised face **B F**
 2" Class 300 ASME B16.5, raised face **C D**
 3" Class 300 ASME B16.5, raised face **C E**
 4" Class 300 ASME B16.5, raised face **C F**
 50A 10K JIS B 2220 flat face **F A**
 80A 10K JIS B 2220 flat face **F B**
 100A 10K JIS B 2220 flat face **F C**
 DN 50 PN 16 EN 1092-1 Type B1 raised face **G A**
 DN 80 PN 16 EN 1092-1 Type B1 raised face **G B**
 DN 100 PN 16 EN 1092-1 Type B1 raised face **G C**
 DN 150 PN 16 EN 1092-1 Type B1 raised face **G D**
 DN 50 PN 40 EN 1092-1 Type B1 raised face **H A**
 DN 80 PN 40 EN 1092-1 Type B1 raised face **H B**
 DN 100 PN 40 EN 1092-1 Type B1 raised face **H C**
 DN 150 PN 40 EN 1092-1 Type B1 raised face **H D**

Selection and Ordering data

Article No.

SITRANS LR250 horn antenna

7ML5431-

2-wire, 25 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, to a range of 20 m (66 ft) (antenna dependent). Ideal for small vessels and low dielectric media.

Flanged connection Hastelloy C⁴⁾

2" Class 150 ASME B16.5 raised face **J A**
 3" Class 150 ASME B16.5 raised face **J B**
 4" Class 150 ASME B16.5 raised face **J C**
 2" Class 300 ASME B16.5 raised face **J D**
 3" Class 300 ASME B16.5 raised face **J E**
 4" Class 300 ASME B16.5 raised face **J F**
 DN 50 PN 16 EN 1092-1 Type B1 raised face **K A**
 DN 80 PN 16 EN 1092-1 Type B1 raised face **K B**
 DN 100 PN 16 EN 1092-1 Type B1 raised face **K C**
 DN 50 PN 40 EN 1092-1 Type B1 raised face **K D**
 DN 80 PN 40 EN 1092-1 Type B1 raised face **K E**
 DN 100 PN 40 EN 1092-1 Type B1 raised face **K F**
 50A 10K JIS B 2220 raised face **L A**
 80A 10K JIS B 2220 raised face **L B**
 100A 10K JIS B 2220 raised face **L C**
 DN 50 PN 16 EN 1092-1 Type B1 raised face **M A**
 DN 80 PN 16 EN 1092-1 Type B1 raised face **M B**
 DN 100 PN 16 EN 1092-1 Type B1 raised face **M C**
 DN 150 PN 16 EN 1092-1 Type B1 raised face **M D**
 DN 50 PN 40 EN 1092-1 Type B1 raised face **M E**
 DN 80 PN 40 EN 1092-1 Type B1 raised face **M F**
 DN 100 PN 40 EN 1092-1 Type B1 raised face **M G**
 DN 150 PN 40 EN 1092-1 Type B1 raised face **M H**

Communication/Output

PROFIBUS PA⁵⁾ **1**
 4 ... 20 mA, HART, start-up at < 3.6 mA **2**
 FOUNDATION Fieldbus⁵⁾ **3**

Enclosure/Cable inlet

Aluminum, Epoxy painted
 2 x ½" NPT
 2 x M20 x 1.5

Antenna

1½" horn **A**
 2" horn (fits 2" ASME or DN 50 nozzles) **B**
 3" horn (fits 3" ASME or DN 80 nozzles) **C**
 4" horn (fits 4" ASME or DN 100 nozzles) **D**
 1½" horn with 100 mm extension **E**
 2" horn with 100 mm extension **F**
 3" horn with 100 mm extension **G**
 4" horn with 100 mm extension **H**
 Hastelloy C22 (or equivalent)
 2" horn (fits 2" ASME or DN 50 nozzles) **J**
 3" horn (fits 3" ASME or DN 80 nozzles) **K**
 4" horn (fits 4" ASME or DN 100 nozzles) **L**
 2" horn (fits 2" ASME or DN 50 nozzles) with 100 mm extension **M**
 3" horn (fits 3" ASME or DN 80 nozzles) with 100 mm extension **N**
 4" horn (fits 4" ASME or DN 100 nozzles) with 100 mm extension **P**

Selection and Ordering data	Article No.
SITRANS LR250 horn antenna	7ML5431-
2-wire, 25 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, to a range of 20 m (66 ft) (antenna dependent). Ideal for small vessels and low dielectric media.	0 -
Approvals	
General Purpose: CE, CSA, FM, FCC, RED, RCM	A
Intrinsically Safe: CSA/FM Class I, Div. 1, Groups A, B, C, D, Class II, Div. 1, Groups E, F, G, Class III T4 FCC, Industry Canada	B
Intrinsically Safe: IECEx/ATEX II 1 G Ex ia IIC T4 Ga, IECEx/ATEX II 1D Ex ia ta IIIC T100 °C Da, INMETRO Ex ia IIC T4 Ga, Ex ia ta IIIC T100 °C Da, CE, RED, RCM	C
Non-incendive: CSA/FM Class I, Div. 2, Groups A, B, C, D T5, FCC, Industry Canada	D
Non Sparking: ATEX II 3G Ex nA IIC T4 Gc, CE, RED, RCM	E
Increased Safety: IECEx/ATEX II 1/2 GD, 1D, 2D Ex e mb ia IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da, INMETRO Ex e ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da, CE, RED, RCM ⁶⁾	F
Flameproof: IECEx/ATEX II 1/2 GD 1D, 2D Ex d mb ia IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da, INMETRO Ex d ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da, CE, RED, RCM ⁶⁾	G
Explosion proof: CSA/FM Class I, II, and III, Div. 1, Groups A, B, C, D, E, F, G, FCC, Industry Canada ⁶⁾	H
Non Sparking: NEPSI Ex nA IIC T4 Gc	K
Intrinsically Safe: NEPSI Ex ia IIC T4 Ga, Ex iaD tD A20 IP67 T100 °C	L
Flameproof: NEPSI Ex d ia mb IIC T4 Ga/Gb, Ex iaD tD A20 IP67 T100 °C ⁶⁾	M
Increased Safety: NEPSI Ex e ia mb IIC T4 Ga/Gb, Ex iaD tD A20 IP67 T100 °C ⁶⁾	N
Pressure rating	
Rating per Pressure/Temperature curves in manual	0
0.5 bar g (7.25 psi g) maximum ⁷⁾	1

¹⁾ Available with process connection options AA ... HD and Antenna Versions A ... H only

²⁾ Available with process connection options JA ... MH and Antenna Versions J ... P only

³⁾ Not available with Antenna options B, C, D, F, G, H.

⁴⁾ Not available with Antenna options A and E.

⁵⁾ Available with Approval options A, B, C, D, K, and L

⁶⁾ Available only with Communications option 2.

⁷⁾ Available with Process Connection and Antenna Material 0, 1, 2, and 3 only

Level Measurement

Continuous level measurement
Radar transmitters

SITRANS LR250 Horn Antenna

Selection and Ordering data		Order code	Selection and Ordering data		Article No.
Further designs			Compact Operating Instructions for FOUNDATION Fieldbus device		
Please add "-Z" to Article No. and specify Order code(s).			English, French, German, Spanish, Italian, Dutch, Danish, Finnish, Greek, Portuguese (Portugal), Swedish		A5E33472700
Plug M12 with mating Connector ¹⁾²⁾³⁾		A50	English, Bulgarian, Czech, Estonian, Hungarian, Latvian, Lithuanian, Polish, Romanian, Slovakian, Slovenian		A5E33472738
Plug 7/8" with mating Connector ²⁾³⁾⁴⁾		A55	English, Portuguese (Brazil), Chinese		A5E34046626
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	Note: The Operating Instructions should be ordered as a separate line item on the order.		
Manufacturer's Test Certificate: M to DIN 55350, Part 18 and to ISO 9000		C11	All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation		
Material inspection certificate 3.1 of EN 10204		C12	Other Operating Instructions		
Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511 ³⁾⁵⁾		C20	SITRANS LR250 Functional Safety manual, English		A5E32286471
Namur NE43 compliant, device preset to failsafe < 3.6 mA ⁵⁾		N07	Note: The Operating Instructions should be ordered as a separate line item on the order.		
Compact Operating Instructions for HART/ mA device		Article No.	All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation		
English, French, German, Spanish, Italian, Dutch, Danish, Finnish, Greek, Portuguese (Portugal), Swedish		A5E33469191	Accessories		
English, Bulgarian, Czech, Estonian, Hungarian, Latvian, Lithuanian, Polish, Romanian, Slovakian, Slovenian		A5E33469171	Handheld programmer, Intrinsically safe, EEx ia		7ML1930-1BK
English, Portuguese (Brazil), Chinese		A5E34046583	HART modem/USB (for use with a PC and SIMATIC PDM)		7MF4997-1DB
Note: The Operating Instructions should be ordered as a separate line item on the order.			One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), HART (two are required)		7ML1930-1AP
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation			One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), PROFIBUS PA and FOUNDATION Fieldbus (two are required) ⁶⁾		7ML1930-1AQ
Compact Operating Instructions for PROFIBUS PA device			FDA approved FKM O-ring for 2" G (BSP) process connections -28 ... +80 °C (-28 ... +176 °F)		7ML1830-3AN
English, French, German, Spanish, Italian, Dutch, Danish, Finnish, Greek, Portuguese (Portugal), Swedish		A5E33469239	SITRANS RD100, loop powered display - see Chapter 7		7ML5741-...
English, Bulgarian, Czech, Estonian, Hungarian, Latvian, Lithuanian, Polish, Romanian, Slovakian, Slovenian		A5E33472685	SITRANS RD200, universal input display with Modbus conversion - see Chapter 7		7ML5740-...
English, Portuguese (Brazil), Chinese		A5E34046624	SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7		7ML5744-...
Note: The Operating Instructions should be ordered as a separate line item on the order.			SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7		7ML5750-...
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation			For applicable back up point level switch - see point level measurement section		

¹⁾ Available with enclosure option 1 only

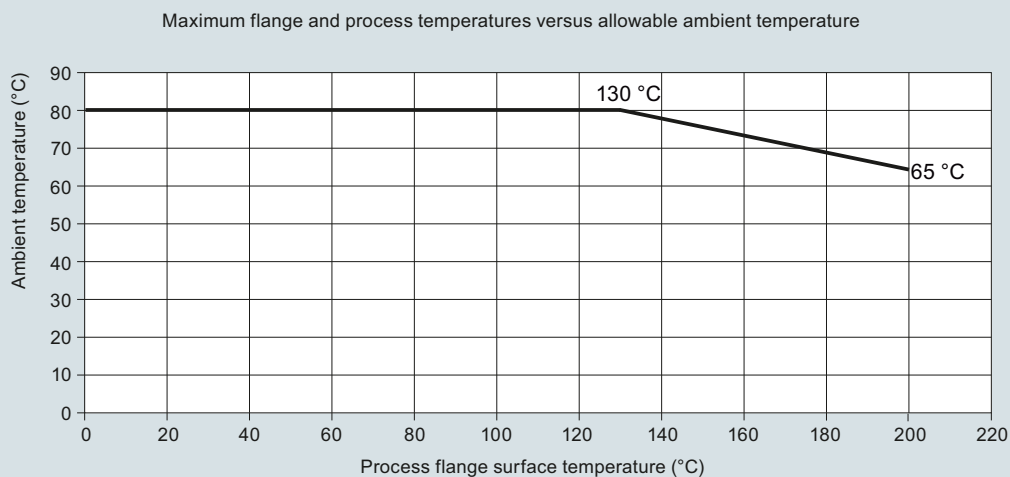
²⁾ To be used with communication options 1 and 3 only. Connector has IP67 rating.

³⁾ Available with approval options A and B. Available with approval option C for use on intrinsically safe applications only. Not rated for dust Ex.

⁴⁾ Available with enclosure option 0 only

⁵⁾ Applicable to communication option 2 only

⁶⁾ For use with communication options 1 and 3 only

Characteristic curves

SITRANS LR250 ambient/process flange surface temperature curve

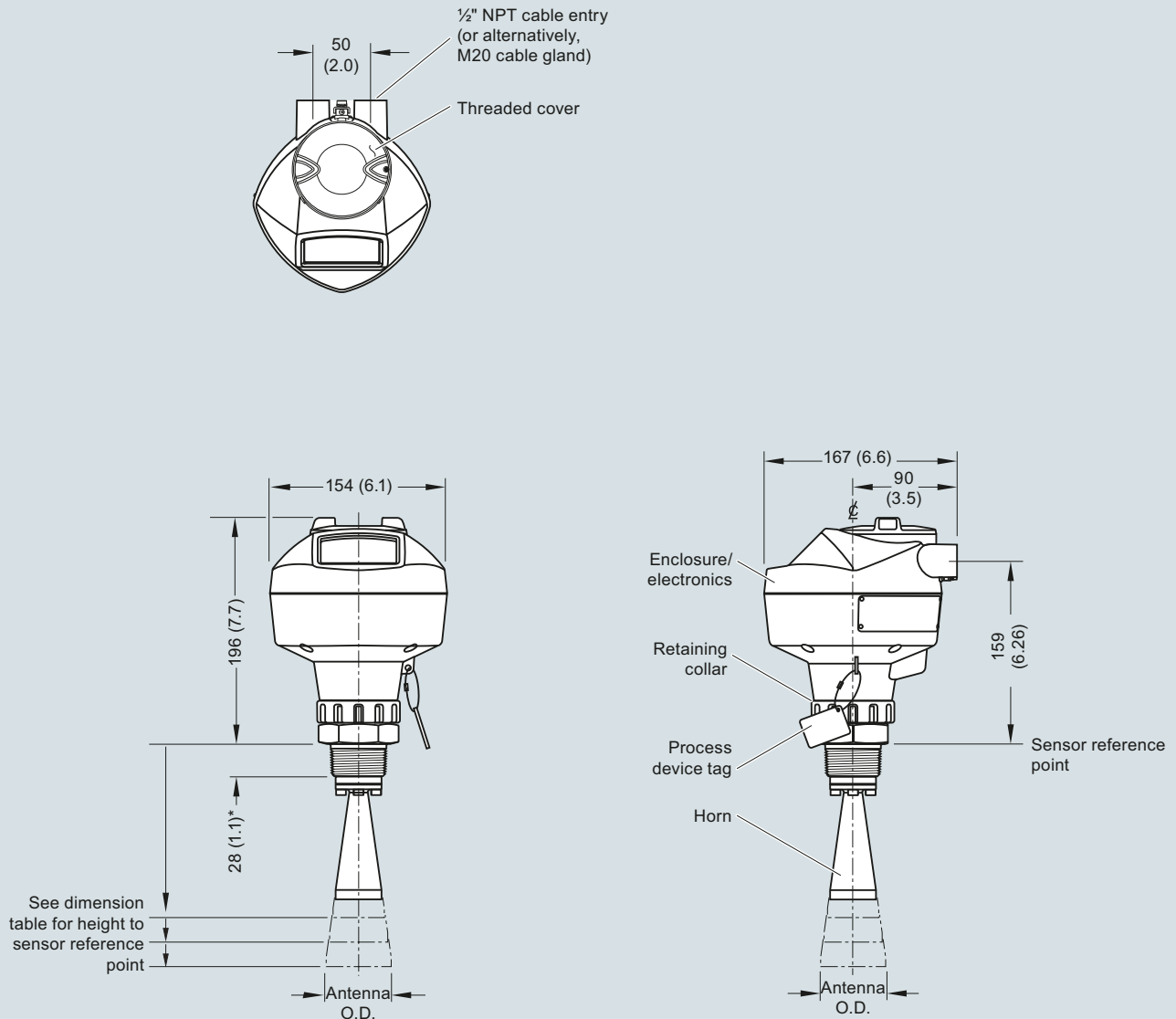
Level Measurement

Continuous level measurement
Radar transmitters

SITRANS LR250 Horn Antenna

Dimensional drawings

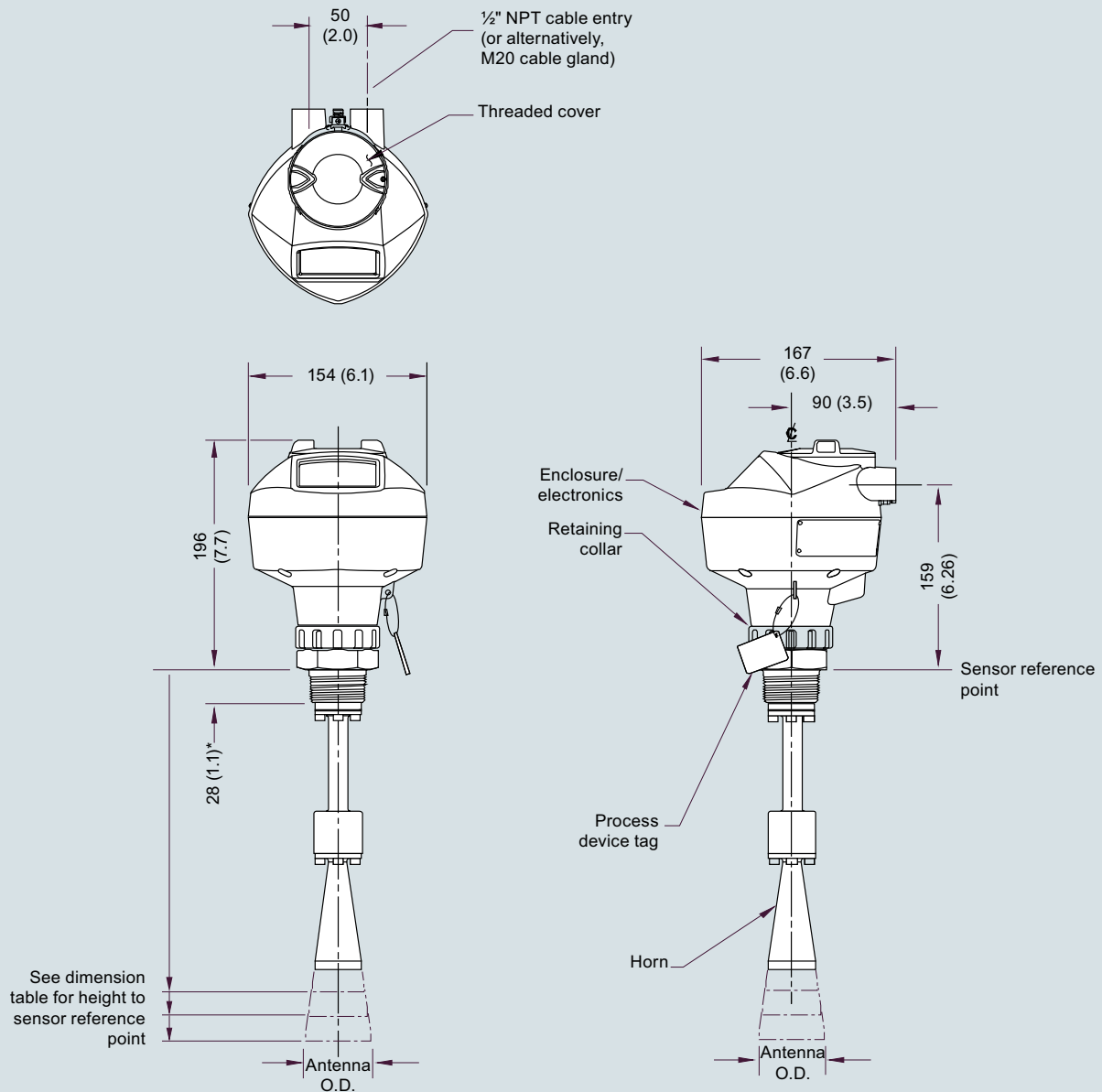
Threaded Horn Antenna



*28 mm (1.1) for 1.5 inch and 2 inch, 42 mm (1.65) for 3 inch

Antenna Type	Antenna O.D.	Height to sensor reference point			Beam angle	Measurement range
		1-1/2" threaded connection	2" threaded connection	3" threaded connection		
1.5" horn	39.8 (1.57)	135 (5.3)	N/A	N/A	19 degrees	10 m (32.8 ft)
2" horn	47.8 (1.88)	N/A	166 (6.55)	180 (7.09)	15 degrees	20 m (65.6 ft)
3" horn	74.8 (2.94)	N/A	199 (7.85)	213 (8.39)	10 degrees	20 m (65.6 ft)
4" horn	94.8 (3.73)	N/A	254 (10)	268 (10.55)	8 degrees	20 m (65.6 ft)

SITRANS LR250 Threaded Horn Antenna, dimensions in mm (inch)

Threaded Horn Antenna with Extension

*28 mm (1.1) for 1.5 inch and 2 inch, 42 mm (1.65) for 3 inch

Antenna Type	Antenna O.D.	Height to sensor reference point			Beam angle	Measurement range
		1-1/2" threaded connection	2" threaded connection	3" threaded connection		
1.5" horn	39.8 (1.57)	235 (9.3)	N/A	N/A	19 degrees	10 m (32.8 ft)
2" horn	47.8 (1.88)	N/A	266 (10.47)	280 (11.02)	15 degrees	20 m (65.6 ft)
3" horn	74.8 (2.94)	N/A	299 (11.77)	313 (12.32)	10 degrees	20 m (65.6 ft)
4" horn	94.8 (3.73)	N/A	354 (13.94)	368 (14.49)	8 degrees	20 m (65.6 ft)

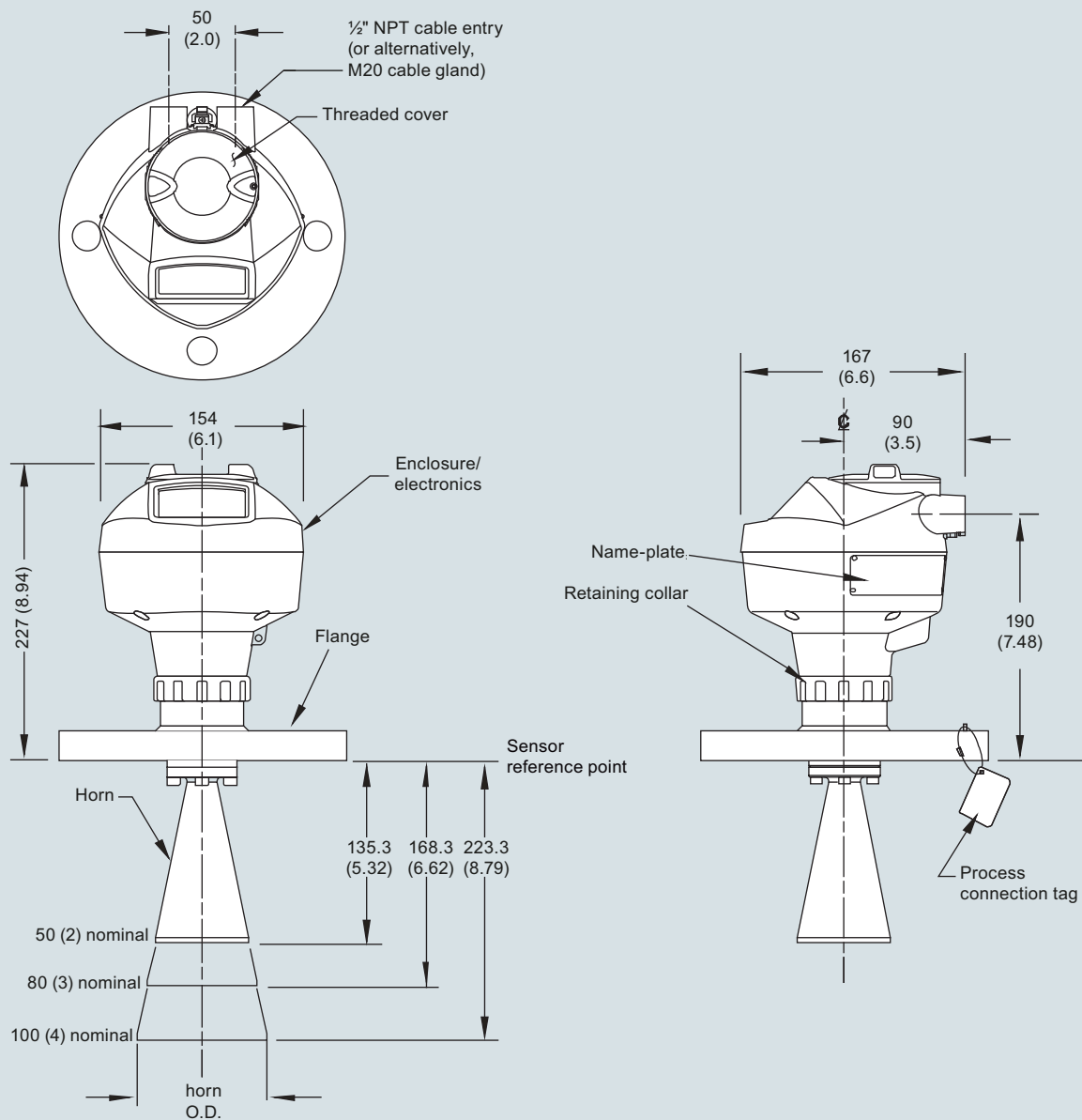
SITRANS LR250 Threaded Horn Antenna with extension, dimensions in mm (inch)

Level Measurement

Continuous level measurement
Radar transmitters

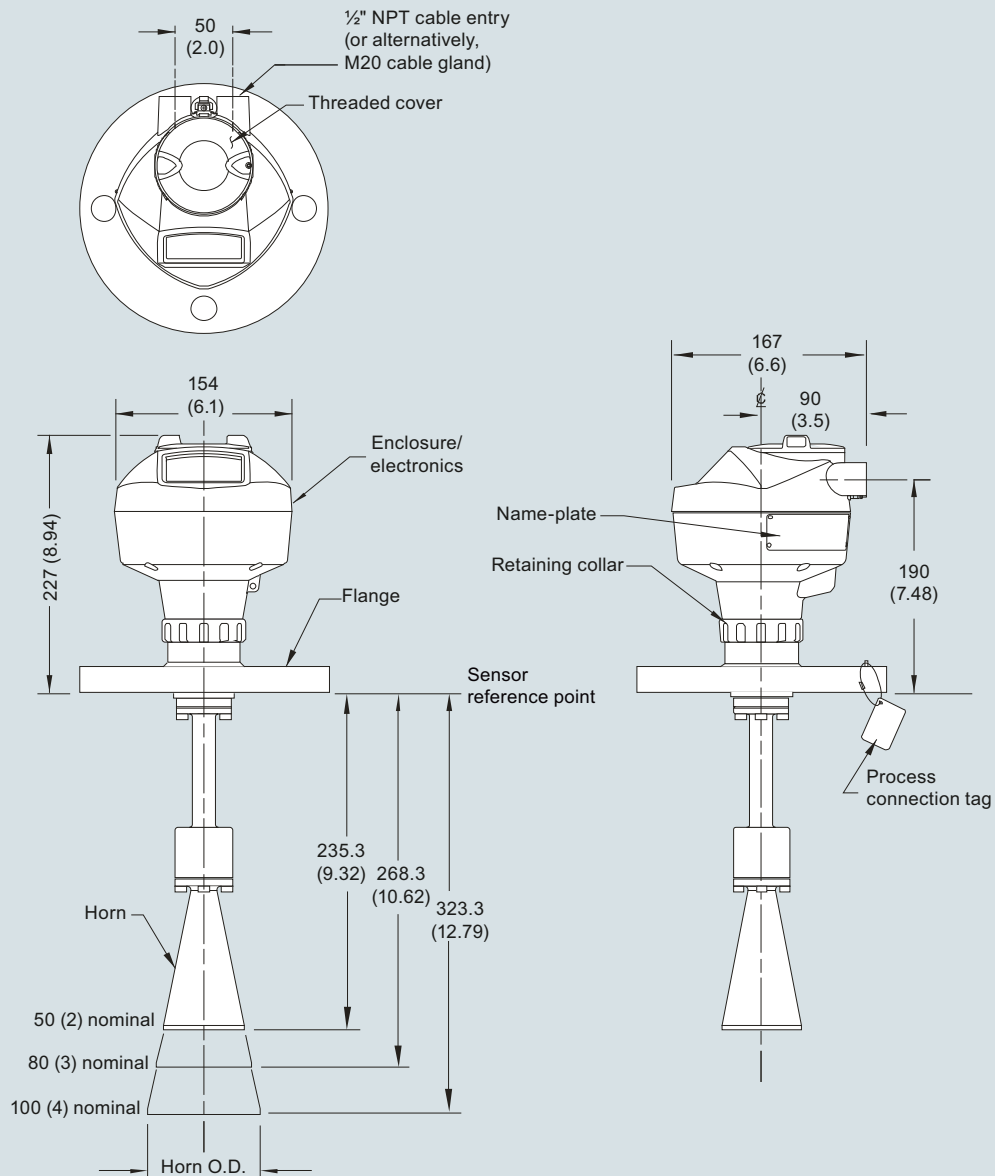
SITRANS LR250 Horn Antenna

Flanged Horn



Nominal Horn Size	Horn O.D.	Height to sensor reference point		Beam angle	Measurement range
		Stainless steel flange raised or flat-faced	Optional alloy flange		
50 (2)	47.8 (1.88)	135.3 (5.32)	138.3 (5.44)	15 degrees	20 m (65.6 ft)
80 (3)	74.8 (2.94)	168.3 (6.62)	171.3 (6.74)	10 degrees	20 m (65.6 ft)
100 (4)	94.8 (3.73)	223.3 (8.79)	226.3 (8.90)	8 degrees	20 m (65.6 ft)

SITRANS LR250 Flanged Horn Antenna, dimensions in mm (inch)

Flanged Horn with Extension

Nominal Horn Size	Horn O.D.	Height to sensor reference point		Beam angle	Measurement range
		Stainless steel flange raised or flat-faced	Optional alloy flange		
50 (2)	47.8 (1.88)	235.3 (9.26)	238.3 (9.38)	15 degrees	20 m (65.6 ft)
80 (3)	74.8 (2.94)	268.3 (10.56)	271.3 (10.68)	10 degrees	20 m (65.6 ft)
100 (4)	94.8 (3.73)	323.3 (12.73)	326.3 (12.85)	8 degrees	20 m (65.6 ft)

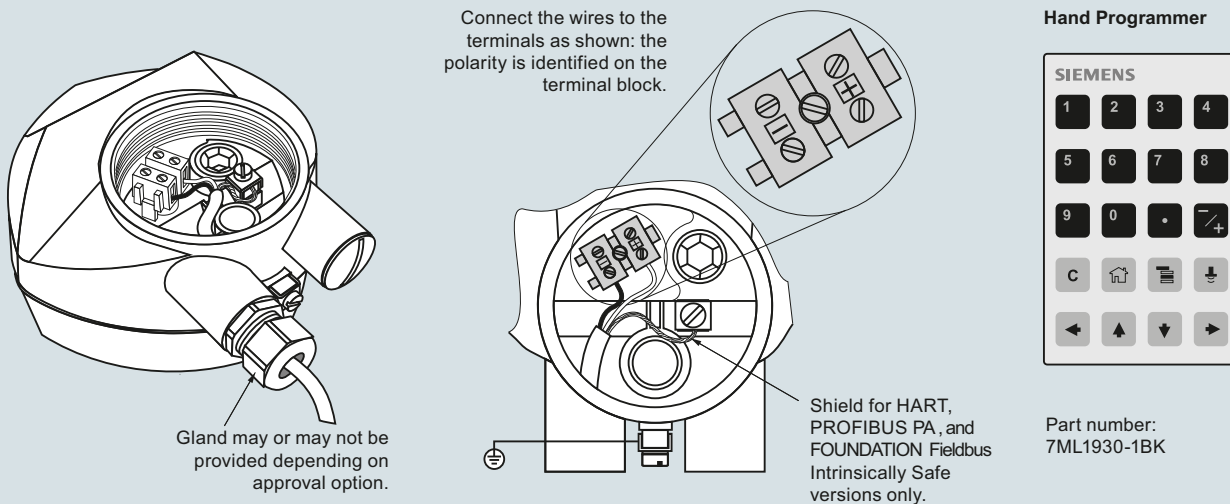
SITRANS LR250 Flanged Horn Antenna with extension, dimensions in mm (inch)

Level Measurement

Continuous level measurement
Radar transmitters

SITRANS LR250 Horn Antenna

Circuit diagrams






Notes:

1. DC terminal shall be supplied from a source providing electrical isolation between the input and output, to meet the applicable safety requirements of IEC 61010-1.
2. All field wiring must have insulation suitable for rated input voltages.
3. Use shielded twisted pair cable (14 ... 22 AWG) for HART version.
4. Separate cables and conduit may be required to conform to standard instrumentation wiring practices or electrical codes.

SITRANS LR250 connections

Selection and ordering data

SITRANS LR250 Specials		SITRANS LR250 Specials	
	Article No.		Article No.
NOTE: LR260 head can be supplied with any LR250 process connection or antenna as special order. For LR250, this means a stronger signal and longer measurement range is possible.		SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option C, with FOUNDATION Fieldbus communication, no process connection	A5E02654606
		SITRANS LR250 horn version enclosures (< 3.6 mA start-up HART)	
SITRANS LR250 horn version enclosures (PROFIBUS PA models)			
SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option A, with PROFIBUS PA communication, no process connection	A5E01156836	SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option A, with HART communication start-up at < 3.6 mA, no process connection	A5E02956317
SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option A, with PROFIBUS PA communication, no process connection	A5E01156838	SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option C, with HART communication start-up at < 3.6 mA, no process connection	A5E02956319
SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option B, with PROFIBUS PA communication, no process connection	A5E01156841	SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option E, with HART communication start-up at < 3.6 mA, no process connection	A5E02956320
SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option C, with PROFIBUS PA communication, no process connection	A5E01156843	SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option F, with HART communication start-up at < 3.6 mA, no process connection	A5E02956322
SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option C, with PROFIBUS PA communication, no process connection	A5E01156844	SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option G, with HART communication start-up at < 3.6 mA, no process connection	A5E02956323
SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option D, with PROFIBUS communication, no process connection	A5E01156846	SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option A, with HART communication start-up at < 3.6 mA, no process connection	A5E03441096
SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option D, with PROFIBUS PA communication, no process connection	A5E01156848	SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option B, with HART communication start-up at < 3.6 mA, no process connection	A5E03441097
SITRANS LR250 horn version enclosures (FOUNDATION Fieldbus models)		SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option H, with HART communication start-up at < 3.6 mA, no process connection	A5E03441099
SITRANS LR250 enclosure with board stack, NPT cable inlet, approval option B, with FOUNDATION Fieldbus communication, no process connection	A5E03769538		
SITRANS LR250 enclosure with board stack, NPT cable inlet, approval option D, with FOUNDATION Fieldbus communication, no process connection	A5E03769539		
SITRANS LR250 enclosure with board stack, M20 cable inlet, approval option E, with FOUNDATION Fieldbus communication, no process connection	A5E03769543		
SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option C, with FOUNDATION Fieldbus communication, no process connection	A5E02654608		
SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option A, with FOUNDATION Fieldbus communication, no process connection	A5E02653792		
SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option A, with FOUNDATION Fieldbus communication, no process connection	A5E02653793		

Level Measurement

Continuous level measurement

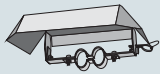
Radar transmitters

SITRANS LR250 Specials

SITRANS LR250 Specials

Article No.

Sun shield for SITRANS LR250 enclosure, stainless steel



A5E39142556

SITRANS LR250 horn antenna and extension kits



38 mm (1.5 inch) horn antenna kit, 1.5" process connections only

A5E01151539

100 mm (4 inch) horn antenna extension kit, 1.5" process connections only

A5E01151553

50 mm (2 inch) stainless steel 316L horn antenna kit

A5E01151569

75 mm (3 inch) stainless steel 316L horn antenna kit

A5E01151571

100 mm (4 inch) stainless steel 316L horn antenna kit

A5E01151573

100 mm (4 inch) horn antenna extension kit, 50 mm (2 inch), 75 mm (3 inch), and 100 mm (4 inch) process connection

A5E01151577

50 mm (2 inch) horn antenna kit, Hastelloy C-22

A5E01151584

75 mm (3 inch) horn antenna kit, Hastelloy C-22

A5E01151585

100 mm (4 inch) horn antenna kit, Hastelloy C-22

A5E01151587

5 Dupont 1Gr Polypack, PTFE grease kit

A5E01151626

SITRANS LR250 lid with O-ring

A5E02465410

Ex-proof plugs

Ex-proof plugs kit, 1/2" NPT, qty 5

A5E39979991

Ex-proof plugs kit, M20, qty 5

A5E39979992

Overview



SITRANS LR250 with threaded PVDF antenna is a 2-wire, 25 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including corrosives or aggressive materials, to a range of 10 m (32.8 ft) or 20 m (66 ft) when used in a stilling pipe.

Benefits

- Fully insulated PVDF antenna design for use in chemical and sanitary environments where aggressive and corrosive materials are used
- 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
- 25 GHz high frequency and 50 mm (2 inch) process connection/antenna allow for easy mounting in nozzles
- Communication using HART or PROFIBUS PA, or FOUNDATION Fieldbus
- Process Intelligence signal processing for improved measurement reliability and Auto False-Echo Suppression of fixed obstructions
- Programming using infrared Intrinsically Safe handheld programmer or over a network using SIMATIC PDM, Emerson AMS, or Field Device Tools such as PACTware or Fieldcare via SITRANS DTM
- Suitable for use in Safety Related Systems in accordance with IEC 61508/61511 (SIL-2)
- 3 mm (0.118 inch) accuracy in accordance with IEC 60770-1

Application

SITRANS LR250 includes a graphical local user interface (LUI) that improves setup and operation by including an intuitive Quick Start Wizard, and echo profile displays for diagnostic support. Startup is easy using the Quick Start wizard with a few parameters required for basic operation.

SITRANS LR250's unique design allows safe and simple programming using the Intrinsically Safe handheld programmer without having to open the instrument's lid.

SITRANS LR250 measures superbly in small vessels and in tanks/vessels up to 10 m (32 ft) on materials with $dk > 3$ or 20 m (66 ft) when used in a stilling pipe with $dk \geq 1.6$.

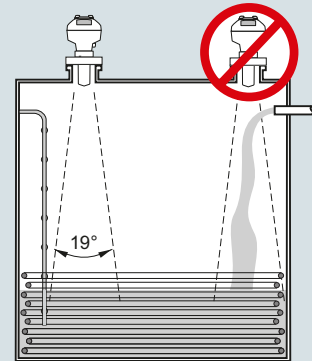
- Key Applications: liquid bulk storage tanks, process vessels with agitators, vaporous liquids, temperatures to 80 °C (176 °F), corrosive and aggressive materials and applications requiring functional safety

Configuration

Installation

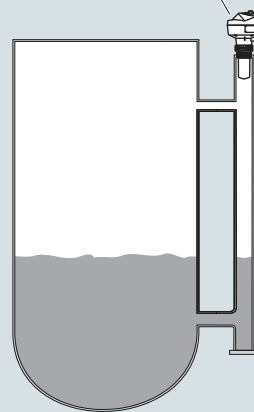
Note:

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



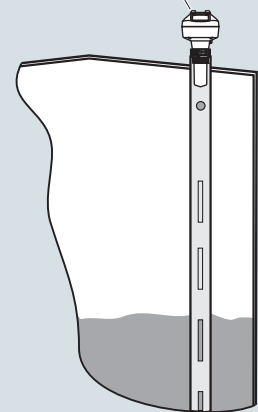
Mounting on bypass

Orient front or back of device toward vent.

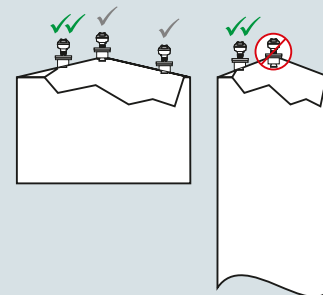


Mounting on stilling well

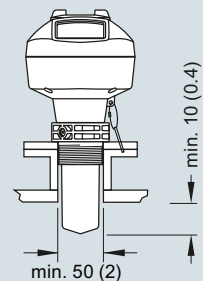
Orient front or back of device toward stillpipe slots.



Mounting on vessel



Mounting on a nozzle



SITRANS LR250 PVDF Antenna installation, dimensions in mm (inch)

Level Measurement

Continuous level measurement

Radar transmitters

SITRANS LR250 Threaded PVDF Antenna

Technical specifications

Mode of operation		Certificates and approvals	
Measuring principle	Radar level measurement	General	CSA _{US/C} , CE, FM, RCM
Frequency	K-band (25.0 GHz)	Radio	FCC, Industry Canada, RED, RCM
Minimum measuring range	50 mm (2 inch) from end of antenna	Hazardous	
Maximum measuring range	10 m (32.8 ft) or 20 m (66 ft) when used in a stilling pipe with $dk \geq 1.6$	• Explosion Proof (Brazil)	INMETRO Ex d ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da
Output		• Increased Safety (Brazil)	INMETRO Ex e ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da
HART	Version 5.1	• Intrinsically Safe (Brazil)	INMETRO Ex ia IIC T4 Ga, Ex ia ta IIIC T100 °C Da
• Analog output	4 ... 20 mA	• Explosion Proof (Canada/USA)	CSA/FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III T4
• Accuracy	± 0.02 mA	• Intrinsically Safe (Canada/USA)	CSA/FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III T4
• Fail-safe	• Programmable as high low or hold (loss of echo) • NE 43 programmable	• Non-incendive (Canada/USA)	CSA/FM Class I, Div. 2, Groups A, B, C, D T5
PROFIBUS PA	Profile 3.1	• Flame Proof/Increased Safety (China)	Ex d ia mb IIC T4 Ga/Gb, Ex e ia mb IIC T4 Ga/Gb, Ex iaD 20 T90 IP67 DIP A20 T _A 90 °C
• Function blocks	2 Analog Input (AI)	• Intrinsically Safe (China)	Ex ia IIC T4 Ga, Ex iaD 20 T90 IP67 DIP A20 T _A 90 °C
FOUNDATION Fieldbus	H1	• Non-sparking (China)	NEPSI Ex nA IIC T4 Gc
• Functionality	Basic or LAS	• Intrinsically Safe (Europe)	ATEX II 1G Ex ia IIC T4 Ga ATEX II 1D Ex ia ta IIC T100 °C Da ATEX II 3G Ex nA IIC T4 Gc
• Version	ITK 5.2.0	• Non-sparking/Energy Limited (Europe)	
• Function blocks	2 Analog Input (AI)	• Flame Proof (International/Europe)	IECEX/ATEX II 1/2 GD, 1D, 2D, Ex d mb ia IIC T4 Ga/Gb, Ex ia ta IIC T100 °C Da
Performance (according to reference conditions IEC60770-1)		• Increased Safety (International/Europe)	IECEX/ATEX II 1/2 GD, 1D, 2D, Ex e mb ia IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da
Maximum measured error	• > 500 mm from sensor reference point: 3 mm (0.118 inch) • < 500 mm from sensor reference point: 25 mm (1 inch)	• Intrinsically Safe (International)	IECEX/ATEX II 1 G Ex ia IIC T4 Ga, IECEX/ATEX II 1D Ex ia ta IIC T100 °C Da
Influence of ambient temperature	< 0.003 %/K	• Explosion Proof (Russia/Kazakhstan)	EAC Ex d
Rated operating conditions		• Increased Safety (Russia/Kazakhstan)	EAC Ex e
Installation conditions		• Intrinsically Safe (Russia/Kazakhstan)	EAC Ex ia
• Location	Indoor/outdoor	• Marine	• Lloyd's Register of Shipping • ABS Type Approval • Bureau Veritas
Ambient conditions (enclosure)		Functional Safety	SIL-2 suitable in accordance with IEC 61508/61511
• Ambient temperature	-40 ... +80 °C (-40 ... +176 °F)	Programming	
• Installation category	I	Intrinsically Safe Siemens handheld programmer	Infrared receiver
• Pollution degree	4	• Approvals for handheld programmer	IS model: ATEX II 1 GD Ex ia IIC T4 Ga Ex ia D 20 T135 °C T _a = -20 ... +50 °C CSA/FM Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G, T6 T _a = +50 °C IECEX SIR 09.0073
Medium conditions		Handheld communicator	HART communicator 375/475
Dielectric constant ϵ_r	≥ 3 (1.6 in stillpipe)	PC	• SIMATIC PDM • Emerson AMS • SITRANS DTM (for connection into FDT, such as PACTware or Fieldcare)
Process temperature	-40 ... +80 °C (-40 ... +176 °F) at process connection (Is suitable for CIP at 120 °C for 1/2 hr max.)	Display (local)	Graphic local user interface including quick start wizard and echo profile displays
Process pressure	Up to 5 bar g (72 psi g) temperature dependent. See Pressure/Temperature curves for more information	Power supply	
Design		4 ... 20 mA/HART	Nominal 24 V DC (max. 30 V DC) with max. 550 Ω
Enclosure		PROFIBUS PA	• 15 mA • per IEC 61158-2
• Material	Aluminum, polyester powder-coated	FOUNDATION Fieldbus	• 20.0 mA • per IEC 61158-2
• Cable inlet	2 x M20 x 1.5 or 2 x 1/2" NPT		
Degree of protection	Type 4X/NEMA 4X, Type 6/ NEMA 6, IP67, IP68		
Weight	Approximately 3.3 kg (7.27 lb)		
Display (local)	Graphic local user interface including quick start wizard and echo profile display		
Antenna			
• Material	PVDF (Polyvinylidene fluoride)		
• Dimensions (nominal sizes)	2 inch (48 mm)		
Process connections			
• Process connection	2" NPT [(Taper), ASME B1.20.1] 2" [(BSPT), EN 10226] 2" [(BSPP), EN ISO 228-1]		

Level Measurement

Continuous level measurement
Radar transmitters

SITRANS LR250 Threaded PVDF Antenna

Selection and Ordering data

Article No.

Compact Operating Instructions for FOUNDATION Fieldbus device

English, French, German, Spanish, Italian, Dutch, Danish, Finnish, Greek, Portuguese (Portugal), Swedish

A5E33472700

English, Bulgarian, Czech, Estonian, Hungarian, Latvian, Lithuanian, Polish, Romanian, Slovakian, Slovenian

A5E33472738

English, Portuguese (Brazil), Chinese

A5E34046626

Note: The Operating Instructions should be ordered as a separate line item on the order.

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Other Operating Instructions

SITRANS LR250 Functional Safety manual, English

A5E32286471

Note: The Operating Instructions should be ordered as a separate line item on the order.

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Selection and Ordering data

Article No.

Accessories

Handheld programmer, Intrinsically safe, EEx ia

7ML1930-1BK

HART modem/USB
(for use with a PC and SIMATIC PDM)

7MF4997-1DB

One metallic cable gland M20 x 1.5,
rated -40 ... +80 °C (-40 ... +176 °F), HART

7ML1930-1AP

One metallic cable gland M20 x 1.5,
rated -40 ... +80 °C (-40 ... +176 °F),
PROFIBUS PA and FOUNDATION Fieldbus²⁾

7ML1930-1AQ

FDA approved FKM o-ring for 2" G (BSPP) process
connections -28 ... +80 °C (-28 ... +176 °F)

7ML1830-3AN

SITRANS RD100, loop powered display -
see Chapter 7

7ML5741-...

SITRANS RD200, universal input display with
Modbus conversion - see Chapter 7

7ML5740-...

SITRANS RD300, dual line display with totalizer
and linearization curve and Modbus conversion -
see Chapter 7

7ML5744-...

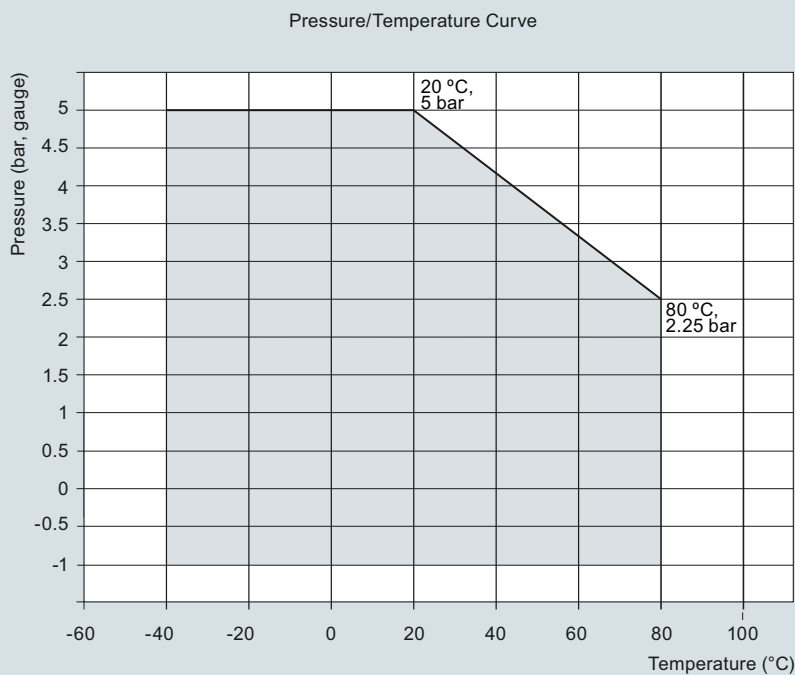
SITRANS RD500 web, universal remote monitoring
solution for instrumentation - see Chapter 7

7ML5750-...

For applicable back up point level switch -
see point level measurement section

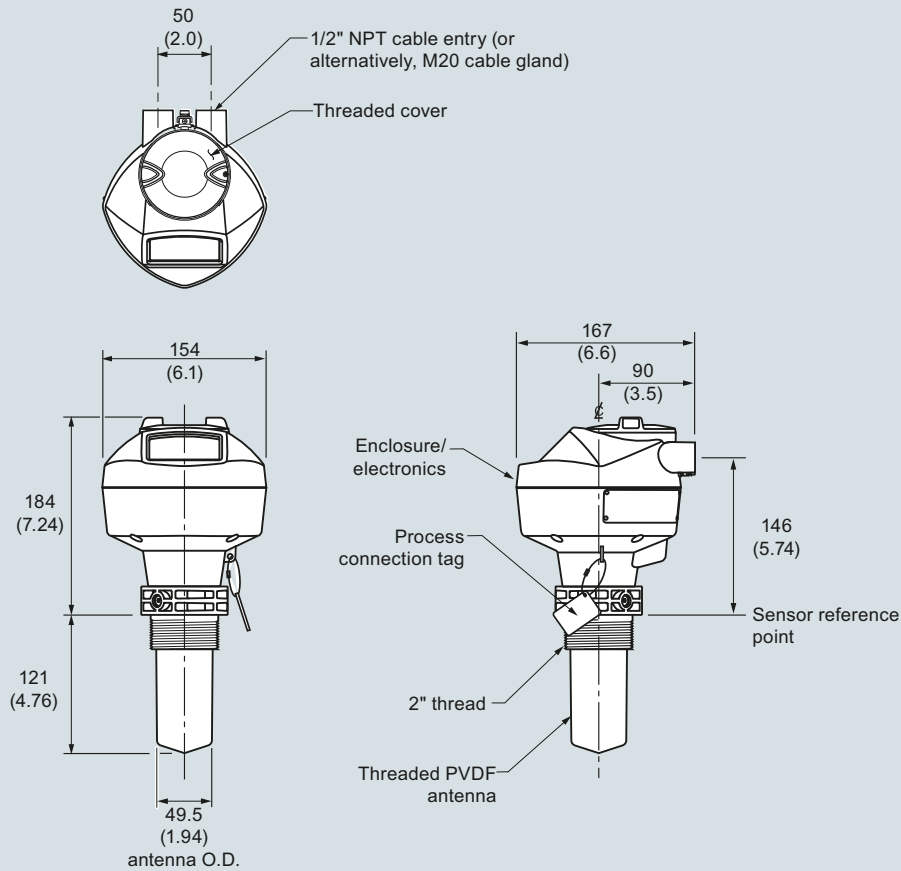
- 1) Available with Enclosure option 1 only
- 2) To be used with Communication options 1 and 3 only.
Connector has IP67 rating.
- 3) Available with Approval options A and B. Available with approval option C
for use on intrinsically safe applications only. Not rated for dust Ex.
- 4) Available with Enclosure option 0 only
- 5) Available with communication option 2 only
- 6) Available with approval options A, B, C, D, E, K, and L only

Characteristic curves



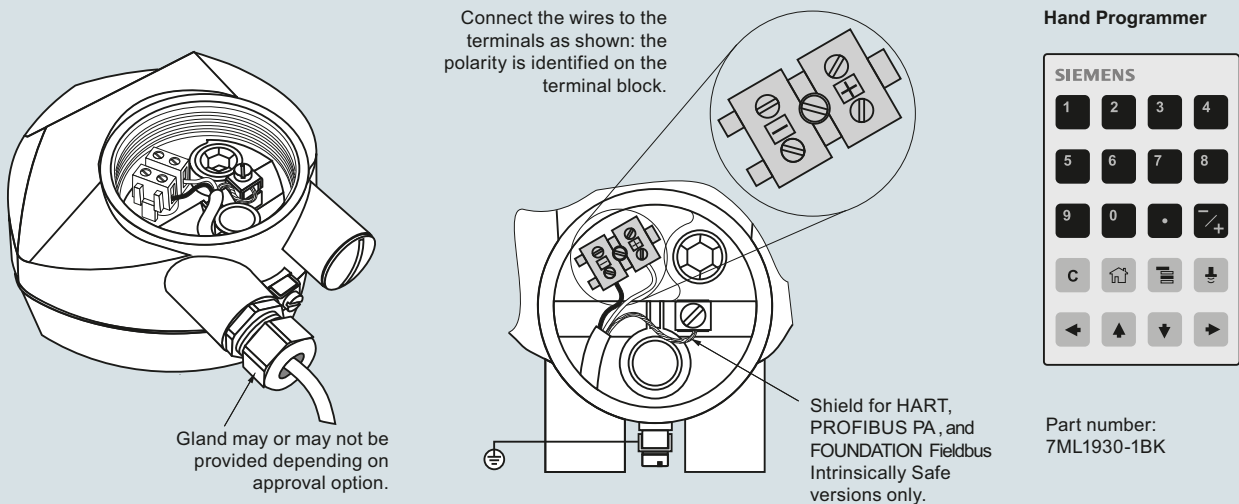
SITRANS LR250 PVDF Antenna pressure/temperature curve

Dimensional drawings



SITRANS LR250 PVDF Antenna, dimensions in mm (inch)

Circuit diagrams



Notes:

1. DC terminal shall be supplied from a source providing electrical isolation between the input and output, to meet the applicable safety requirements of IEC 61010-1.
2. All field wiring must have insulation suitable for rated input voltages.
3. Use shielded twisted pair cable (14 ... 22 AWG) for HART version.
4. Separate cables and conduit may be required to conform to standard instrumentation wiring practices or electrical codes.

Level Measurement

Continuous level measurement
Radar transmitters

SITRANS LR250 Threaded PVDF Specials

Selection and Ordering data

SITRANS LR250 threaded PVDF Specials

	Article No.
NOTE: LR260 head can be supplied with any LR250 process connection or antenna as special order. For LR250, this means a stronger signal and longer measurement range is possible.	
SITRANS LR250 threaded PVDF antenna version enclosures (PROFIBUS PA models)	
SITRANS LR250 threaded PVDF antenna version enclosure with board stack, M20 cable inlet, approval option A, with PROFIBUS PA communication, no process connection	A5E03588171
SITRANS LR250 threaded PVDF antenna version enclosure with board stack, NPT cable inlet, approval option A, with PROFIBUS PA communication, no process connection	A5E03588253
SITRANS LR250 threaded PVDF antenna version enclosure with board stack, NPT cable inlet, approval option B, with PROFIBUS PA communication, no process connection	A5E03588512
SITRANS LR250 threaded PVDF antenna version enclosure with board stack, M20 cable inlet, approval option C, with PROFIBUS PA communication, no process connection	A5E03589260
SITRANS LR250 threaded PVDF antenna version enclosure with board stack, NPT cable inlet, approval option D, with PROFIBUS PA communication, no process connection	A5E03589262
SITRANS LR250 threaded PVDF antenna version enclosure with board stack, M20 cable inlet, approval option E, with PROFIBUS PA communication, no process connection	A5E03589264
SITRANS LR250 threaded PVDF antenna version enclosures (FOUNDATION Fieldbus models)	
SITRANS LR250 enclosure with board stack, M20 cable inlet, approval option A, with FOUNDATION Fieldbus communication, no process connection	A5E03589266
SITRANS LR250 enclosure with board stack, NPT cable inlet, approval option A, with FOUNDATION Fieldbus communication, no process connection	A5E03589275
SITRANS LR250 enclosure with board stack, NPT cable inlet, approval option B, with FOUNDATION Fieldbus communication, no process connection	A5E03589277
SITRANS LR250 enclosure with board stack, M20 cable inlet, approval option C, with FOUNDATION Fieldbus communication, no process connection	A5E03589280
SITRANS LR250 enclosure with board stack, NPT cable inlet, approval option D, with FOUNDATION Fieldbus communication, no process connection	A5E03589281
SITRANS LR250 enclosure with board stack, M20 cable inlet, approval option E, with FOUNDATION Fieldbus communication, no process connection	A5E03589283

SITRANS LR250 threaded PVDF Specials

	Article No.
SITRANS LR250 threaded PVDF antenna version enclosures (< 3.6 mA start-up HART models)	
SITRANS LR250 enclosure with board stack, M20 cable inlet, approval option A, with HART communication start-up at < 3.6 mA, no process connection	A5E03569747
SITRANS LR250 enclosure with board stack, NPT cable inlet, approval option A, with HART communication start-up at < 3.6 mA, no process connection	A5E03586807
SITRANS LR250 enclosure with board stack, NPT cable inlet, approval option B, with HART communication start-up at < 3.6 mA, no process connection	A5E03586854
SITRANS LR250 enclosure with board stack, M20 cable inlet, approval option C, with HART communication start-up at < 3.6 mA, no process connection	A5E03586887
SITRANS LR250 enclosure with board stack, NPT cable inlet, approval option D, with HART communication start-up at < 3.6 mA, no process connection	A5E03586961
SITRANS LR250 enclosure with board stack, M20 cable inlet, approval option E, with HART communication start-up at < 3.6 mA, no process connection	A5E03587012
SITRANS LR250 enclosure with board stack, M20 cable inlet, approval option F, with HART communication start-up at < 3.6 mA, no process connection	A5E03587132
SITRANS LR250 enclosure with board stack, M20 cable inlet, approval option G, with HART communication start-up at < 3.6 mA, no process connection	A5E03587223
SITRANS LR250 enclosure with board stack, NPT cable inlet, approval option H, with HART communication start-up at < 3.6 mA, no process connection	A5E03588125
SITRANS LR250 threaded PVDF antenna kits	
Antenna kit 2" NPT threaded PVDF	A5E03528941
Antenna kit 2" R (BSPT) threaded PVDF	A5E03528943
Antenna kit 2" G (BSPP) threaded PVDF	A5E03528947
Kit of hardware parts for LR250 threaded PVDF antenna: consists of O-rings, screws, wavewasher, and loctite	A5E03528948
Ex-proof plugs	
Ex-proof plugs kit, 1/2" NPT, qty 5	A5E39979991
Ex-proof plugs kit, M20, qty 5	A5E39979992

Level Measurement

Continuous level measurement

Radar transmitters

SITRANS LR250 Flanged Encapsulated Antenna

Overview



SITRANS LR250 with flanged encapsulated antenna is a 2-wire, 25 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including corrosives or aggressive materials, to a range of 20 m (66 ft) (antenna dependent).

Benefits

- Fully encapsulated horn antenna design with FDA approved TFM 1600 PTFE lens for use in chemical and sanitary environments where aggressive and corrosive materials are used
- Cost effective replacement for transmitters made of exotic materials
- 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
- 25 GHz high frequency and 50 mm (2 inch) process connection/antenna allow for easy mounting
- Insensitive to mounting location and obstructions, and less sensitive to nozzle interference
- Short blanking distance for improved minimum measuring range to 50 mm (2 inch) from the end of the antenna
- Communication using HART, PROFIBUS PA, or FOUNDATION Fieldbus
- Process Intelligence signal processing for improved measurement reliability and Auto False-Echo Suppression of fixed obstructions
- Programming using infrared Intrinsically Safe handheld programmer or over a network using SIMATIC PDM, Emerson AMS, or Field Device Tools such as PACTware or Fieldcare via SITRANS DTM
- Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511
- Suitable for API 2350

Application

SITRANS LR250 includes a graphical local user interface (LUI) that improves setup and operation by including an intuitive Quick Start Wizard, and echo profile displays for diagnostic support. Startup is easy using Quick Start Wizard with a few parameters required for basic operation.

The 25 GHz frequency creates a narrow, focused beam allowing for smaller antenna options and decreasing sensitivity to obstructions.

SITRANS LR250's unique design allows safe and simple programming using the Intrinsically Safe handheld programmer without having to open the instrument's lid.

SITRANS LR250 measures superbly in small vessels and in tanks/vessels up to 20 m (66 ft) on materials with $dk > 1.6$.

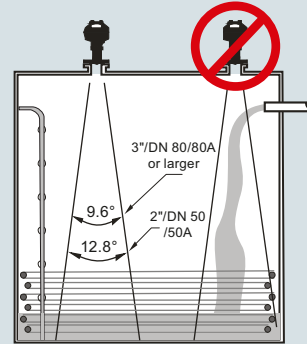
- Key Applications: liquid bulk storage tanks, process vessels with agitators, vaporous liquids, temperatures to 170 °C (338 °F), corrosive and aggressive materials and applications where ease of cleaning is required such as food or fine chemicals

Configuration

Installation

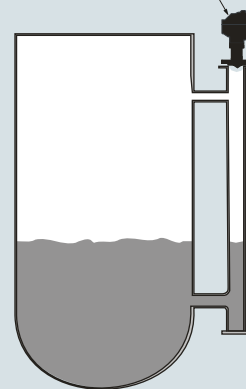
Note:

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



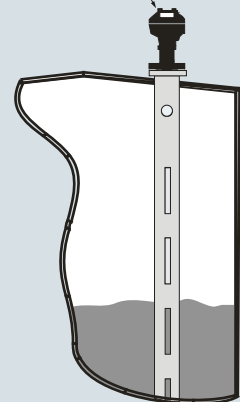
Mounting on bypass

Orient front or back of device toward vent.

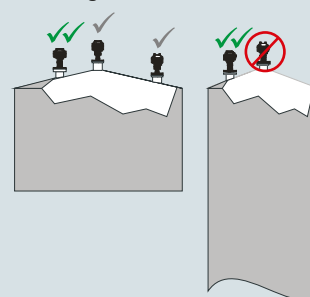


Mounting on stilling well

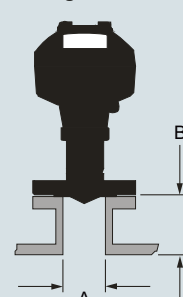
Orient front or back of device toward stillpipe slots.



Mounting on vessel



Mounting on a nozzle



A	B*
ø 50 (2)	500 (20) max.
ø 80 (3)	500 (20) max.
ø 100 (4)	500 (20) max.
ø 150 (6)	500 (20) max.

*Reference conditions

SITRANS LR250 Flanged Encapsulated Antenna installation, dimensions in mm (inch)

Level Measurement

Continuous level measurement

Radar transmitters

SITRANS LR250 Flanged Encapsulated Antenna

Technical specifications

Mode of operation		Process connections	
Measuring principle	Radar level measurement	Flanged connection	Raised Face
Frequency	K-band (25.0 GHz)		<ul style="list-style-type: none"> 2, 3, 4, 6" Class 150 ASME B16.5 50A, 80A, 100A, 150A 10K JIS B 2220 DN 50, DN 80, DN 100 & DN 150 PN 10/16 EN 1092-1 type B1
Minimum measuring range	50 mm (2 inch) from end of antenna		
Maximum measuring range	20 m (66 ft)		
Output		Power supply	
HART	Version 5.1	4 ... 20 mA/HART	Nominal 24 V DC (max. 30 V DC) with max. 550 Ω
<ul style="list-style-type: none"> Analog output Accuracy Fail-safe 	4 ... 20 mA ± 0.02 mA <ul style="list-style-type: none"> Programmable as high low or hold (loss of echo) NE 43 programmable 	PROFIBUS PA	<ul style="list-style-type: none"> 15 mA Per IEC 61158-2
PROFIBUS PA	Profile 3.01	FOUNDATION Fieldbus	<ul style="list-style-type: none"> 20.0 mA Per IEC 61158-2
<ul style="list-style-type: none"> Function blocks 	2 Analog Input (AI)		
FOUNDATION Fieldbus	H1		
<ul style="list-style-type: none"> Functionality Version Function blocks 	Basic or LAS ITK 5.2.0 2 Analog Input (AI)		
Performance (according to reference conditions IEC60770-1)		Certificates and approvals	
Maximum measured error	<ul style="list-style-type: none"> > 500 mm from sensor reference point: 3 mm (0.118 inch) < 500 mm from sensor reference point: 25 mm (1 inch) 	General	CSA _{US/C} , CE, FM, RCM
Influence of ambient temperature	< 0.003 %/K	Radio	FCC, Industry Canada, RED, RCM
Rated operating conditions		Hazardous	
Installation conditions		<ul style="list-style-type: none"> Explosion Proof (Brazil) 	INMETRO Ex d ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da
<ul style="list-style-type: none"> Location 	Indoor/outdoor	<ul style="list-style-type: none"> Increased Safety (Brazil) 	INMETRO Ex e ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da
Ambient conditions (enclosure)		<ul style="list-style-type: none"> Intrinsically Safe (Brazil) 	INMETRO Ex ia IIC T4 Ga, Ex ia ta IIIC T100 °C Da
<ul style="list-style-type: none"> Ambient temperature 	-40 ... +80 °C (-40 ... +176 °F)	<ul style="list-style-type: none"> Explosion Proof (Canada/USA) 	CSA/FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III T4
<ul style="list-style-type: none"> Installation category 	I	<ul style="list-style-type: none"> Intrinsically Safe (Canada/USA) 	CSA/FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III T4
<ul style="list-style-type: none"> Pollution degree 	4	<ul style="list-style-type: none"> Non-incendive (Canada/USA) 	CSA/FM Class I, Div. 2, Groups A, B, C, D T5
Medium conditions		<ul style="list-style-type: none"> Flame Proof/Increased Safety (China) 	NEPSI Ex d ia mb IIC T4 Ga/Gb, Ex e ia mb IIC T4 Ga/Gb, Ex iaD tD A20 IP67 T100 °C
Dielectric constant ϵ_r	≥ 1.6 (antenna dependent)	<ul style="list-style-type: none"> Intrinsically Safe (China) 	NEPSI Ex ia IIC T4 Ga, Ex iaD tD A20 IP67 T100 °C
Process temperature	-40 ... +170 °C (-40 ... +338 °F) at process connection	<ul style="list-style-type: none"> Non-sparking/Energy Limited (China) 	NEPSI Ex nA IIC T4 Gc
Process pressure	See Pressure/Temperature curves for more information (page 4/235)	<ul style="list-style-type: none"> Intrinsically Safe (Europe) 	ATEX II 1G Ex ia IIC T4 Ga
Design		<ul style="list-style-type: none"> Non-sparking/Energy Limited (Europe) 	ATEX II 1D Ex ia ta IIIC T100 °C Da
Enclosure		<ul style="list-style-type: none"> Flame Proof (International/Europe) 	ATEX II 3G Ex nA IIC T4 Gc
<ul style="list-style-type: none"> Material Cable inlet 	Aluminum, polyester powder-coated 2 x M20 x 1.5 or 2 x ½" NPT	<ul style="list-style-type: none"> Increased Safety (-International/Europe) 	IECEX/ATEX II 1/2 GD, 1D, 2D Ex d mb ia IIC T4 Ga/Gb, Ex ia ta IIC T100 °C Da
Degree of protection	Type 4X/NEMA 4X, Type 6/NEMA 6, IP67, IP68	<ul style="list-style-type: none"> Intrinsically Safe (International) 	IECEX/ATEX II 1/2 GD, 1D, 2D, Ex e mb ia IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da
Weight (dependent on process connection)	<ul style="list-style-type: none"> Approx. 7 kg (15.43 lb) for 2" Class 150 ASME B16.5 raised face flange (smallest size) Approx. 17.7 kg (39.02 lb) for 6" Class 150 ASME B16.5 raised face flange (largest size) 		IECEX/ATEX II 1 G Ex ia IIC T4 Ga, IECEX/ATEX II 1D Ex ia ta IIIC T100 °C Da
Display (local)	Graphic local user interface including quick start wizard and echo profile display	<ul style="list-style-type: none"> Explosion Proof (Russia/Kazakhstan) Increased Safety (Russia/Kazakhstan) Intrinsically Safe (Russia/Kazakhstan) Marine 	EAC Ex d
Antenna			EAC Ex e
<ul style="list-style-type: none"> Material 	Stainless Steel 316L (1.4435 or 1.4404) and TFM 1600 PTFE Lens (lens is the only wetted part)		EAC Ex ia
<ul style="list-style-type: none"> Dimensions (nominal sizes) 	48 mm (2 inch), 80 mm (3 inch), 100 mm (4 inch), 150 mm (6 inch)	<ul style="list-style-type: none"> Functional Safety 	<ul style="list-style-type: none"> Lloyd's Register of Shipping ABS Type Approval Bureau Veritas SIL-2 suitable in accordance with IEC 61508/61511

Level Measurement

Continuous level measurement
Radar transmitters

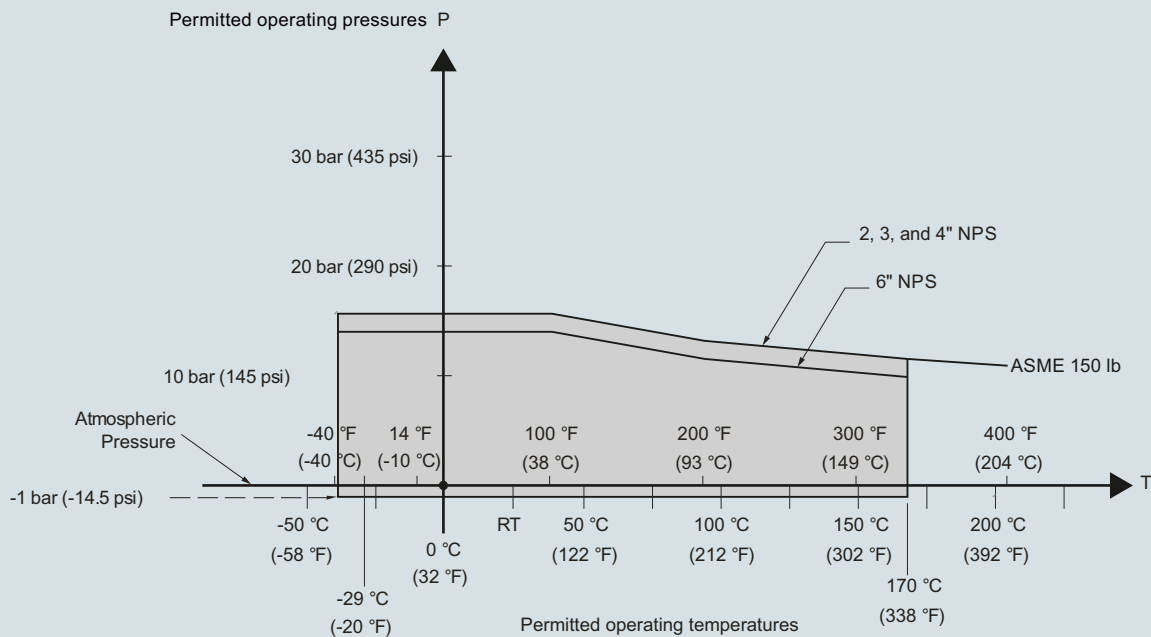
SITRANS LR250 Flanged Encapsulated Antenna

Selection and Ordering data		Order code	Selection and Ordering data	Article No.
Further designs			Compact Operating Instructions for FOUNDATION Fieldbus device	
Please add "-Z" to Article No. and specify Order code(s).			English, French, German, Spanish, Italian, Dutch, Danish, Finnish, Greek, Portuguese (Portugal), Swedish	A5E33472700
Plug M12 with mating Connector ¹⁾²⁾³⁾		A50		
Plug 7/8" with mating Connector ²⁾³⁾⁴⁾		A55	English, Bulgarian, Czech, Estonian, Hungarian, Latvian, Lithuanian, Polish, Romanian, Slovakian, Slovenian	A5E33472738
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	English, Portuguese (Brazil), Chinese	A5E34046626
Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000		C11	Note: The Operating Instructions should be ordered as a separate line item on the order.	
Material inspection Certificate Type 3.1 per EN 10204		C12	All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511 ⁵⁾⁶⁾		C20	Other Operating Instructions	
Namur NE43 compliant, device preset to failsafe < 3.6 mA ⁵⁾		N07	SITRANS LR250 Functional Safety manual, English	A5E32286471
Compact Operating Instructions for HART/ mA device		Article No	Note: The Operating Instructions should be ordered as a separate line item on the order.	
English, French, German, Spanish, Italian, Dutch, Danish, Finnish, Greek, Portuguese (Portugal), Swedish		A5E33469191	All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
English, Bulgarian, Czech, Estonian, Hungarian, Latvian, Lithuanian, Polish, Romanian, Slovakian, Slovenian		A5E33469171	Accessories	
English, Portuguese (Brazil), Chinese		A5E34046583	Handheld programmer, Intrinsically safe, EEx ia HART modem/USB (for use with a PC and SIMATIC PDM)	7ML1930-1BK 7MF4997-1DB
Note: The Operating Instructions should be ordered as a separate line item on the order.			One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), HART (2 are required) ⁶⁾	7ML1930-1AP
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation			One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), PROFIBUS PA and FOUNDATION Fieldbus (2 are required) ²⁾	7ML1930-1AQ
Compact Operating Instructions for PROFIBUS PA device			SITRANS RD100, loop powered display - see Chapter 7	7ML5741-...
English, French, German, Spanish, Italian, Dutch, Danish, Finnish, Greek, Portuguese (Portugal), Swedish		A5E33469239	SITRANS RD200, universal input display with Modbus conversion - see Chapter 7	7ML5740-...
English, Bulgarian, Czech, Estonian, Hungarian, Latvian, Lithuanian, Polish, Romanian, Slovakian, Slovenian		A5E33472685	SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7	7ML5744-...
English, Portuguese (Brazil), Chinese		A5E34046624	SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7	7ML5750-...
Note: The Operating Instructions should be ordered as a separate line item on the order.			For applicable back up point level switch - see point level measurement section	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation				

- ¹⁾ Available with enclosure option 1 only
- ²⁾ Available with communication options 1 and 3 only
- ³⁾ Available with approval options A, B, C, and L only
- ⁴⁾ Available with enclosure option 0 only
- ⁵⁾ Applicable with communication option 2 only
- ⁶⁾ Available with approval options A, B, C, D, E, K, and L only

Characteristic curves

Pressure/ temperature curve
LR250 Flanged Encapsulated Antenna
ASME flanged process connections
(7ML5432)



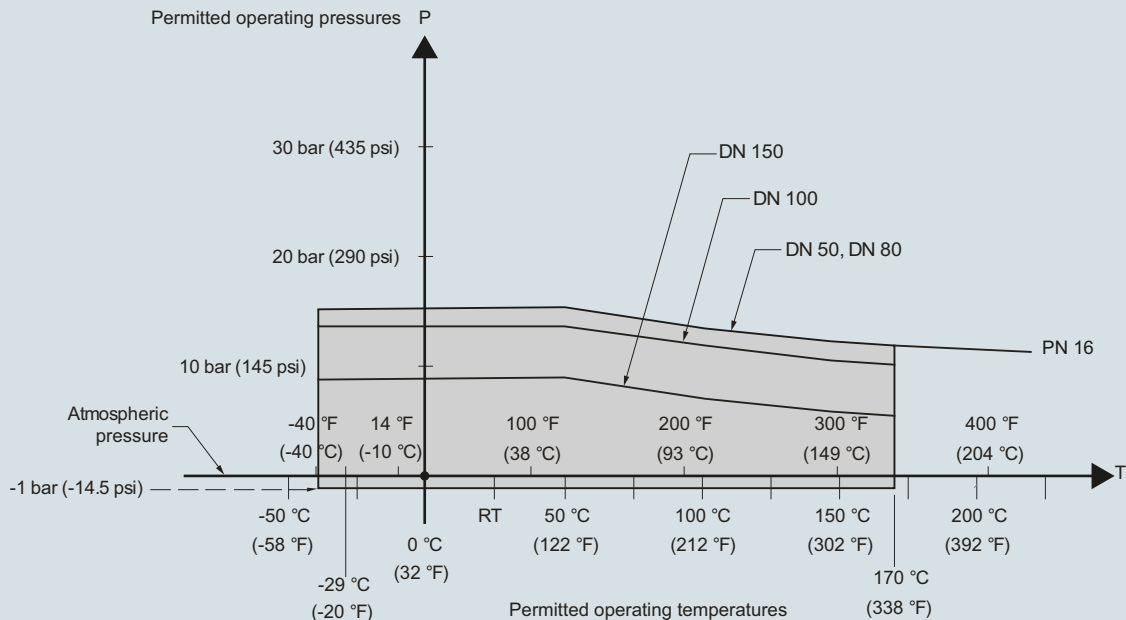
SITRANS LR250 Flanged Encapsulated Antenna pressure/temperature curve

Level Measurement

Continuous level measurement
Radar transmitters

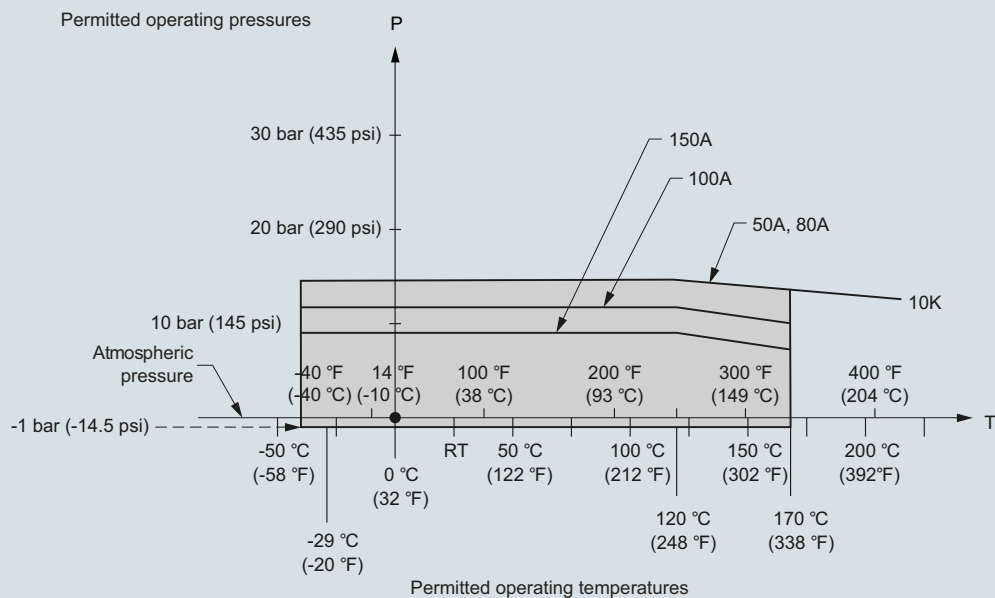
SITRANS LR250 Flanged Encapsulated Antenna

Pressure/ temperature curve
LR250 Flanged Encapsulated Antenna
EN 1092-1 flanged process connections
(7ML5432)



SITRANS LR250 Flanged Encapsulated Antenna pressure/temperature curve

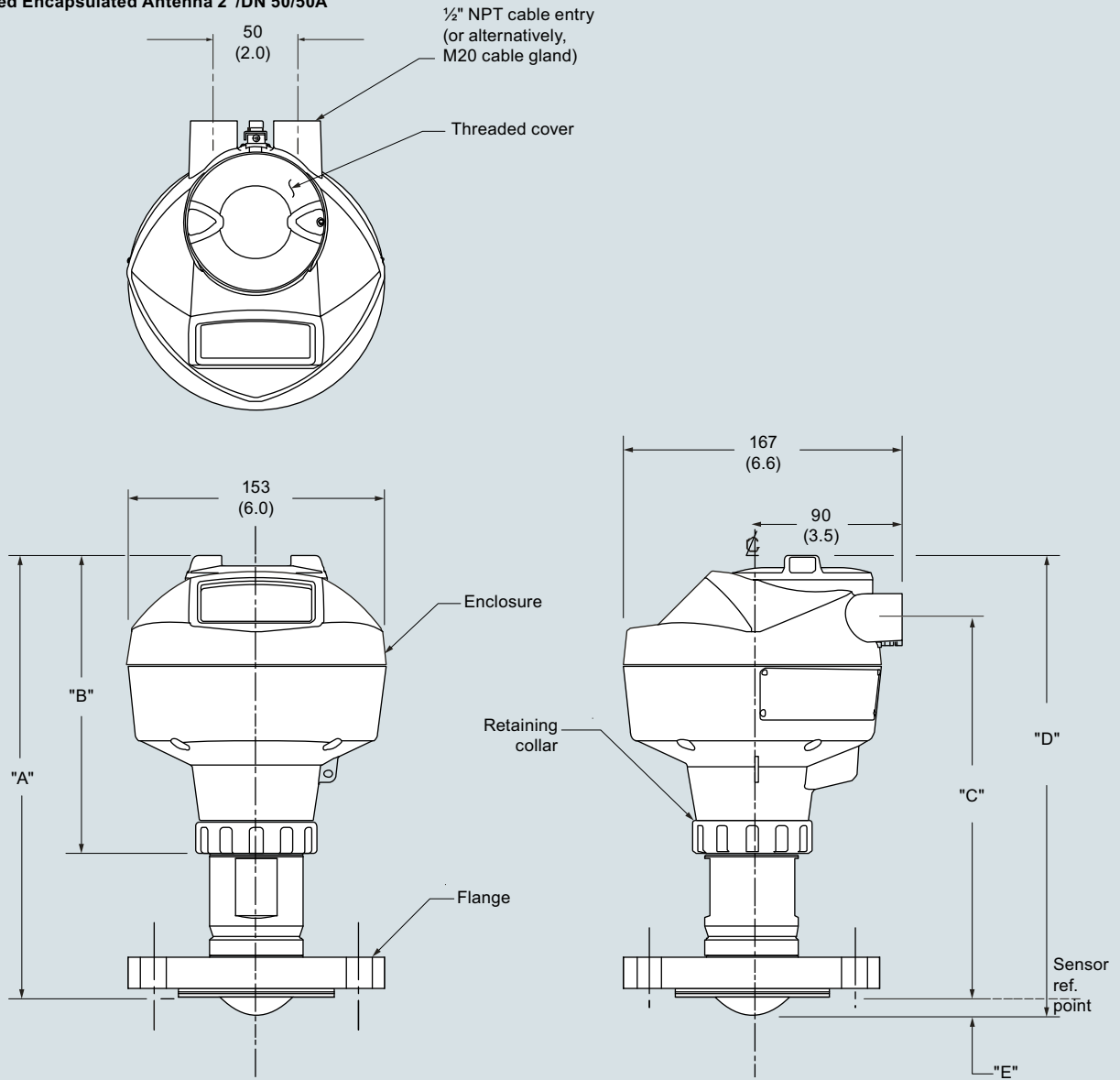
Pressure/ temperature curve
LR250 Flanged Encapsulated Antenna
JIS B 2220 flanged process connections
(7ML5432)



SITRANS LR250 Flanged Encapsulated Antenna pressure/temperature curve

Dimensional drawings

Flanged Encapsulated Antenna 2"/DN 50/50A



Flange Size	Flange Class	Flange O.D.	Antenna aperture size	Height to Sensor reference point dimension E ¹⁾	Beam angle	Measurement Range	Dimension A	Dimension B	Dimension C	Dimension D
2"	150 lb	152 (5.98)	50 (1.97)	11 (0.43)	12.8°	10 m (32.8 ft)	263 (10.35)	178 (7)	223 (8.78)	274 (10.79)
DN 50	PN 10/16	165 (6.50)								
50A	10K	155 (6.10)								

¹⁾ Height from tip of lens to sensor reference point as shown.

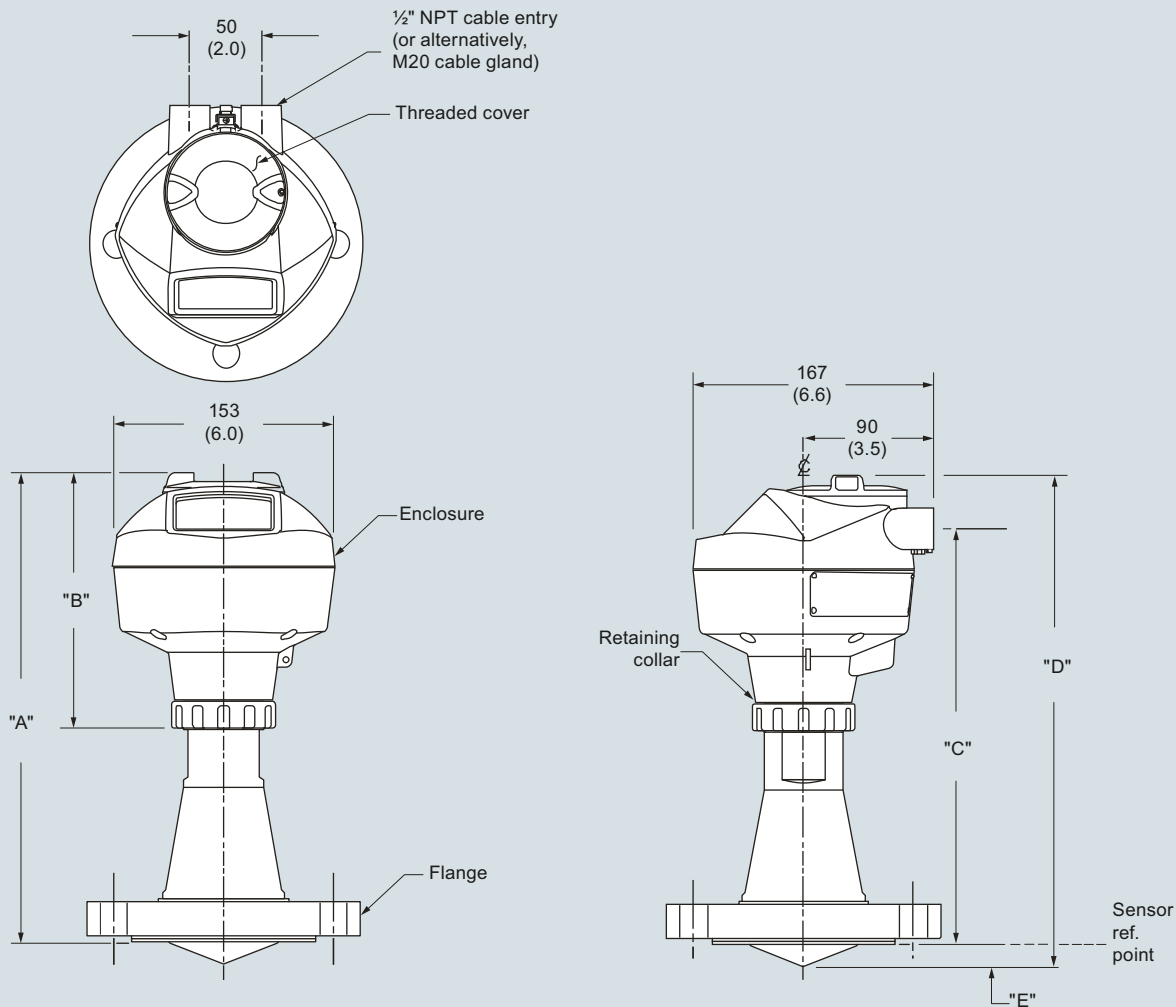
SITRANS LR250 Flanged Encapsulated Antenna, dimensions in mm (inch)

Level Measurement

Continuous level measurement
Radar transmitters

SITRANS LR250 Flanged Encapsulated Antenna

Flanged Encapsulated Antenna 3"/DN 50/80A or greater

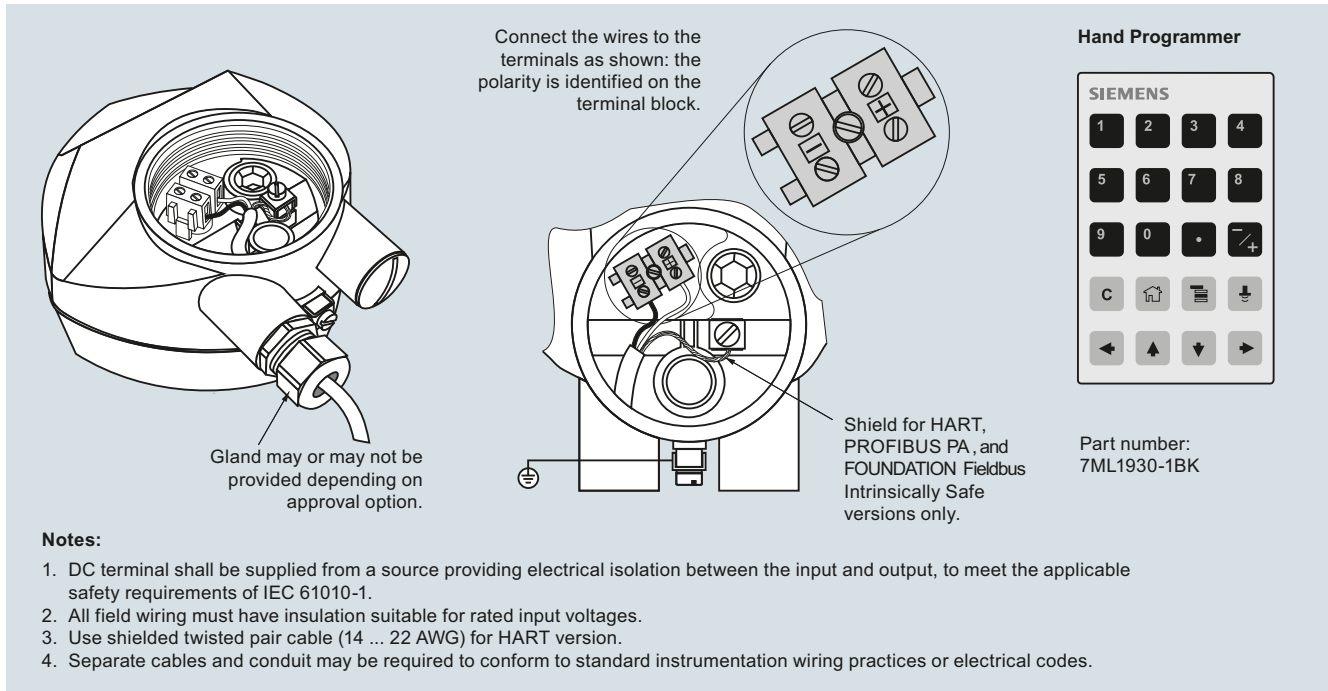


Flange Size	Flange Class	Flange O.D.	Antenna aperture size	Height to Sensor reference point dimension E ¹⁾	Beam angle	Measurement Range	Dimension A	Dimension B	Dimension C	Dimension D
3"	150 lb	190 (7.48)	75 (2.95)	15 (0.59)	9.6°	20 m (65.6 ft)	328 (12.91)	178 (7)	288 (11.34)	343 (13.54)
DN 80	PN 10/16	200 (7.87)								
80A	10K	185 (7.28)								
4"	150 lb	230 (9.06)	75 (2.95)	13 (0.51)	9.6°	20 m (65.6 ft)	328 (12.91)	178 (7)	288 (11.34)	343 (13.50)
DN 100	PN 10/16	220 (8.66)								
100A	10K	210 (8.27)								
6"	150 lb	280 (11.02)	75 (2.95)	15 (0.59)	9.6°	20 m (65.6 ft)	333 (13.11)	178 (7)	293 (11.54)	348 (13.70)
DN 150	PN 10/16	285 (11.25)								
150A	10K	280 (11.02)								

¹⁾ Height from tip of lens to sensor reference point as shown.

SITRANS LR250 Flanged Encapsulated Antenna, dimensions in mm (inch)

Circuit diagrams



SITRANS LR250 connections

Level Measurement

Continuous level measurement
Radar transmitters

SITRANS LR250 Flanged Encapsulated Specials

Selection and ordering data

SITRANS LR250 Flanged Encapsulated Specials

	Article No.
NOTE: LR260 head can be supplied with any LR250 process connection or antenna as special order. For LR250, this means a stronger signal and longer measurement range is possible.	
SITRANS LR250 flanged encapsulated antenna version enclosures (PROFIBUS PA models)	
SITRANS LR250 flanged encapsulated antenna version (7ML5432) enclosure with board stack, M20 cable inlet, approval option A, with PROFIBUS PA communication, no process connection	A5E32462853
SITRANS LR250 flanged encapsulated antenna version (7ML5432) enclosure with board stack, NPT cable inlet, approval option A, with PROFIBUS PA communication, no process connection	A5E32462854
SITRANS LR250 flanged encapsulated antenna version (7ML5432) enclosure with board stack, NPT cable inlet, approval option B, with PROFIBUS PA communication, no process connection	A5E32462855
SITRANS LR250 flanged encapsulated antenna version (7ML5432) enclosure with board stack, M20 cable inlet, approval option C, with PROFIBUS PA communication, no process connection	A5E32462856
SITRANS LR250 flanged encapsulated antenna version (7ML5432) enclosure with board stack, NPT cable inlet, approval option D, with PROFIBUS PA communication, no process connection	A5E32462857
SITRANS LR250 flanged encapsulated antenna version (7ML5432) enclosure with board stack, M20 cable inlet, approval option E, with PROFIBUS PA communication, no process connection	A5E32462858
SITRANS LR250 flanged encapsulated antenna version enclosures (FOUNDATION Fieldbus models)	
SITRANS LR250 flanged encapsulated antenna version (7ML5432) enclosure with board stack, M20 cable inlet, approval option A, with FOUNDATION Fieldbus communication, no process connection	A5E32462859
SITRANS LR250 flanged encapsulated antenna version (7ML5432) enclosure with board stack, NPT cable inlet, approval option A, with FOUNDATION Fieldbus communication, no process connection	A5E32462860
SITRANS LR250 flanged encapsulated antenna version (7ML5432) enclosure with board stack, NPT cable inlet, approval option B, with FOUNDATION Fieldbus communication, no process connection	A5E32462861
SITRANS LR250 flanged encapsulated antenna version (7ML5432) enclosure with board stack, M20 cable inlet, approval option C, with FOUNDATION Fieldbus communication, no process connection	A5E32462862
SITRANS LR250 flanged encapsulated antenna version (7ML5432) enclosure with board stack, NPT cable inlet, approval option D, with FOUNDATION Fieldbus communication, no process connection	A5E32462863
SITRANS LR250 flanged encapsulated antenna version (7ML5432) enclosure with board stack, M20 cable inlet, approval option E, with FOUNDATION Fieldbus communication, no process connection	A5E32462864

SITRANS LR250 Flanged Encapsulated Specials

	Article No.
SITRANS LR250 flanged encapsulated antenna version enclosures (< 3.6 mA start-up HART models)	
SITRANS LR250 flanged encapsulated antenna version (7ML5432) enclosure with board stack, M20 cable inlet, approval option A, with HART communication start-up at < 3.6 mA, no process connection	A5E32462865
SITRANS LR250 flanged encapsulated antenna version (7ML5432) enclosure with board stack, NPT cable inlet, approval option A, with HART communication start-up at < 3.6 mA, no process connection	A5E32462866
SITRANS LR250 flanged encapsulated antenna version (7ML5432) enclosure with board stack, NPT cable inlet, approval option B, with HART communication start-up at < 3.6 mA, no process connection	A5E32462867
SITRANS LR250 flanged encapsulated antenna version (7ML5432) enclosure with board stack, M20 cable inlet, approval option C, with HART communication start-up at < 3.6 mA, no process connection	A5E32462868
SITRANS LR250 flanged encapsulated antenna version (7ML5432) enclosure with board stack, NPT cable inlet, approval option D, with HART communication start-up at < 3.6 mA, no process connection	A5E32462869
SITRANS LR250 flanged encapsulated antenna version (7ML5432) enclosure with board stack, M20 cable inlet, approval option E, with HART communication start-up at < 3.6 mA, no process connection	A5E32462830
SITRANS LR250 flanged encapsulated antenna version (7ML5432) enclosure with board stack, M20 cable inlet, approval option F, with HART communication start-up at < 3.6 mA, no process connection	A5E32462831
SITRANS LR250 flanged encapsulated antenna version (7ML5432) enclosure with board stack, M20 cable inlet, approval option G, with HART communication start-up at < 3.6 mA, no process connection	A5E32462832
SITRANS LR250 flanged encapsulated antenna version (7ML5432) enclosure with board stack, NPT cable inlet, approval option H, with HART communication start-up at < 3.6 mA, no process connection	A5E32462833

SITRANS LR250 Flanged Encapsulated Specials

	Article No.
SITRANS LR250 flanged encapsulated antenna lens kits	
Replacement TFM 1600 Lens and Spring Washer Kit for 2" Class 150 ASME B16.5 raised face	A5E32462817
Replacement TFM 1600 Lens and Spring Washer Kit for 3" Class 150 ASME B16.5 raised face	A5E32462819
Replacement TFM 1600 Lens and Spring Washer Kit for 4" Class 150 ASME B16.5 raised face	A5E32462820
Replacement TFM 1600 Lens and Spring Washer Kit for 6" Class 150 ASME B16.5 raised face	A5E32462821
Replacement TFM 1600 Lens and Spring Washer Kit for 50A 10K JIS B 2220 raised face	A5E32462822
Replacement TFM 1600 Lens and Spring Washer Kit for 80A 10K JIS B 2220 raised face	A5E32462823
Replacement TFM 1600 Lens and Spring Washer Kit for 100A 10K JIS B 2220 raised face	A5E32462824
Replacement TFM 1600 Lens and Spring Washer Kit for 150A 10K JIS B 2220 raised face	A5E32462825
Replacement TFM 1600 Lens and Spring Washer Kit for DN 50 PN 10/16 EN 1092-1 type B1 raised face	A5E32462826
Replacement TFM 1600 Lens and Spring Washer Kit for DN 80 PN 10/16 EN 1092-1 type B1 raised face	A5E32462827
Replacement TFM 1600 Lens and Spring Washer Kit for DN 100 PN 10/16 EN 1092-1 type B1 raised face	A5E32462828
Replacement TFM 1600 Lens and Spring Washer Kit for DN 150 PN 10/16 EN 1092-1 type B1 raised face	A5E32462829
Ex-proof plugs	
Ex-proof plugs kit, 1/2" NPT, qty 5	A5E39979991
Ex-proof plugs kit, M20, qty 5	A5E39979992

Level Measurement

Continuous level measurement
Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Overview



The SITRANS LR250 Hygienic Encapsulated Antenna is a 2-wire 25 GHz pulse radar level transmitter with sanitary and hygienic approvals for continuous monitoring of liquids, slurries, and pastes within the food, beverage, chemical, and pharmaceutical industries to a range of 20 m (66 ft) (antenna dependent).

Picture shown with accessories sold separately.

Benefits

- Fully encapsulated horn antenna design with FDA approved and USP Class VI compliant, TFM 1600 PTFE lens
- < 0.8 μ Ra surface finish for maximum cleanability and hygiene requirements commonly required in sanitary environments
- Chemically resistant TFM 1600 PTFE lens is also suitable for aggressive or corrosive materials
- Approved device in accordance with 3-A, EHEDG EL Class I and/or EHEDG EL Aseptic Class I
- Cost effective replacement for transmitters made of exotic materials
- Graphical local user interface (LUI) makes operation simple with plug-and-play set-up using the intuitive Quick Start Wizard
- Industry standard process connections including ISO 2852, DIN 11851, DIN 11864-1, DIN 11864-2, DIN 11864-3, and Tuchenhausen Varivent Type F and N
- LUI displays echo profiles for diagnostic support
- 25 GHz high frequency and 2 inch (50 mm) process connection/antenna allow for easy mounting
- Insensitive to mounting location and obstructions, and less sensitive to nozzle interference
- Communication using HART, PROFIBUS PA, or FOUNDATION Fieldbus
- Process Intelligence signal processing for improved measurement reliability and Auto False-Echo Suppression of fixed obstructions
- Programming using infrared Intrinsically Safe handheld programmer or over a network using SIMATIC PDM, Emerson AMS, or Field Device Tools, such as PACTware or Fieldcare via SITRANS DTM.
- Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511

Application

SITRANS LR250 includes a graphical local user interface (LUI) that improves set-up and operation by including an intuitive Quick Start Wizard, and echo profile displays for diagnostic support. Startup is easy using the Quick Start wizard with few parameters required for basic operation.

The 25 GHz frequency creates a narrow, focused beam allowing for smaller antenna options and decreasing sensitivity to obstructions.

SITRANS LR250's unique design allows safe and simple programming using the Intrinsically Safe handheld programmer without having to open the instrument's lid.

SITRANS LR250 measures superbly in small vessels and in tanks/vessels up to 20 m (66 ft) on materials with $dk > 1.6$.

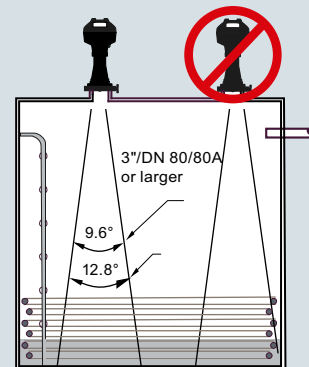
- Key Applications: applications within the food, beverage, chemical and pharmaceutical industries where sanitary, aseptic, or hygienic approvals are required or easy install/clean flush antennas are preferable, such as ice cream, fruit juice, milk, beer, and pharmaceutical or chemical additives and ingredients.

Configuration

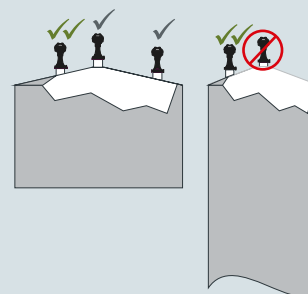
Installation

Note:

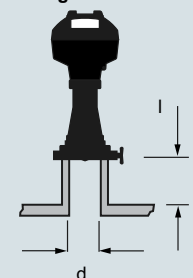
- Beam angle is the width of the cone where the energy density is half of the peak energy density.
- The peak energy density is directly in front of and in line with the antenna.
- There is a signal transmitted outside of the beam angle; therefore false targets may be detected.



Mounting on vessel



Mounting on a nozzle



Nozzles should be maximum l/d ratio 1:1 (Eg. 50 mm length, 50 mm diameter)

LR250 Hygienic Encapsulated Antenna, dimensions in mm (inch)

SITRANS LR250 Hygienic Encapsulated Antenna

Technical specifications

Mode of Operation		Process connections	
Measuring principle	Radar level measurement	Hygienic/Sanitary connections	<ul style="list-style-type: none"> 2", 3" & 4" Sanitary Clamp according to ISO 2852 DN 50, DN 80 & DN 100 Aseptic/Hygienic threaded to DIN 11864-1 [Form A] DN 50, DN 80 & DN 100 Aseptic/Hygienic flanged to DIN 11864-2 [Form A] DN 50, DN 80 & DN 100 Aseptic/Hygienic Clamp according to DIN 11864-3 [Form A] DN 50, DN 80 & DN 100 Hygienic Union according to DIN 11851 Type F (50 mm) & Type N (68 mm) Tuchenhausen Varivent
Frequency	K-band (25.0 GHz)		
Minimum measuring range	50 mm (2 inch) from end of antenna		
Maximum measuring range	20 m (66 ft)		
Output		Power supply	
HART	Version 5.1	4 ... 20 mA/HART	Nominal 24 V DC (max. 30 V DC) with max. 550 Ω
• Analog output	4 ... 20 mA	PROFIBUS PA	<ul style="list-style-type: none"> 15 mA Per IEC 61158-2
• Accuracy	± 0.02 mA	FOUNDATION Fieldbus	<ul style="list-style-type: none"> 20.0 mA Per IEC 61158-2
• Fail-safe	<ul style="list-style-type: none"> Programmable as high low or hold (loss of echo) NE 43 programmable 		
PROFIBUS PA	Profile 3.01		
• Function blocks	2 Analog Input (AI)		
FOUNDATION Fieldbus	H1		
• Functionality	Basic or LAS		
• Version	ITK 5.2.0		
• Function blocks	2 Analog Input (AI)		
Performance (according to reference conditions IEC60770-1)		Certificates and approvals	
Maximum measured error	<ul style="list-style-type: none"> > 500 mm from sensor reference point: 3 mm (0.118 inch) < 500 mm from sensor reference point: 25 mm (1 inch) 	General	CSA _{US/C} , CE, FM, RCM
Influence of ambient temperature	< 0.003 %/K	Radio	FCC, Industry Canada, RED, RCM
Rated operating conditions		Hazardous	
Installation conditions		• Explosion Proof (Brazil)	INMETRO Ex d ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da
• Location	Indoor/outdoor	• Increased Safety (Brazil)	INMETRO Ex e ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da
Ambient conditions (enclosure)		• Intrinsically Safe (Brazil)	INMETRO Ex ia IIC T4 Ga, Ex ia ta IIIC T100 °C Da
• Ambient temperature	-40 ... +80 °C (-40 ... +176 °F)	• Explosion Proof (Canada/USA)	CSA/FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III T4
• Installation category	I	• Intrinsically Safe (Canada/USA)	CSA/FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III T4
• Pollution degree	4	• Non-incendive (Canada/USA)	CSA/FM Class I, Div. 2, Groups A, B, C, D T5
Medium conditions		• Flame Proof/Increased Safety (China)	NEPSI Ex d ia mb IIC T4 Ga/Gb, Ex e ia mb IIC T4 Ga/Gb, Ex iaD tD A20 IP67 T100 °C
Dielectric constant ϵ_r	≥ 1.6 (antenna dependent)	• Intrinsically Safe (China)	NEPSI Ex ia IIC T4 Ga, Ex iaD tD A20 IP67 T100 °C
Process temperature	-40 ... +170 °C (-40 ... +338 °F) at process connection	• Non-sparking (China)	NEPSI Ex nA IIC T4 Gc
Process pressure	See Pressure/Temperature curves for more information	• Intrinsically Safe (Europe)	ATEX II 1G Ex ia IIC T4 Ga ATEX II 1D Ex ia ta IIIC T100 °C Da
Design		• Non-sparking (Europe)	ATEX II 3G Ex nA IIC T4 Gc
Enclosure		• Flame Proof (International/Europe)	IECEX/ATEX II 1/2 GD, 1D, 2D Ex d mb ia IIC T4 Ga/Gb, Ex ia ta IIC T100 °C Da
• Material	Aluminum, polyester powder coated		IECEX/ATEX II 1 G Ex ia IIC T4 Ga, IECEX/ATEX II 1D Ex ia ta IIIC T100 °C Da
• Cable inlet	2 x M20 x 1.5 or 2 x ½" NPT		EAC Ex d
Degree of protection	Type 4X/NEMA 4X, Type 6/NEMA 6, IP67, IP68		EAC Ex e
Weight (dependent on process connection)	<ul style="list-style-type: none"> Approx. 4.7 kg (10.4 lb) for 2" ISO 2852 (smallest size) Approx. 7.9 kg (17.4 lb) for DN 100 DIN 11864-2 (largest size) 		EAC Ex ia
Display (local)	Graphic local user interface including quick start wizard and echo profile display		
Antenna			
• Material	Stainless steel 316L (1.4435 or 1.4404) and TFM 1600 PTFE Lens (lens is the only wetted part)		
• Lens surface finish (R_a)	0.8 μm		
		Hygienic/Sanitary	EHEDG EL Class I EHEDG EL Aseptic Class I

Level Measurement
Continuous level measurement
Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Programming	
Intrinsically Safe Siemens handheld programmer	Infrared receiver
• Approvals for handheld programmer	IS model: ATEX II 1 GD Ex ia IIC T4 Ga Ex ia D 20 T135 °C Ta = -20 ... +50 °C CSA/FM Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G, T6 Ta = 50 °C IECEX SIR 09.0073
Handheld communicator	HART communicator 375/475
PC	• SIMATIC PDM • Emerson AMS • SITRANS DTM (for connection into FDT, such as PACTware or Field-care)
Display (local)	Graphic local user interface including quick start wizard and echo profile displays

Level Measurement

Continuous level measurement

Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
SITRANS LR250 hygienic encapsulated antenna 2-wire, 25 Ghz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, up to a range of 20 m (66 ft) (Antenna dependant). Ideal for Hygienic applications including small vessels and low dielectric media. Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5433- 	SITRANS LR250 hygienic encapsulated antenna 2-wire, 25 Ghz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, up to a range of 20 m (66 ft) (Antenna dependant). Ideal for Hygienic applications including small vessels and low dielectric media. <u>316L st/st [1.4435 or 1.4404]</u> Type F (50 mm) Tuchenhausen Varivent (EHEDG only) ⁵⁾ Type N (68 mm) Tuchenhausen Varivent (EHEDG only) ⁵⁾ Type F (50 mm) Tuchenhausen Varivent [3-A only & EPDM process seal -40 ... 120 °C (-40 ... 248 °F)] ⁵⁾ Type N (68 mm) Tuchenhausen Varivent [3-A only & EPDM process seal -40 ... 120 °C (-40 ... 248 °F)] ⁵⁾ Type F (50 mm) Tuchenhausen Varivent [3-A only & FKM process seal -20 ... 170 °C (-4 ... 338 °F)] ⁵⁾ Type N (68 mm) Tuchenhausen Varivent [3-A only & FKM process seal -20 ... 170 °C (-4 ... 338 °F)] ⁵⁾ Communication PROFIBUS PA 4 ... 20 mA HART, start-up at < 3.6 mA FOUNDATION Fieldbus Enclosure (with Cable Inlets) Aluminum, Epoxy paint, 2 X ½" NPT Aluminum, Epoxy paint, 2 X M20 x 1.5 Approvals General Purpose: CE, CSA, FM, FCC, RED, RCM Intrinsically Safe: CSA/FM Class I, Div. 1, Groups A, B, C, D, Class II, Div. 1, Groups E, F, G, Class III T4 FCC, Industry Canada Intrinsically Safe: IECEx/ATEX II 1 GD Ex ia IIC T4 Ga, Ex ia ta IIIC T100 °C Da, INMETRO Ex ia IIC T4 Ga, Ex ia ta IIIC T100 °C Da, CE, RED, RCM Non-incendive: CSA/FM Class I, Div. 2, Groups A, B, C, D T5, FCC, Industry Canada Non Sparking: ATEX II 3G Ex nA IIC T4 Gc, CE, RED, RCM Increased Safety: IECEx/ATEX II 1/2 GD, 1D, 2D Ex e mb ia IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da, INMETRO Ex e ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da, CE, RED, RCM ⁶⁾ Flameproof: IECEx/ATEX II 1/2 GD 1D, 2D Ex d mb ia IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da, INMETRO Ex d ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da, CE, RED, RCM ⁶⁾ Explosion proof: CSA/FM Class I, II and III, Div. 1, Groups A, B, C, D, E, F, G, FCC, Industry Canada ⁶⁾ Non Sparking: NEPSI Ex nA IIC T4 Gc Intrinsically Safe: NEPSI Ex ia IIC T4 Ga, Ex ia d TD A20 IP67 T100 °C Flameproof: NEPSI Ex d ia mb IIC T4 Ga/Gb, Ex ia d TD A20 IP67 T100 °C ⁶⁾ Increased Safety: NEPSI Ex e ia mb IIC T4 Ga/Gb, Ex ia d TD A20 IP67 T100 °C ⁶⁾ Pressure Rating Rating per pressure/temperature curves in instruction manual	7ML5433-
Hygienic/Sanitary Approvals EHEDG EL Class I ¹⁾ EHEDG EL Aseptic Class I ¹⁾ 3-A (Tuchenhausen connections only - FC ... FF) ²⁾³⁾ EHEDG EL Class I & 3-A (excludes Tuchenhausen connections) ²⁾⁴⁾	1 2 3 4	FA FB FC FD FE FF	0 1 A B C D E F G H K L M N 0
Process Connection Types (all types have TFM1600 PTFE lens) <u>316L st/st [1.4435 or 1.4404]</u> 2" Sanitary Clamp according to ISO 2852 ⁵⁾ 3" Sanitary Clamp according to ISO 2852 4" Sanitary Clamp according to ISO 2852 <u>316L st/st (1.4435 or 1.4404) & 304L st/st (1.4301)</u> DN 50 Aseptic/Hygienic nozzle/ slotted nut (instrument side) to DIN 11864-1 [Form A] ⁵⁾ DN 80 Aseptic/Hygienic nozzle/ slotted nut (instrument side) to DIN 11864-1 [Form A] DN 100 Aseptic/Hygienic nozzle/ slotted nut (instrument side) to DIN 11864-1 [Form A] <u>316L st/st [1.4435 or 1.4404]</u> DN 50 Aseptic/Hygienic flanged to DIN 11864-2 [Form A] ⁵⁾ DN 80 Aseptic/Hygienic flanged to DIN 11864-2 [Form A] DN 100 Aseptic/Hygienic flanged to DIN 11864-2 [Form A] <u>316L st/st [1.4435 or 1.4404]</u> DN 50 Aseptic/Hygienic Clamp according to DIN 11864-3 [Form A] ⁵⁾ DN 80 Aseptic/Hygienic Clamp according to DIN 11864-3 [Form A] DN 100 Aseptic/Hygienic Clamp according to DIN 11864-3 [Form A] <u>316L st/st (1.4435 or 1.4404) & 304L st/st (1.4301)</u> DN 50 Hygienic nozzle/ slotted nut (instrument side) to DIN 11851 ⁵⁾ DN 80 Hygienic nozzle/ slotted nut (instrument side) to DIN 11851 DN 100 Hygienic nozzle/ slotted nut (instrument side) to DIN 11851	AA AB AC BA BB BC CA CB CC DA DB DC EA EB EC		

Continuous level measurement
Radar transmitters

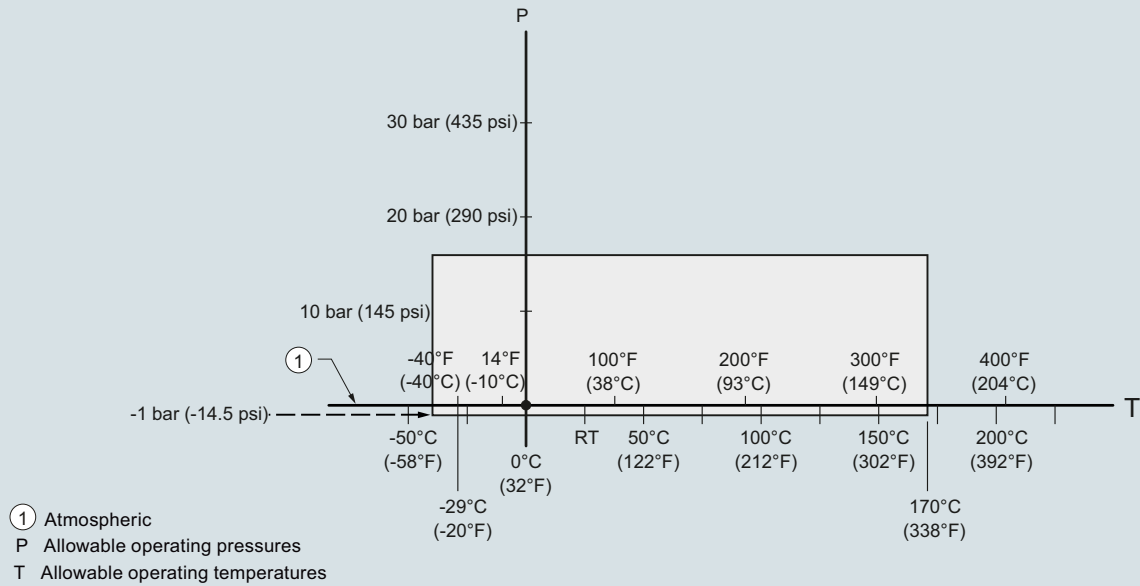
Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Article No. and specify Order code(s).	
<u>Electrical Connection cable entry:</u>	
Plug M12 (IP 67 rating) with mating connector ²⁾⁷⁾⁸⁾	A50
Plug 7/8" (IP 67 rating) with mating Connector ²⁾⁸⁾⁹⁾	A55
<u>Test Certificates</u>	
Manufacturer's Test Certificate M to DIN 55350, Part 18 and to ISO 9000	C11
Material inspection Certificate 3.1 of EN 10204	C12
<u>Functional Safety</u>	
Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511 ⁶⁾¹⁰⁾	C20
<u>Namur</u>	
Namur NE43 compliant, device preset to failsafe < 3.6 mA ⁶⁾	N07
<u>Tagging</u>	
Stainless steel tag [69 mm x 50 mm (2.71 x 1.97 inch)]	
Measuring-point number / identification (max. 27 characters) specify in plain text	Y15
Compact Operating Instructions for HART/ mA device	Article No.
English, French, German, Spanish, Italian, Dutch, Danish, Finnish, Greek, Portuguese (Portugal), Swedish	A5E33469191
English, Bulgarian, Czech, Estonian, Hungarian, Latvian, Lithuanian, Polish, Romanian, Slovakian, Slovenian	A5E33469171
English, Portuguese (Brazil), Chinese	A5E34046583
Note: The Operating Instructions should be ordered as a separate line item on the order. All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Compact Operating Instructions for PROFIBUS PA device	
English, French, German, Spanish, Italian, Dutch, Danish, Finnish, Greek, Portuguese (Portugal), Swedish	A5E33469239
English, Bulgarian, Czech, Estonian, Hungarian, Latvian, Lithuanian, Polish, Romanian, Slovakian, Slovenian	A5E33472685
English, Portuguese (Brazil), Chinese	A5E34046624
Note: The Operating Instructions should be ordered as a separate line item on the order. All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	

Selection and Ordering data	Article No.
Compact Operating Instructions for FOUNDATION Fieldbus device	
English, French, German, Spanish, Italian, Dutch, Danish, Finnish, Greek, Portuguese (Portugal), Swedish	A5E33472700
English, Bulgarian, Czech, Estonian, Hungarian, Latvian, Lithuanian, Polish, Romanian, Slovakian, Slovenian	A5E33472738
English, Portuguese (Brazil), Chinese	A5E34046626
<p>Note: The Operating Instructions should be ordered as a separate line item on the order.</p> <p>All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation</p>	
Other Operating Instructions	
<p>SITRANS LR250 Functional Safety manual, English</p> <p>Note: The Operating Instructions should be ordered as a separate line item on the order.</p> <p>All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation</p>	A5E32286471
Accessories	
Handheld programmer, Intrinsically safe, EEx ia (LUI enabled)	7ML1930-1BK
HART modem/USB (for use with a PC and SIMATIC PDM)	7MF4997-1DB
One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), HART (two are required) ⁵⁾	7ML1930-1AP
One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), PROFIBUS PA and FOUNDATION Fieldbus (two are required) ⁸⁾	7ML1930-1AQ
SITRANS RD100, loop powered display - see Chapter 7	7ML5741-...
SITRANS RD200, universal input display with Modbus conversion - see Chapter 7	7ML5740-...
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7	7ML5744-...
SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7	7ML5750-...
For applicable back up point level switch - see point level measurement section	
<p>¹⁾ Available with Process connection options AA ... FB only</p> <p>²⁾ Available with Approval options A, B, C, L only</p> <p>³⁾ Available with Process connections FC ... FF only</p> <p>⁴⁾ Available with Process connection options AA ... EC only</p> <p>⁵⁾ Max. range 10 m (32.8 ft), dk > 3 [20 m (66 ft) and dk > 1.6 if installed in a stillpipe]</p> <p>⁶⁾ Applicable with Communication option 2 only</p> <p>⁷⁾ Available with Enclosure option 1 only</p> <p>⁸⁾ Available with Communication options 1 and 3 only</p> <p>⁹⁾ Available with Enclosure option 0 only</p> <p>¹⁰⁾ Available with Approval options A, B, C, D, E, K, L only</p>	

SITRANS LR250 Hygienic Encapsulated Antenna

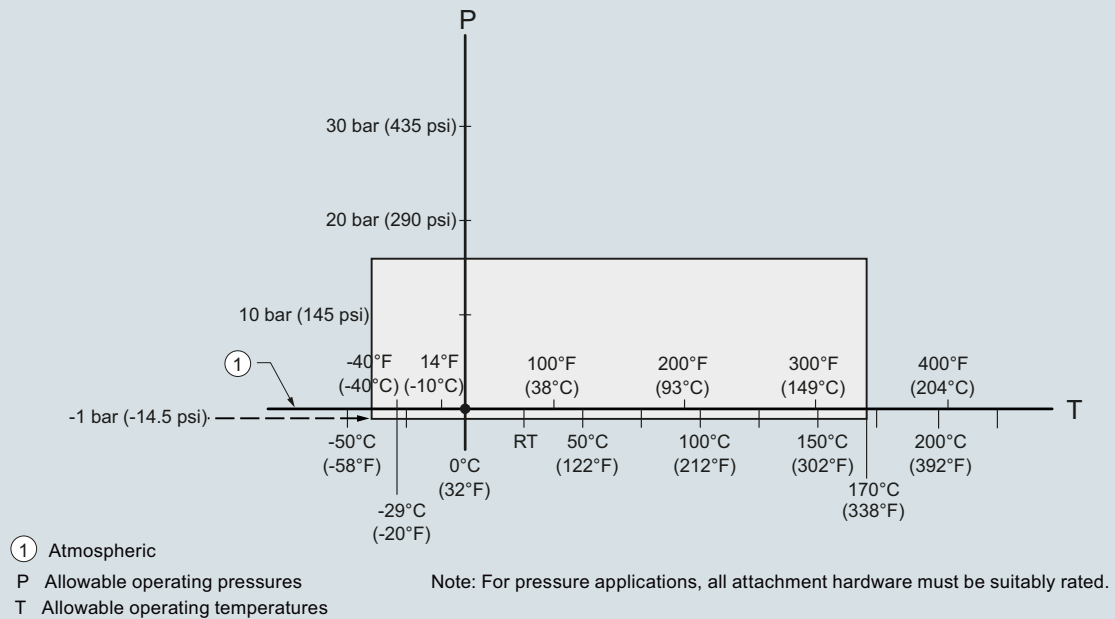
Characteristic curves

DIN 11851 Sanitary/Hygienic nozzle/slotted nut: DN 50, DN 80, and DN 100
DIN 11864-1 Aseptic/Hygienic nozzle/slotted nut: DN 50, DN 80, and DN 100



SITRANS LR250 Hygienic Encapsulated Antenna, process pressure/temperature rating curve

DIN 11864-2 Aseptic/Hygienic flanged: DN 50, DN 80, and DN 100



SITRANS LR250 Hygienic Encapsulated Antenna, process pressure/temperature rating curve

Level Measurement

Continuous level measurement

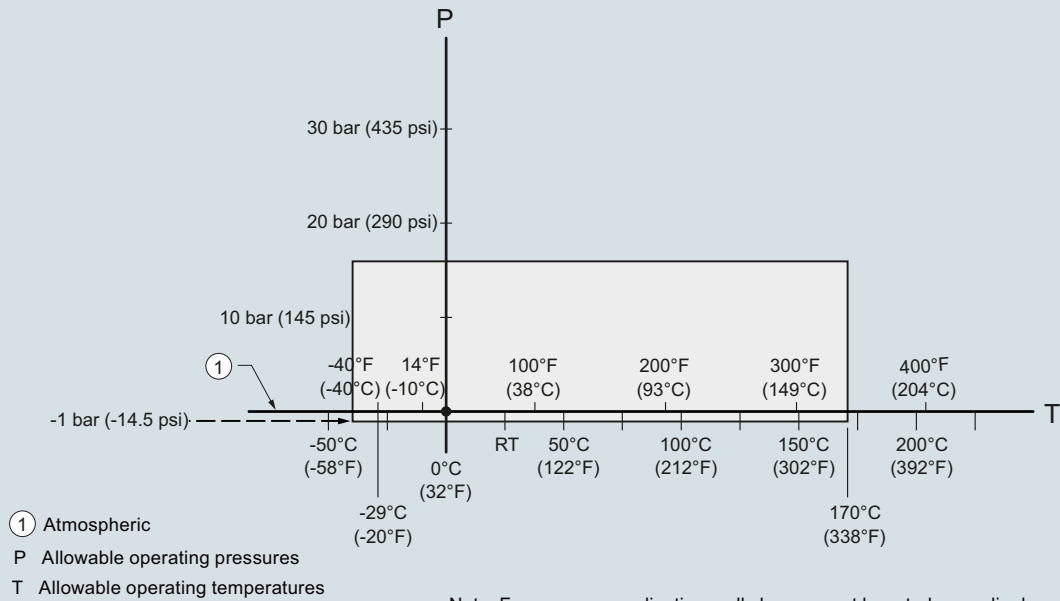
Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

DIN 11864-3 Aseptic/Hygienic clamp: DN 50, DN 80, and DN 100

ISO 2852 Sanitary/Hygienic clamp: 2", 3", and 4"

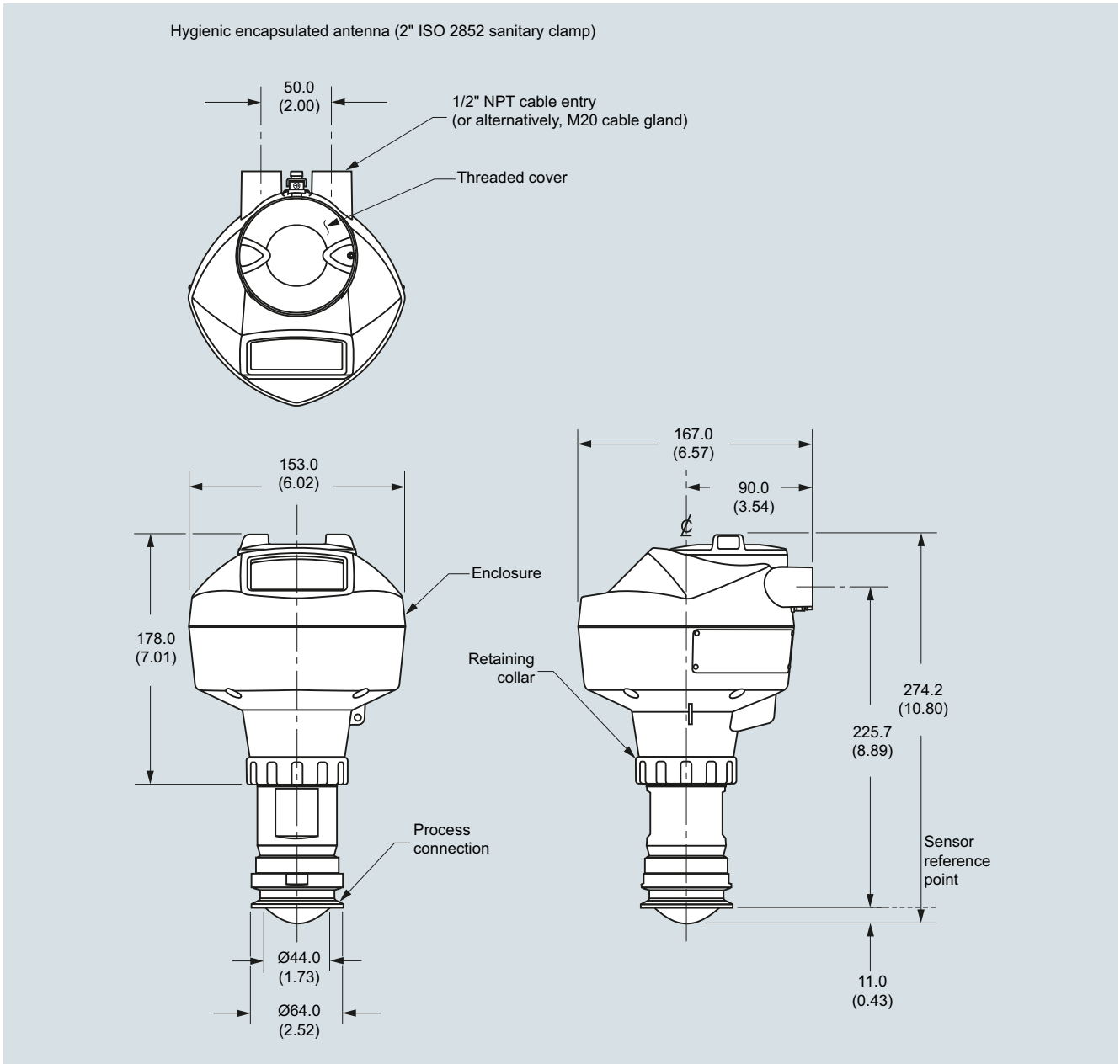
Tuchenhagen Varivent face seal clamp: Type N (68 mm) and Type F (50 mm)



SITRANS LR250 Hygienic Encapsulated Antenna, process pressure/temperature rating curve

SITRANS LR250 Hygienic Encapsulated Antenna

Dimensional drawings



SITRANS LR250 Hygienic Encapsulated Antenna (2" ISO 2852 sanitary clamp), dimensions in mm (inch)

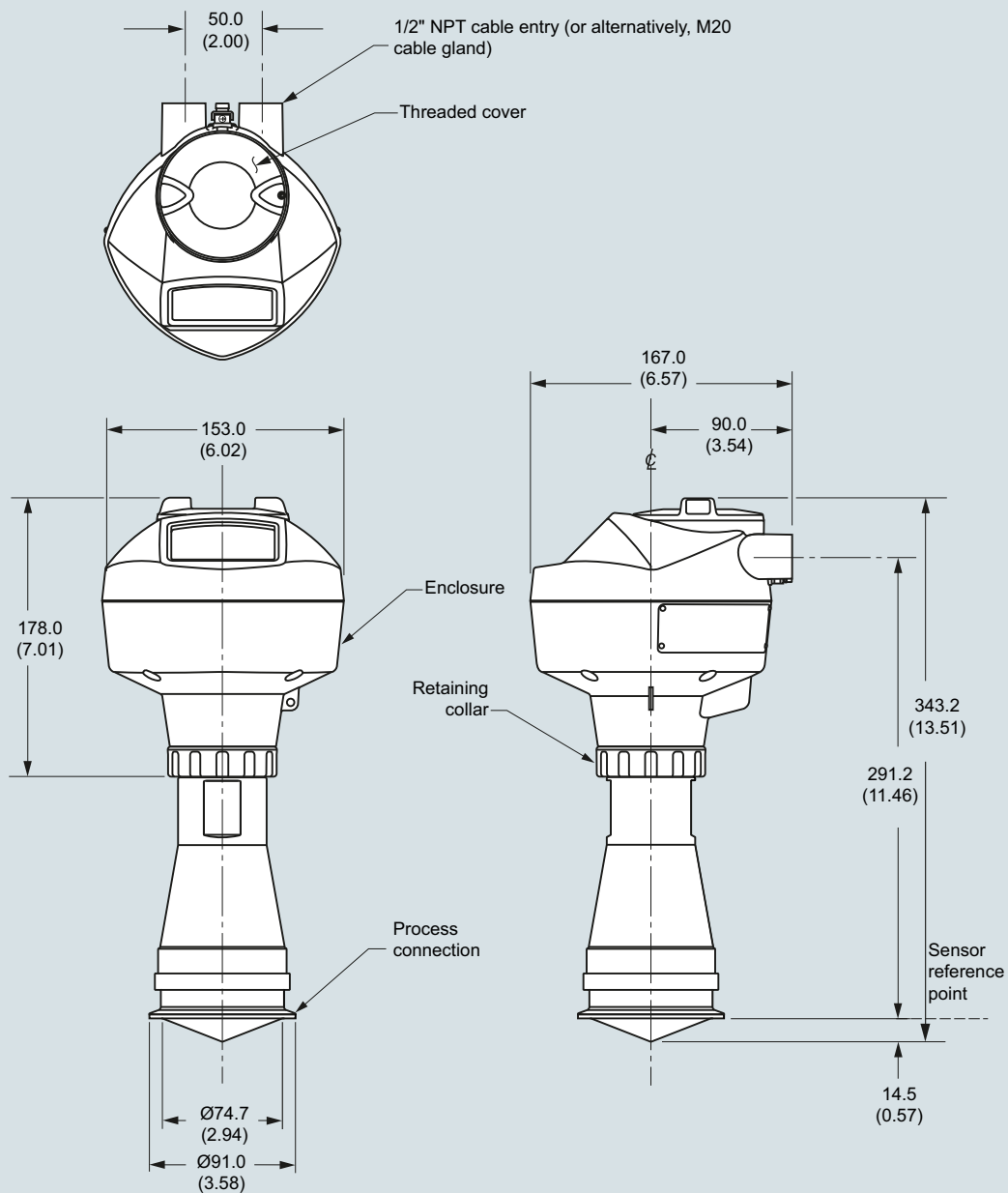
Level Measurement

Continuous level measurement

Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

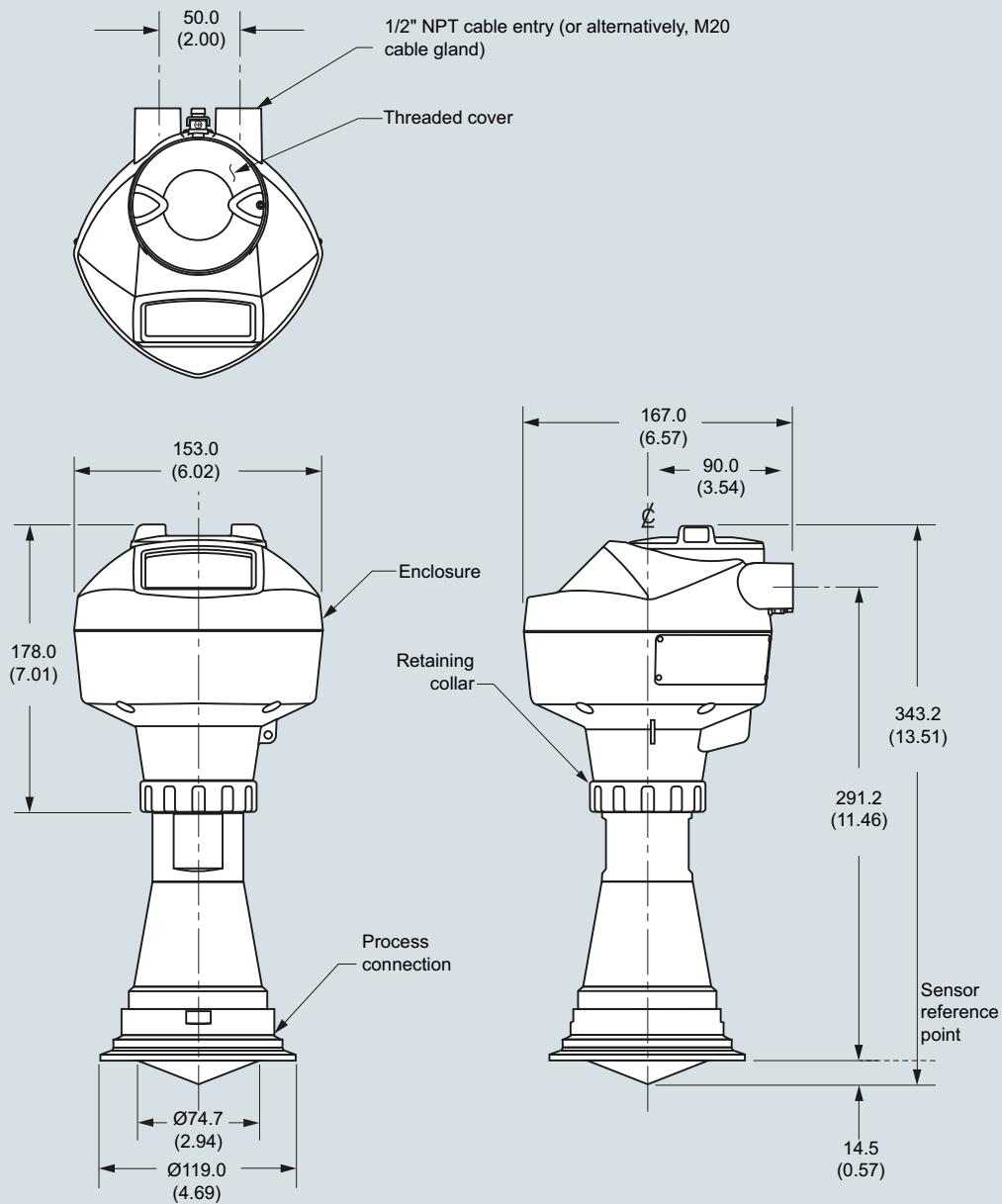
Hygienic encapsulated antenna (3" ISO 2852 sanitary clamp)



SITRANS LR250 Hygienic Encapsulated Antenna (3" ISO 2852 sanitary clamp), dimensions in mm (inch)

SITRANS LR250 Hygienic Encapsulated Antenna

Hygienic encapsulated antenna (4" ISO 2852 sanitary clamp)



SITRANS LR250 Hygienic Encapsulated Antenna (4" ISO 2852 sanitary clamp), dimensions in mm (inch)

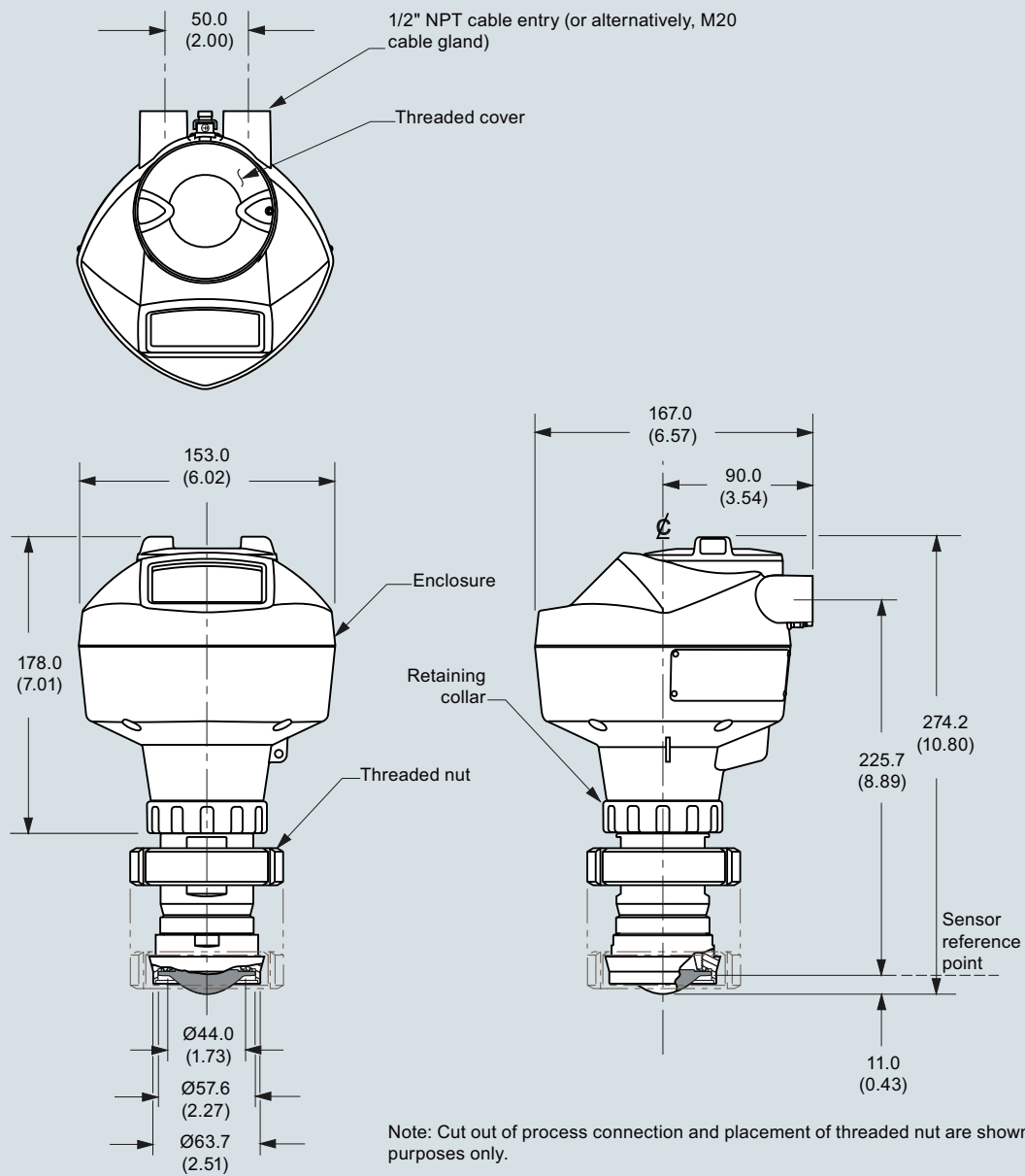
Level Measurement

Continuous level measurement

Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

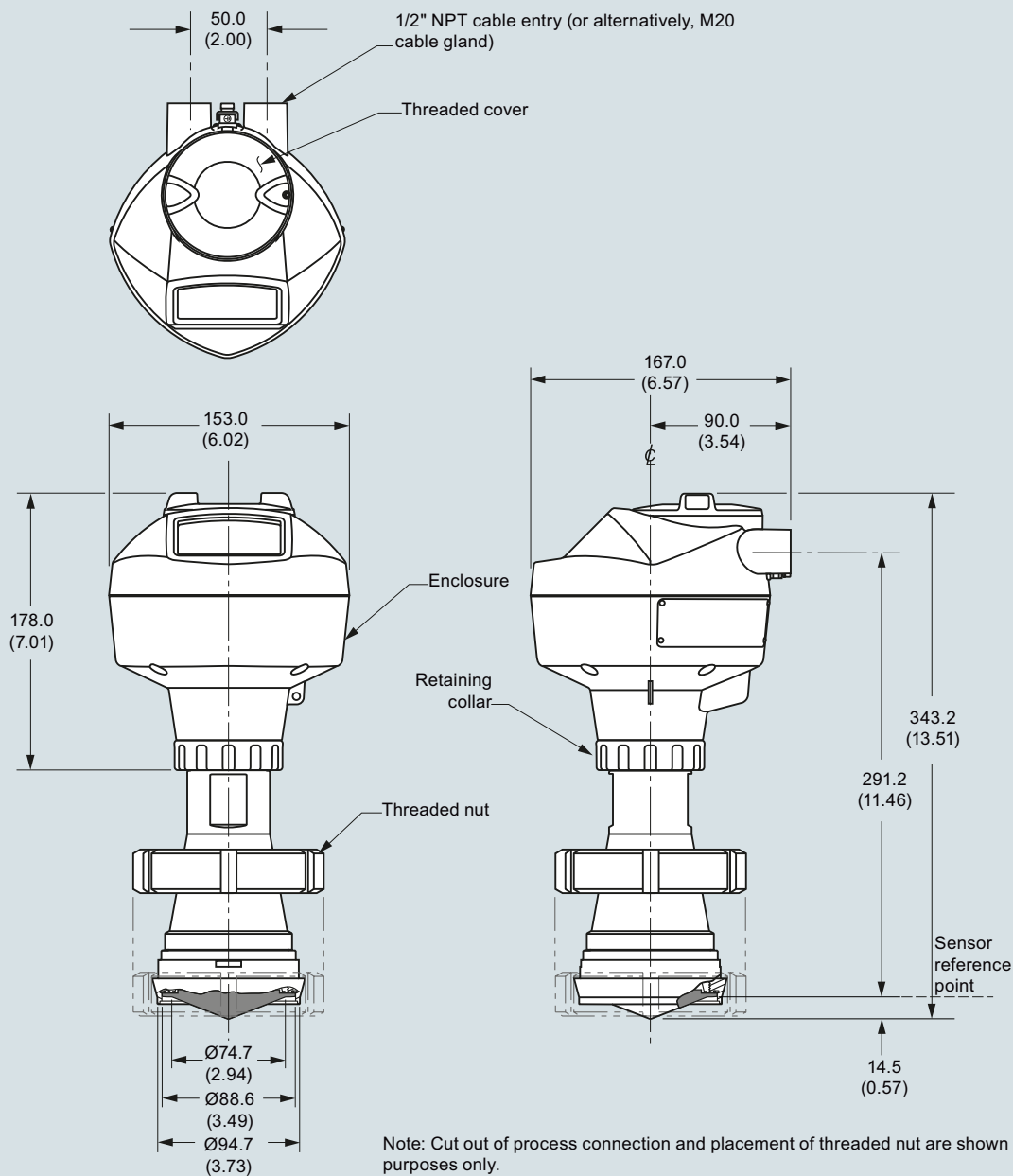
Hygienic encapsulated antenna (DN 50 nozzle/slotted nut to DIN 11851)



SITRANS LR250 Hygienic Encapsulated Antenna (DN 50 nozzle/slotted nut to DIN 11851), dimensions in mm (inch)

SITRANS LR250 Hygienic Encapsulated Antenna

Hygienic encapsulated antenna (DN 80 nozzle/slotted nut to DIN 11851)



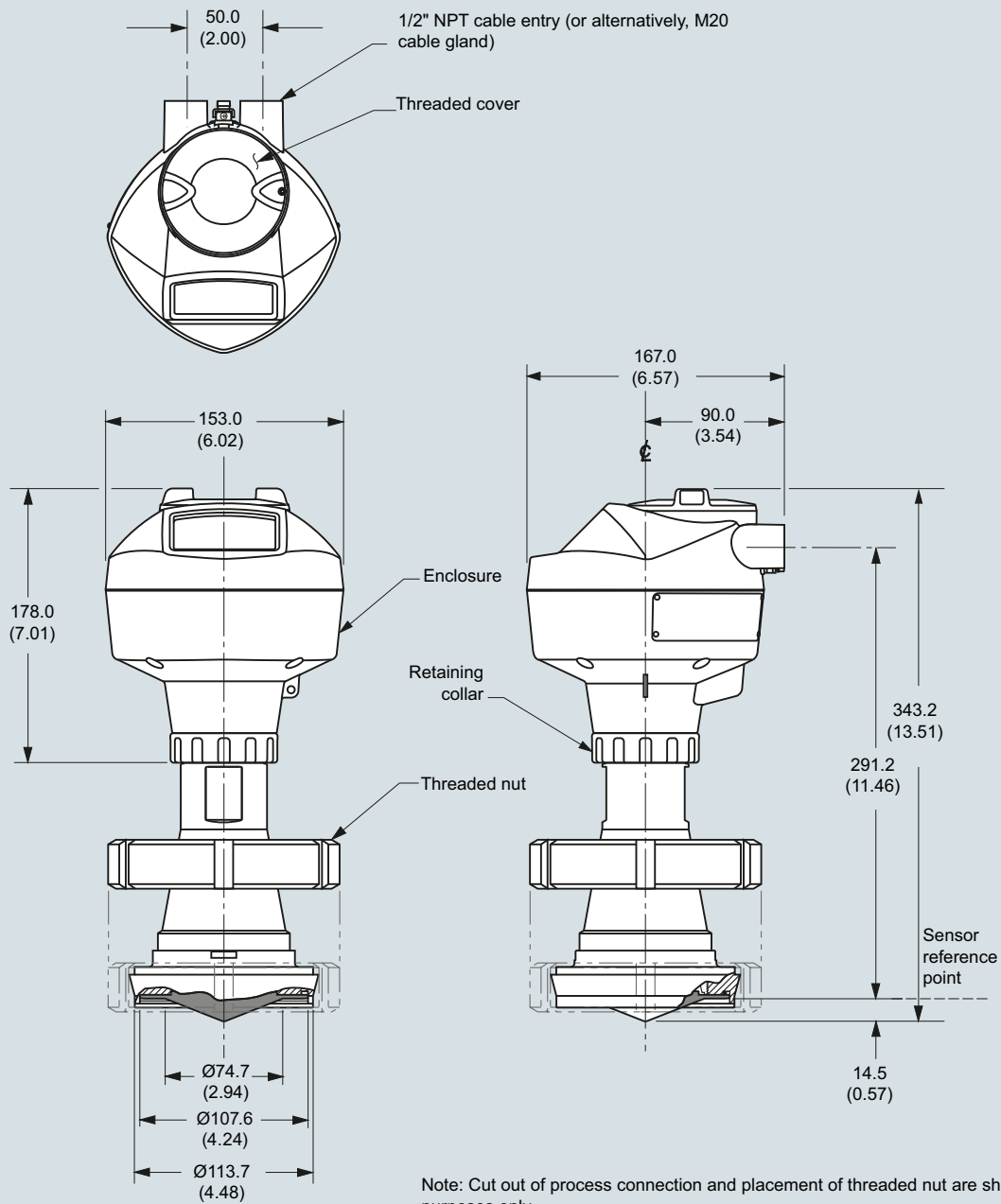
SITRANS LR250 Hygienic Encapsulated Antenna (DN 80 nozzle/slotted nut to DIN 11851), dimensions in mm (inch)

Level Measurement

Continuous level measurement
Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

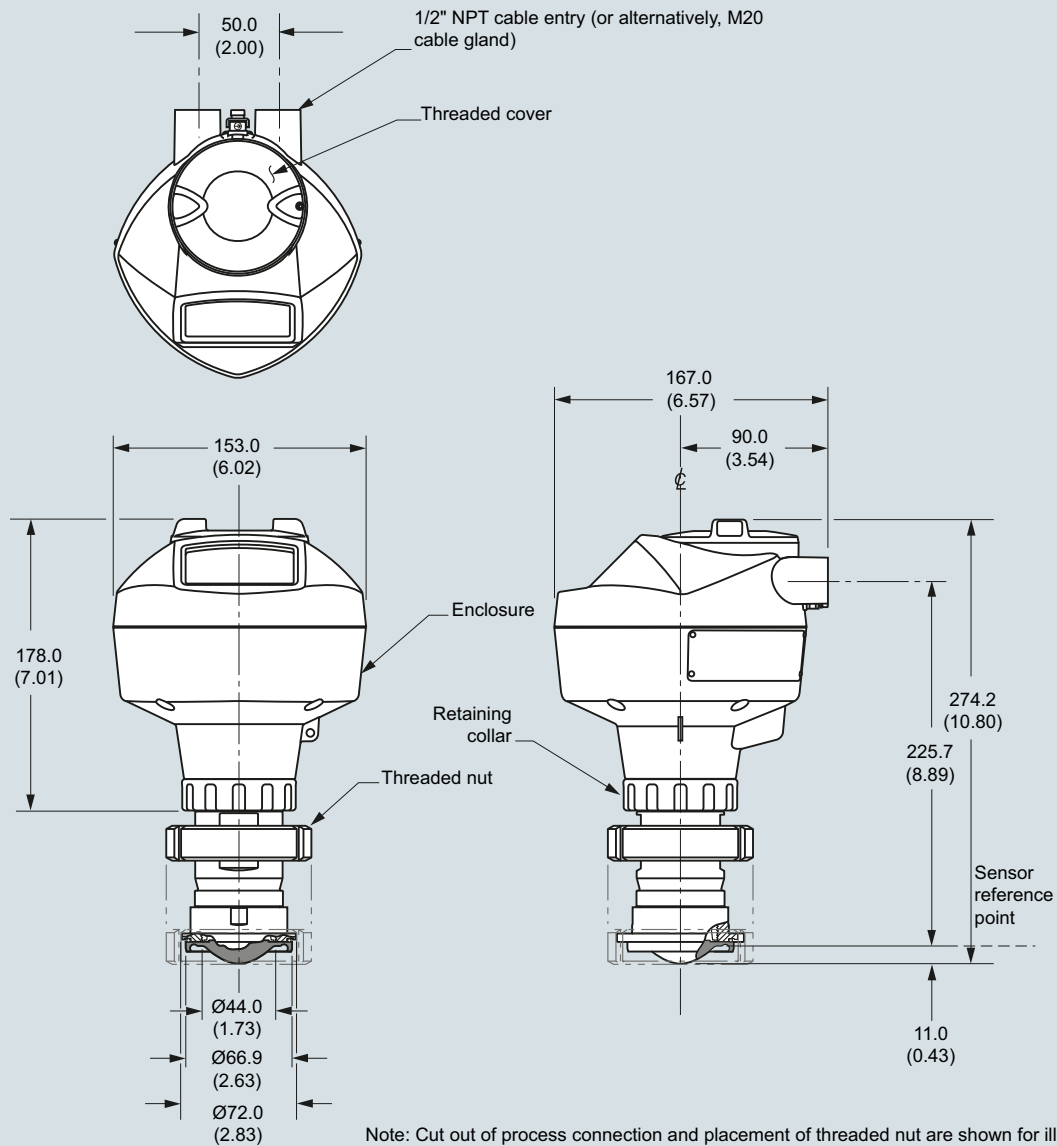
Hygienic encapsulated antenna (DN 100 nozzle/slotted nut to DIN 11851)



SITRANS LR250 Hygienic Encapsulated Antenna (DN 100 nozzle/slotted nut to DIN 11851), dimensions in mm (inch)

SITRANS LR250 Hygienic Encapsulated Antenna

Hygienic encapsulated antenna (DN 50 aseptic clamp to DIN 11864-1)



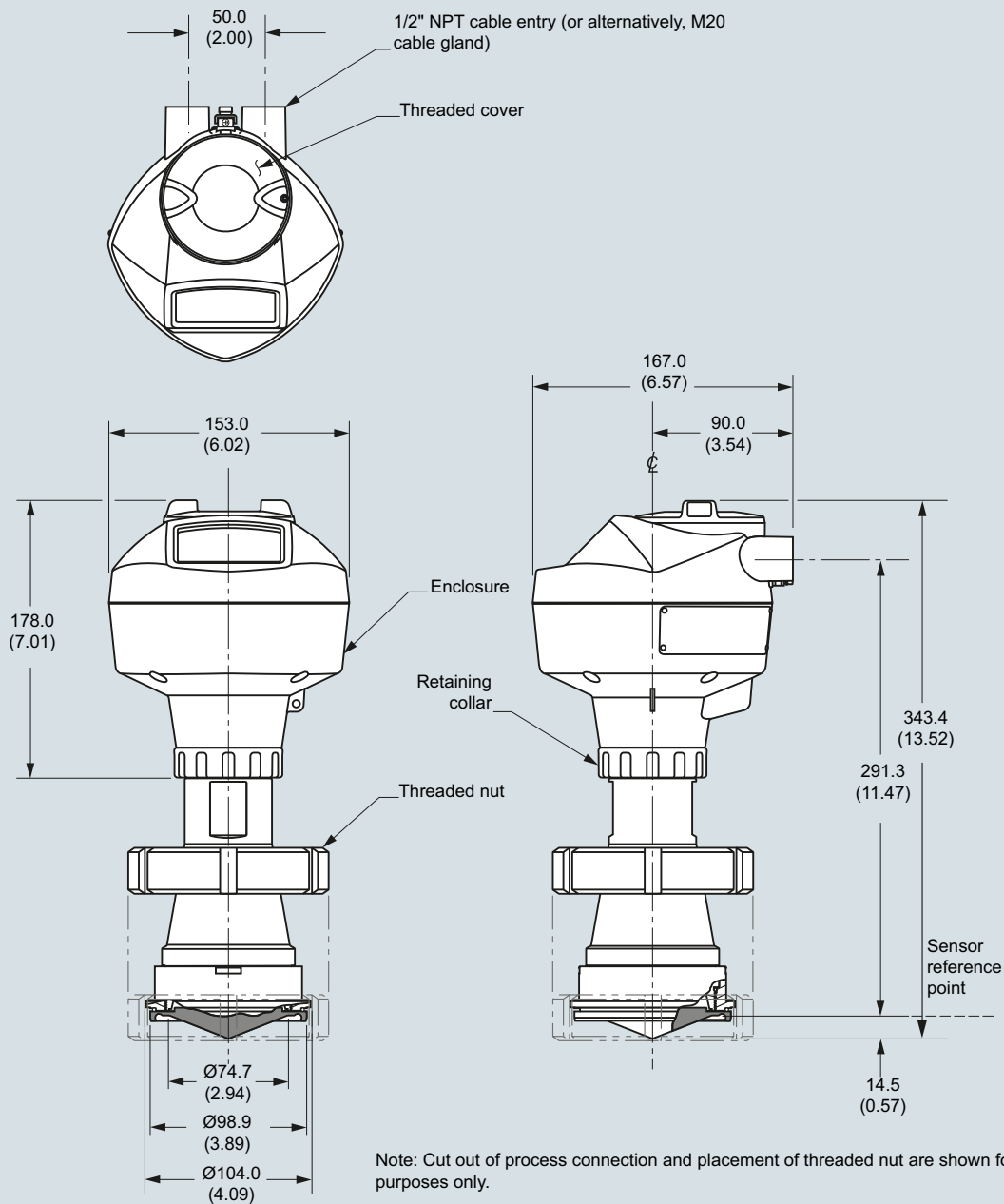
SITRANS LR250 Hygienic Encapsulated Antenna (DN 50 aseptic clamp to DIN 11864-1), dimensions in mm (inch)

Level Measurement

Continuous level measurement
Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

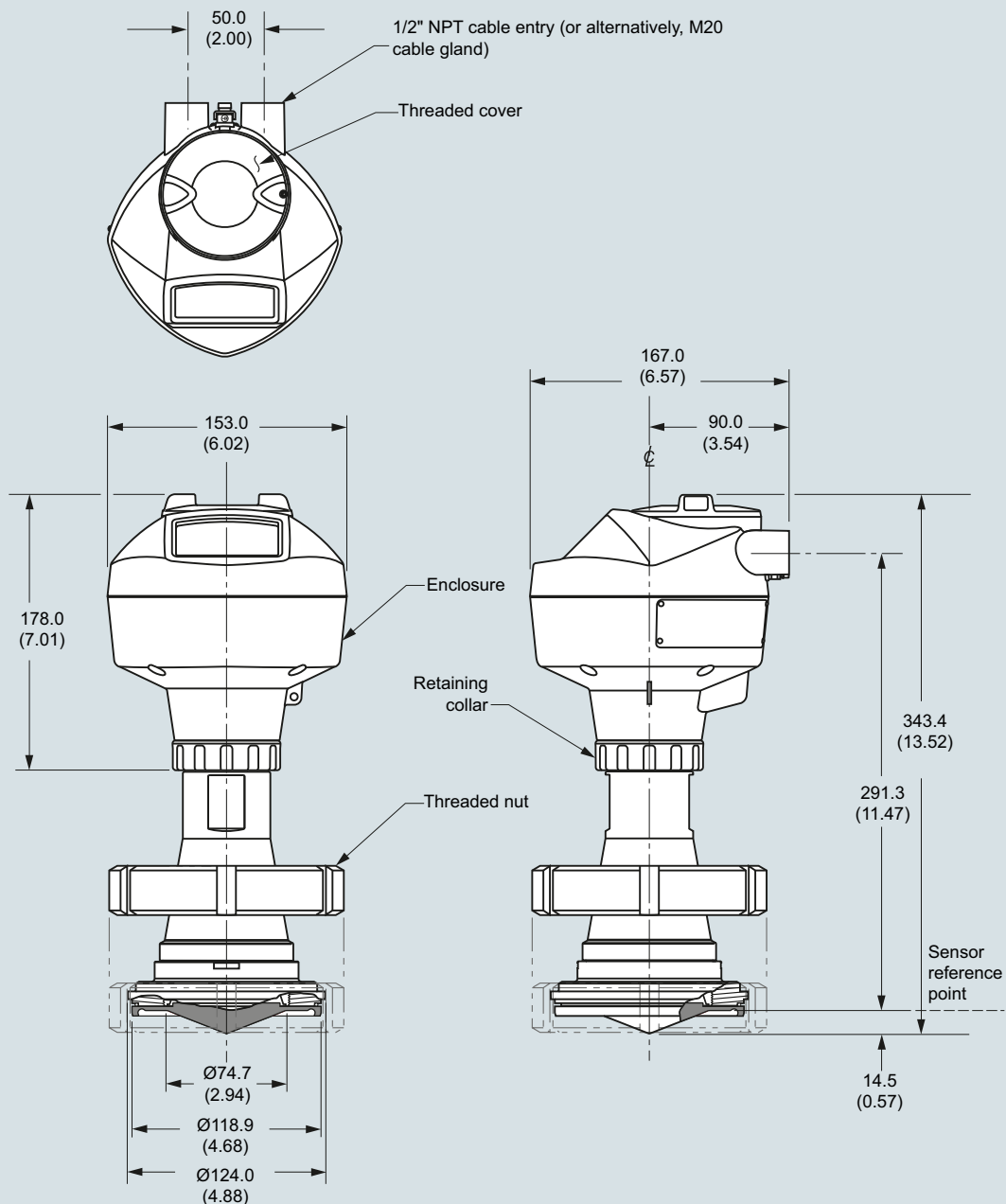
Hygienic encapsulated antenna (DN 80 aseptic clamp to DIN 11864-1)



SITRANS LR250 Hygienic Encapsulated Antenna (DN 80 aseptic clamp to DIN 11864-1), dimensions in mm (inch)

SITRANS LR250 Hygienic Encapsulated Antenna

Hygienic encapsulated antenna (DN 100 aseptic clamp to DIN 11864-1)



Note: Cut out of process connection and placement of threaded nut are shown for illustration purposes only.

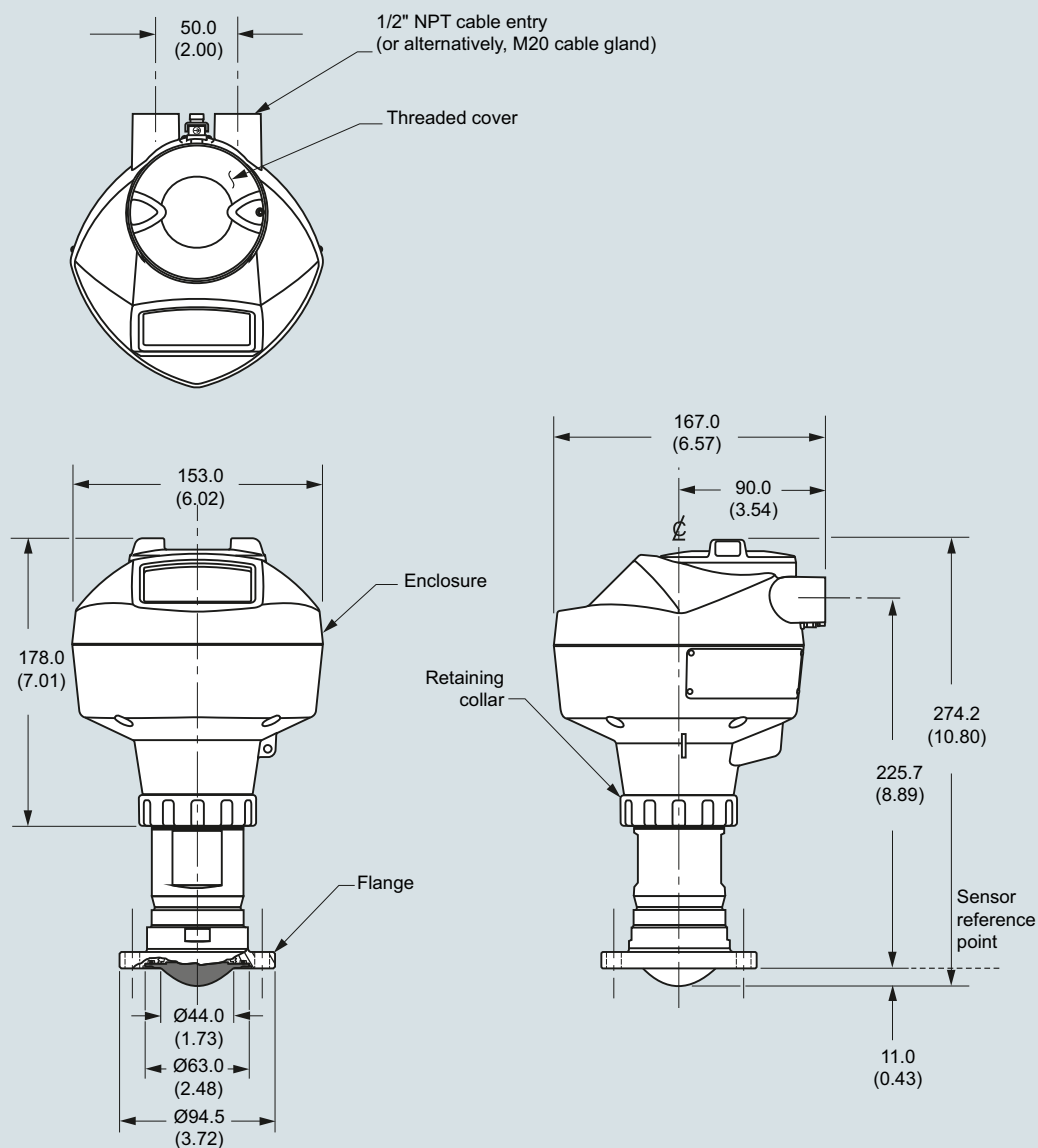
SITRANS LR250 Hygienic Encapsulated Antenna (DN 100 aseptic clamp to DIN 11864-1), dimensions in mm (inch)

Level Measurement

Continuous level measurement
Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

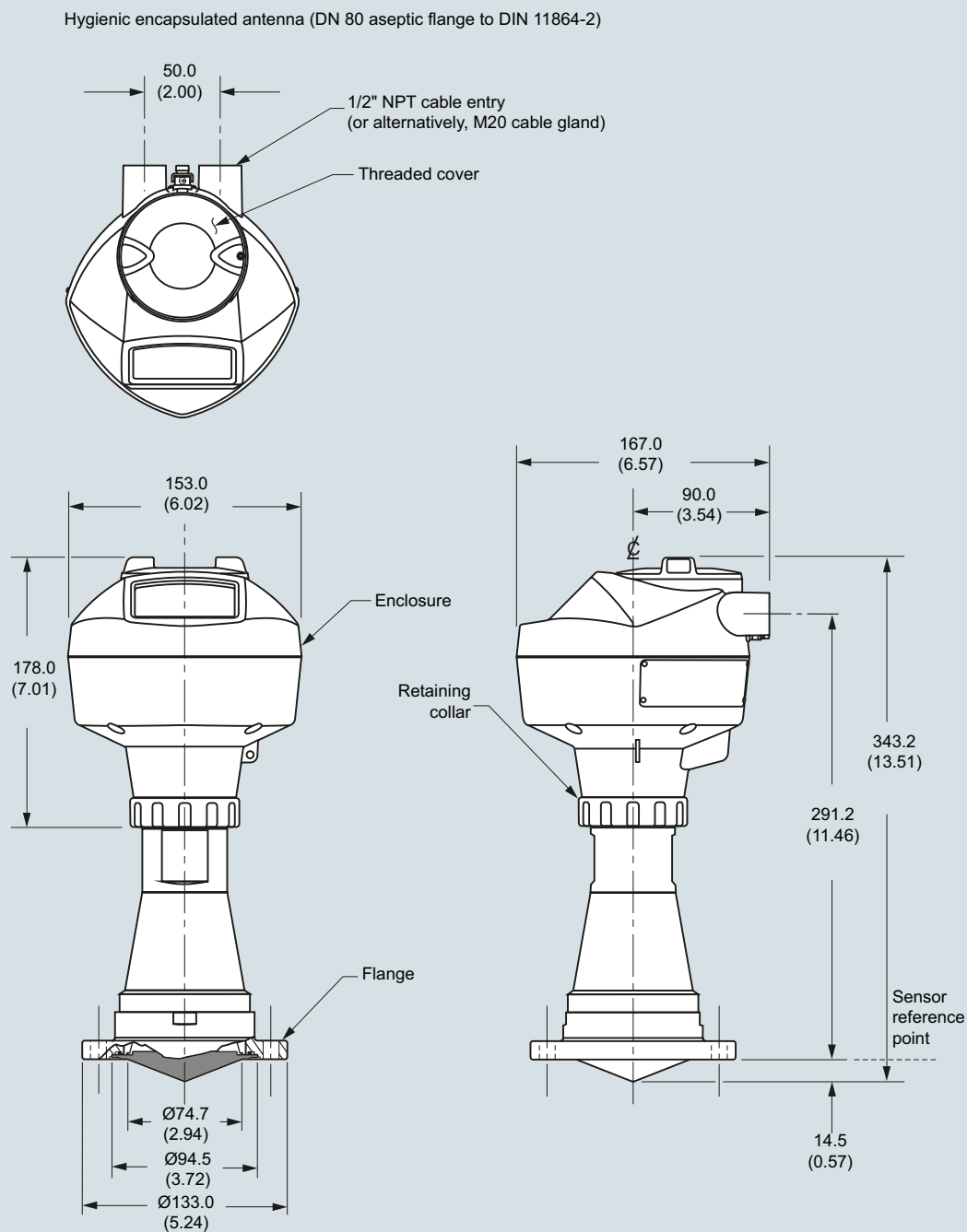
Hygienic encapsulated antenna (DN 50 aseptic flange to DIN 11864-2)



Note: Cut out of process connection and flange are shown for illustration purposes only.

SITRANS LR250 Hygienic Encapsulated Antenna (DN 50 aseptic flange to DIN 11864-2), dimensions in mm (inch)

SITRANS LR250 Hygienic Encapsulated Antenna



SITRANS LR250 Hygienic Encapsulated Antenna (DN 80 aseptic flange to DIN 11864-2), dimensions in mm (inch)

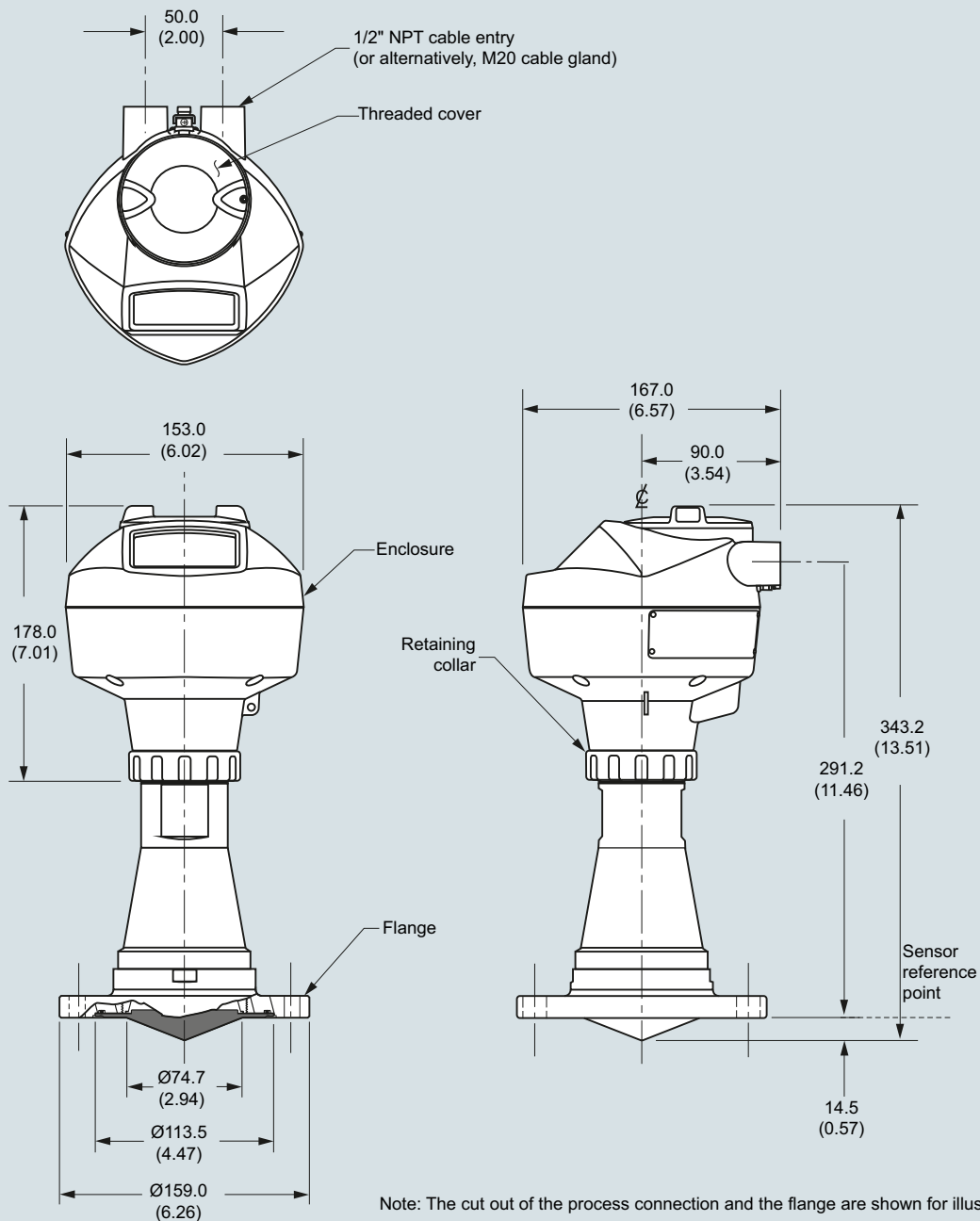
Level Measurement

Continuous level measurement

Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

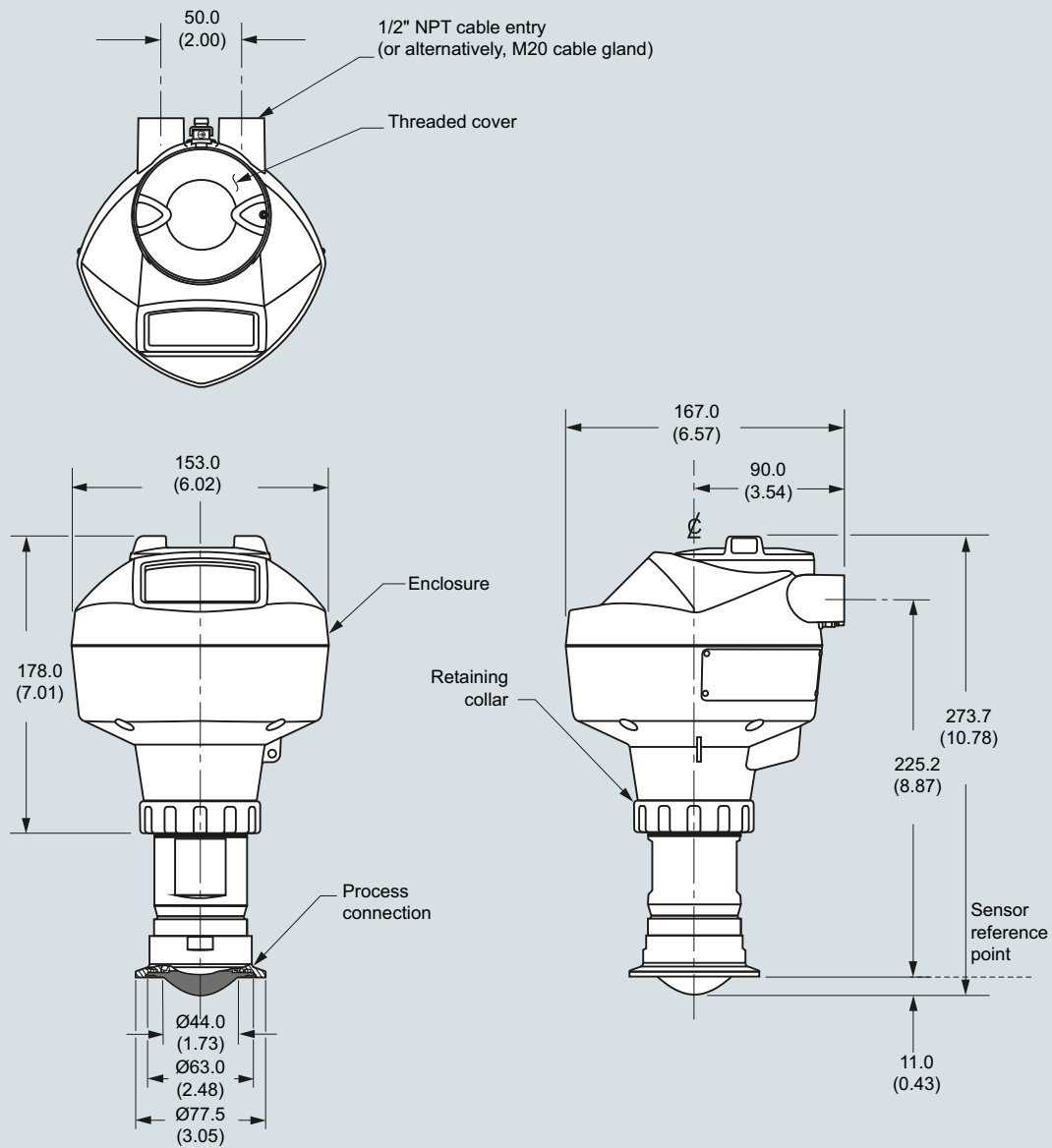
Hygienic encapsulated antenna (DN 100 aseptic flange to DIN 11864-2)



SITRANS LR250 Hygienic Encapsulated Antenna (DN 100 aseptic flange to DIN 11864-2), dimensions in mm (inch)

SITRANS LR250 Hygienic Encapsulated Antenna

Hygienic encapsulated antenna (DN 50 aseptic clamp to DIN 11864-3)



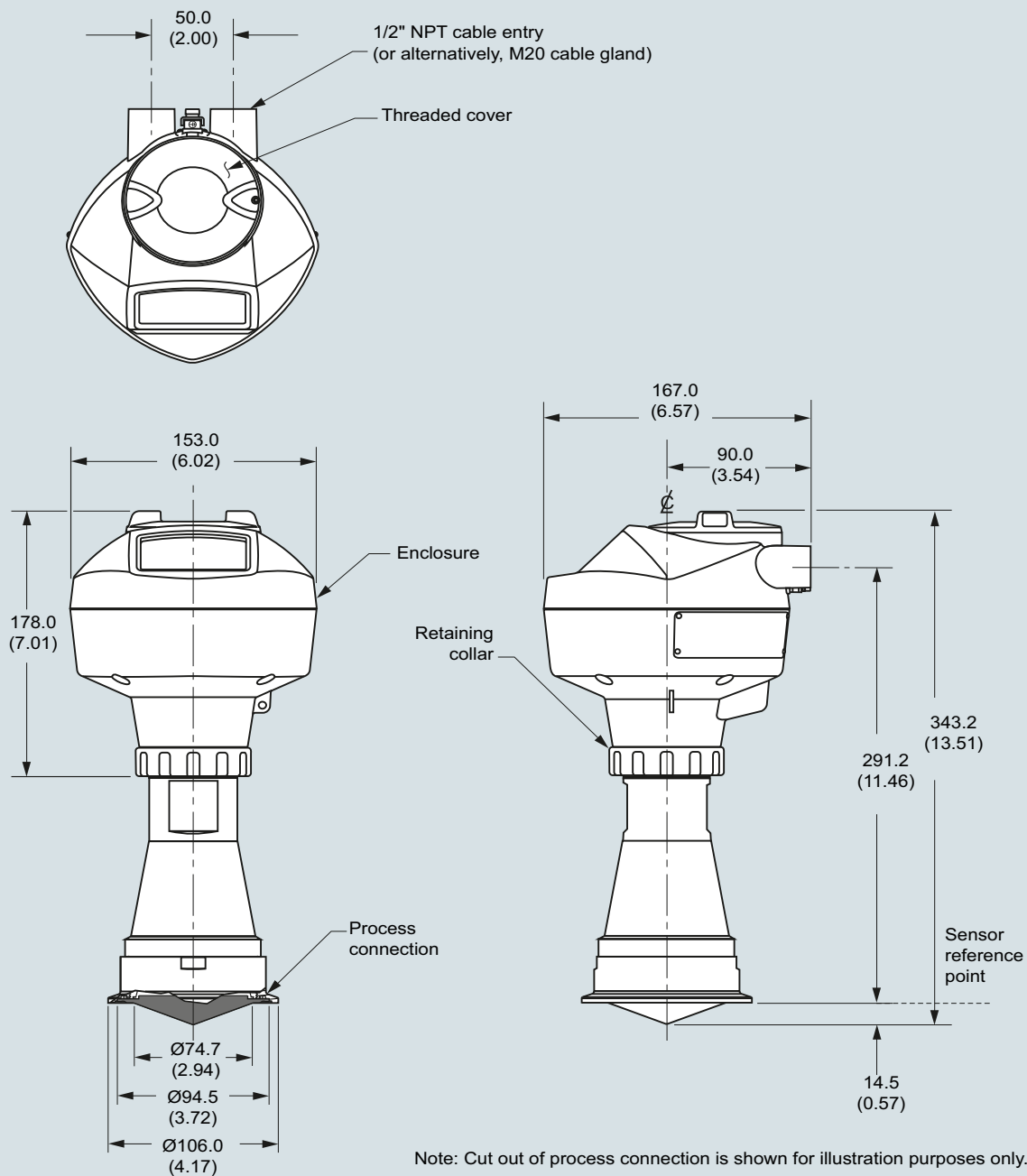
SITRANS LR250 Hygienic Encapsulated Antenna (DN 50 aseptic clamp to DIN 11864-3), dimensions in mm (inch)

Level Measurement

Continuous level measurement
Radar transmitters

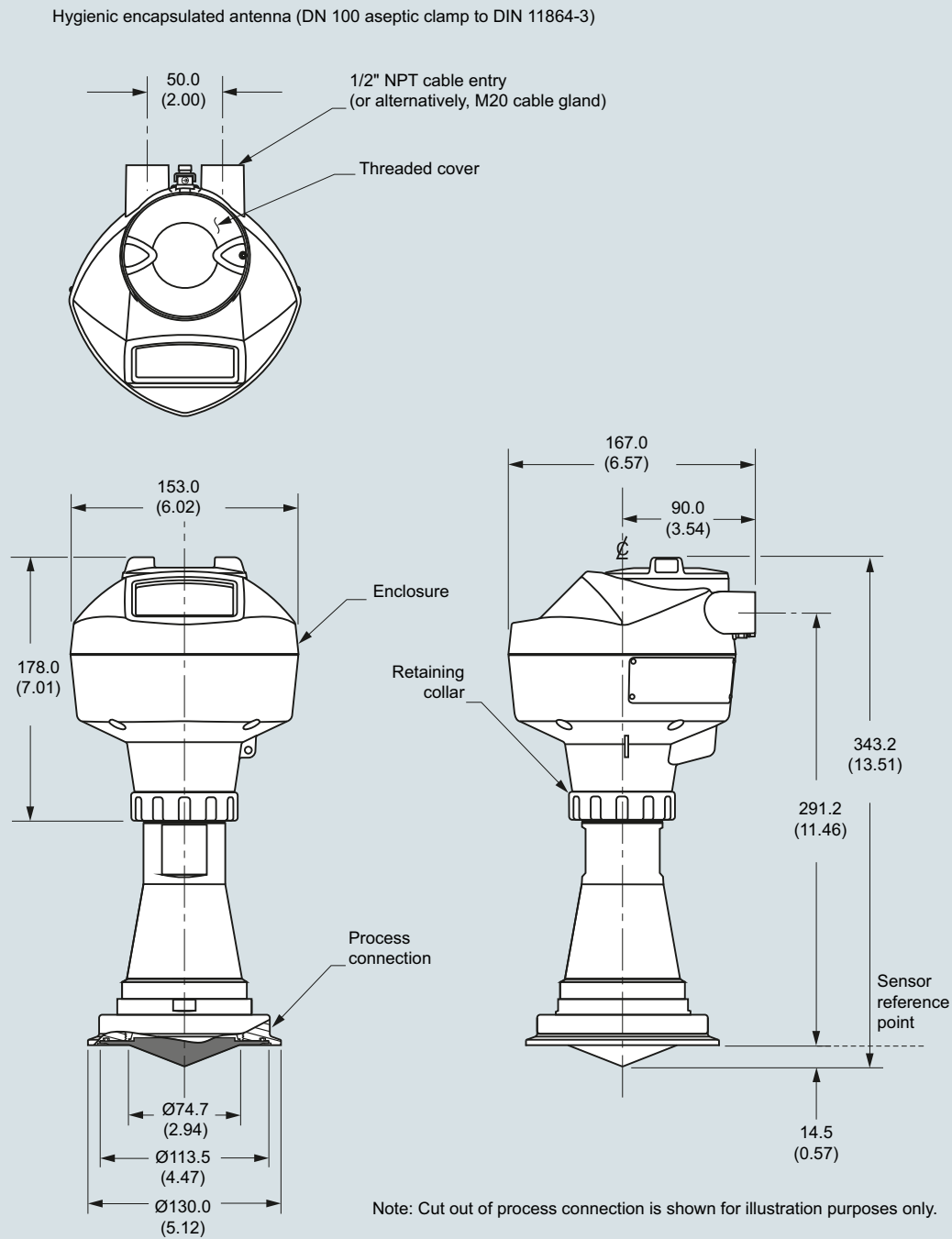
SITRANS LR250 Hygienic Encapsulated Antenna

Hygienic encapsulated antenna (DN 80 aseptic clamp to DIN 11864-3)



SITRANS LR250 Hygienic Encapsulated Antenna (DN 80 aseptic clamp to DIN 11864-3), dimensions in mm (inch)

SITRANS LR250 Hygienic Encapsulated Antenna



SITRANS LR250 Hygienic Encapsulated Antenna (DN 100 aseptic clamp to DIN 11864-3), dimensions in mm (inch)

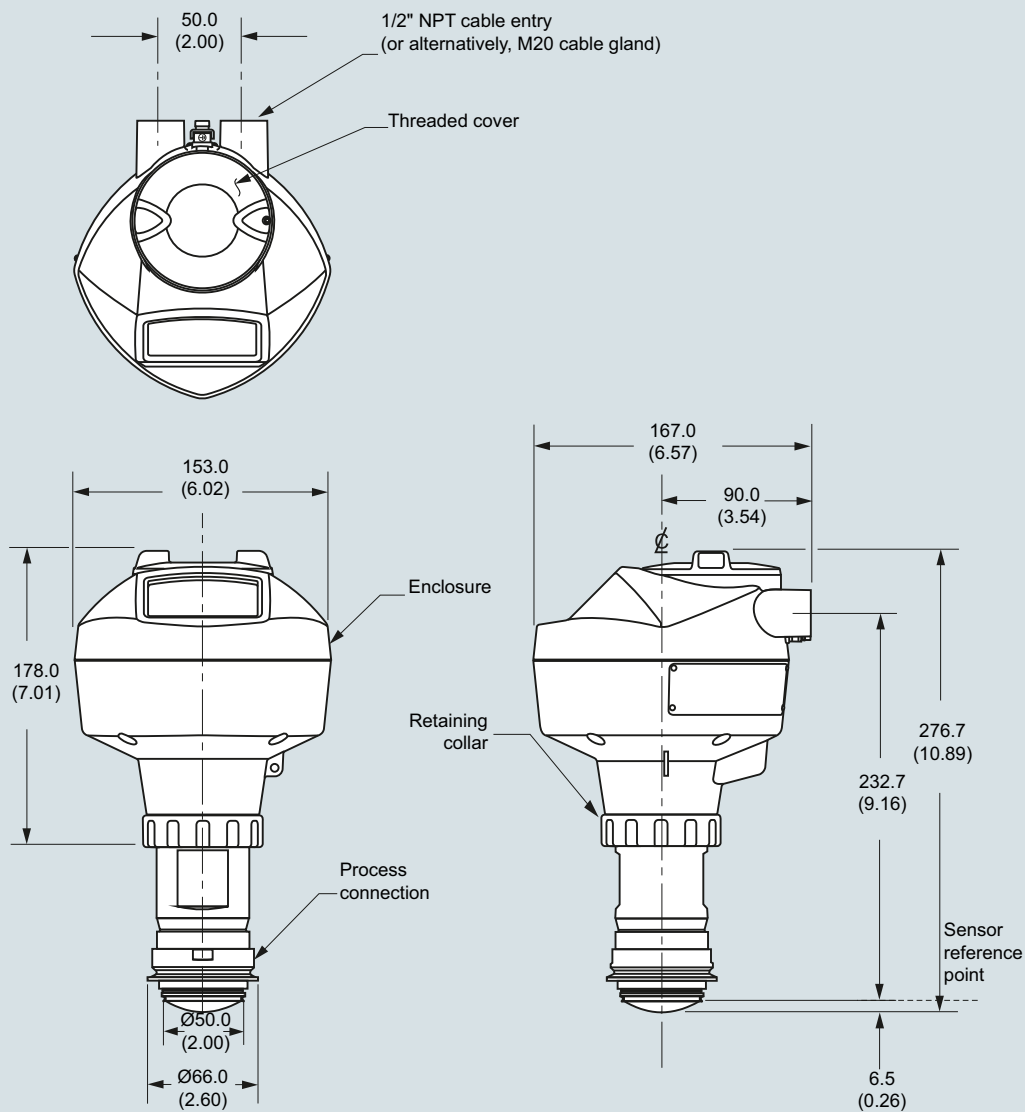
Level Measurement

Continuous level measurement

Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

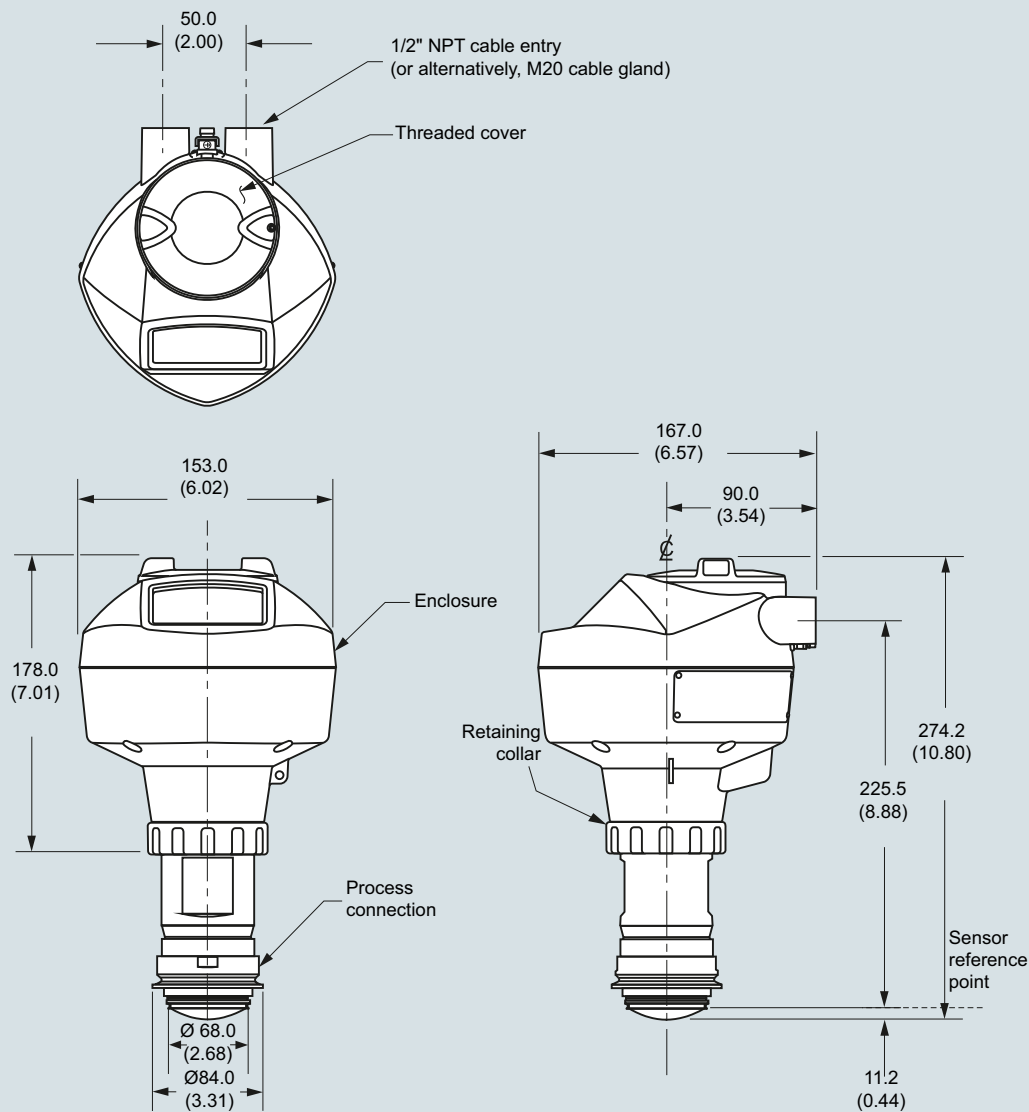
Hygienic encapsulated antenna (Tuchenhagen Type F, 50 mm)



SITRANS LR250 Hygienic Encapsulated Antenna (Tuchenhagen Type F), dimensions in mm (inch)

SITRANS LR250 Hygienic Encapsulated Antenna

Hygienic encapsulated antenna (Tuchenhagen Type N, 68 mm)



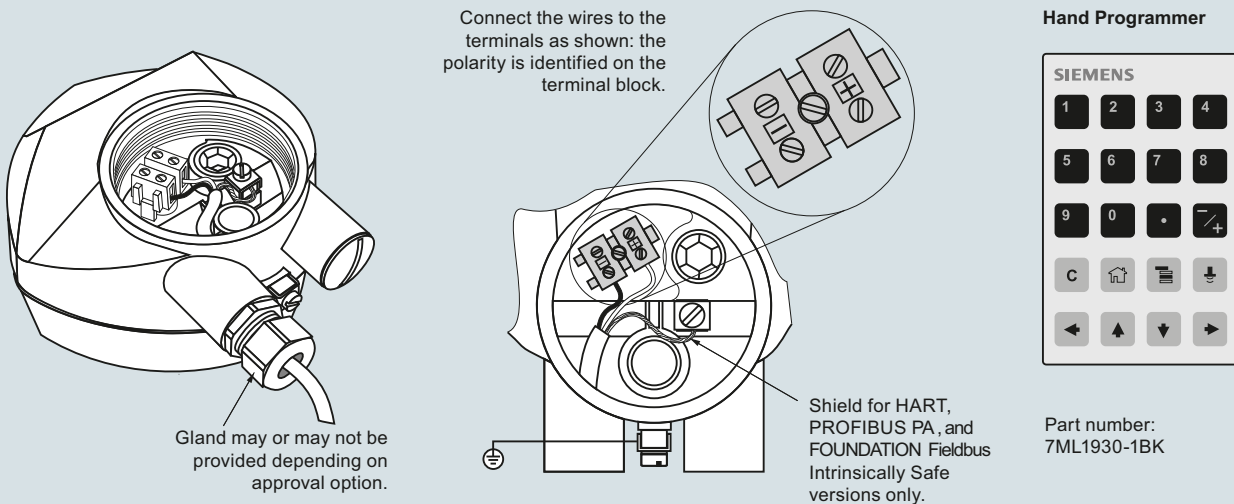
SITRANS LR250 Hygienic Encapsulated Antenna (Tuchenhagen Type N), dimensions in mm (inch)

Level Measurement

Continuous level measurement
Radar transmitters

SITRANS LR250 Hygienic Encapsulated Antenna

Circuit diagrams



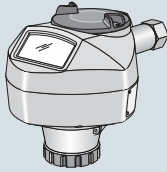
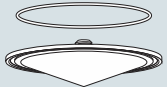
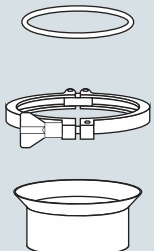
Notes:

1. DC terminal shall be supplied from a source providing electrical isolation between the input and output, to meet the applicable safety requirements of IEC 61010-1.
2. All field wiring must have insulation suitable for rated input voltages.
3. Use shielded twisted pair cable (14 ... 22 AWG) for HART version.
4. Separate cables and conduit may be required to conform to standard instrumentation wiring practices or electrical codes.

SITRANS LR250 connections

SITRANS LR250 Hygienic Encapsulated Specials

Selection and ordering data

SITRANS LR250 Hygienic Encapsulated Specials		SITRANS LR250 Hygienic Encapsulated Specials	
	Article No.		Article No.
NOTE: LR260 head can be supplied with any LR250 process connection or antenna as special order. For LR250, this means a stronger signal and longer measurement range is possible.		Kit, DN80 DIN11864-1 GS Form A tank connection, FKM Seal Class I	A5E32910671
For "Electronics Head only" follow the standard configuration and choose YY option on positions 9 and 10 of the full part number.		Kit, DN100 DIN11864-1 GS Form A tank connection, FKM Seal Class I	A5E32910681
For example: 7ML5433-1YY20-1AA0 will order an electronics head for the following:		Kit 2" ISO2852 tank connection, Clamp, Cleanable EPDM Seal Class II	A5E32910686
EHEDG EL Class 1 approval, 4 ... 20 mA HART, M20 cable entries, General purpose Haz Loc approval, pressure rating as per manual.		Kit 3" ISO2852 tank connection, Clamp, Cleanable EPDM Seal Class II	A5E32910697
Spare Lens Kits (Lens and O-ring)		Kit 4" ISO2852 tank connection, Clamp, Cleanable EPDM Seal Class II	A5E32910708
		Kit 2" ISO2852 tank connection, Clamp, Cleanable FKM Seal	A5E32910718
		Kit 3" ISO2852 tank connection, Clamp, Cleanable FKM Seal	A5E32910723
Kit, 2 inch, ISO 2852, HEA, Lens, silicone secondary O-ring	A5E32572731	Kit 4" ISO2852 tank connection, Clamp, Cleanable FKM Seal	A5E32910734
Kit, 3 inch, ISO 2852, HEA, Lens, silicone secondary O-ring	A5E32572745	Kit DN50 DIN11851 SC Tank connection, EPDM Seal Class II ¹⁾	A5E32910746
Kit, 4 inch, ISO 2852, HEA, Lens, silicone secondary O-ring	A5E32572747	Kit DN80 DIN11851 SC Tank connection, EPDM Seal Class II ¹⁾	A5E32910771
Kit, DN 50, DIN 11851, HEA, Lens, silicone secondary O-ring	A5E32572758	Kit DN100 DIN11851 SC Tank connection, EPDM Seal Class II ¹⁾	A5E32910780
Kit, DN 80, DIN 11851, HEA, Lens, silicone secondary O-ring	A5E32572770	Kit DN50 DIN11851 SC Tank connection, FKM Seal Class II	A5E32910784
Kit, DN 100, DIN 11851, HEA, Lens, silicone secondary O-ring	A5E32572772	Kit DN80 DIN11851 SC Tank connection, FKM Seal Class II	A5E32910789
Kit, DN 50, DIN 11864-1, HEA, Lens, silicone secondary O-ring	A5E32572773	Kit DN100 DIN11851 SC Tank connection, FKM Seal Class II	A5E32910790
Kit, DN 80, DIN 11864-1, HEA, Lens, silicone secondary O-ring	A5E32572779	Kit DN50 DIN11864-2 Form A tank connection, M8 Hardware (nut/bolt/washer), EPDM Seal Class II	A5E32910791
Kit, DN 100, DIN 11864-1, HEA, Lens, silicone secondary O-ring	A5E32572782	Kit DN80 DIN11864-2 Form A tank connection, M10 Hardware (nut/bolt/washer), EPDM Seal Class II	A5E32910793
Kit, DN 50, DIN 11864-2/3, HEA, Lens, silicone secondary O-ring	A5E32572785	Kit DN100 DIN11864-2 Form A tank connection, M10 Hardware (nut/bolt/washer), EPDM Seal Class II	A5E32910799
Kit, DN 80, DIN11864-2/3, HEA, Lens, silicone secondary O-ring	A5E32572790	Kit DN50 DIN11864-2 Form A tank connection, M8 Hardware (nut/bolt/washer), FKM Seal Class I	A5E32910805
Kit, DN 100, DIN11864-2/3, HEA, Lens, silicone secondary O-ring	A5E32572791	Kit DN80 DIN11864-2 Form A tank connection, M10 Hardware (nut/bolt/washer), FKM Seal Class I	A5E32910809
Kit, Tuchenhausen, Type F, HEA, Lens, silicone secondary O-ring	A5E32572794	Kit DN100 DIN11864-2 Form A tank connection, M10 Hardware (nut/bolt/washer), FKM Seal Class I	A5E32910812
Kit, Tuchenhausen, Type N, HEA, Lens, silicone secondary O-ring	A5E32572795	Kit DN50 DIN11864-3 Form A tank connection, Clamp, EPDM Seal Class II	A5E32910813
Accessories (customer side process connection and FKM and EPDM seal for each size and type)		Kit DN80 DIN11864-3 Form A tank connection, Clamp, EPDM Seal Class II	A5E32910814
		Kit DN100 DIN11864-3 Form A tank connection, Clamp, EPDM Seal Class II	A5E32910815
		Kit DN50 DIN11864-3 Form A tank connection, Clamp, FKM Seal Class I	A5E32910816
Kit DN50 DIN11864-1 GS Form A tank connection, EPDM Seal Class II	A5E32910638	Kit DN80 DIN11864-3 Form A tank connection, Clamp, FKM Seal Class I	A5E32910817
Kit, DN80 DIN11864-1 GS Form A tank connection, EPDM Seal Class II	A5E32910649		
Kit, DN100 DIN11864-1 GS Form A tank connection, EPDM Seal Class II	A5E32910657		
Kit DN50 DIN11864-1 GS Form A tank connection, FKM Seal Class I	A5E32910658		

Level Measurement

Continuous level measurement

Radar transmitters

SITRANS LR250 Hygienic Encapsulated Specials

SITRANS LR250 Hygienic Encapsulated Specials	
	Article No.
Kit DN100 DIN11864-3 Form A tank connection, Clamp, FKM Seal Class I	A5E32910818
Kit Type F, Tuchenhausen, Clamp, EPDM Seal Class II (EHEDG only) - no tank connection	A5E33489537
Kit Type N, Tuchenhausen, Clamp, EPDM Seal Class II (EHEDG only) - no tank connection	A5E33489543
Kit Type F, Tuchenhausen, Clamp, FKM Seal Class I (EHEDG only) - no tank connection	A5E33489828
Kit Type N, Tuchenhausen, Clamp, FKM Seal Class I (EHEDG only) - no tank connection	A5E33489830
Ex-proof plugs	
Ex-proof plugs kit, 1/2" NPT, qty 5	A5E39979991
Ex-proof plugs kit, M20, qty 5	A5E39979992

¹⁾ Class II for low fat applications when EPDM seal used on DIN11851

Overview



SITRANS LR260 is a 2-wire 25 GHz pulse radar level transmitter for continuous monitoring of solids and liquids in storage vessels including extreme levels of dust and high temperatures, to a range of 30 m (98.4 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
- 25 GHz high frequency allows for small horn antennas mounted easily in nozzles
- 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 LR260 includes a graphical local user interface (LUI) that improves setup and operation using an intuitive Quick Start Wizard, and echo profile displays for diagnostic support. Startup is easy using the Quick Start wizard with a few parameters required for basic operation.

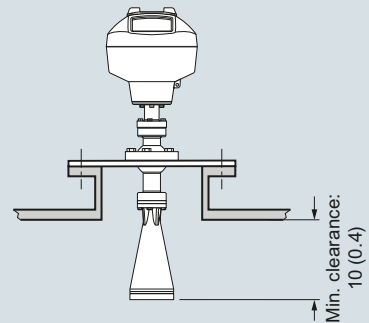
SITRANS LR260's unique design allows safe and simple programming using the Intrinsically Safe handheld programmer without having to open the instrument's lid.

SITRANS LR260 measures virtually any solids material to a range of 30 m (98.4 ft).

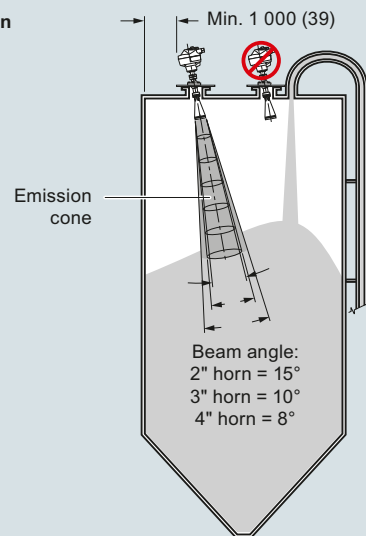
- Key Applications: cement powder, plastic powder/pellets, grain, flour, coal, solids and liquids bulk storage vessels, and other applications

Configuration

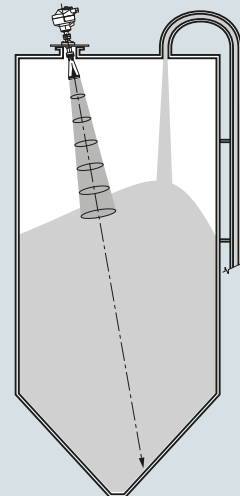
Mounting on a nozzle



Installation



Positioning with easy Aimer



SITRANS LR260 installation, dimensions in mm (inch)

Level Measurement

Continuous level measurement

Radar transmitters

SITRANS LR260

Technical specifications

Mode of operation		Design	
Measuring principle	Pulse radar level measurement	Enclosure	Aluminum, polyester powder-coated
Frequency	K-band (25.0 GHz)	• Construction	2 x M20 x 1.5 or 2 x 1/2" NPT
Minimum detectable distance	0.05 m (2 inch) from end of horn	• Conduit entry	Type 4X/NEMA 4X, Type 6/ NEMA 6, IP67, IP68
Maximum measuring range ¹⁾		Degree of protection	
Solids	<ul style="list-style-type: none"> • 2" horn: 10 m (32.8 ft) • 3" horn: 20 m (65.6 ft) • 4" horn: 30 m (98.4 ft) 	Weight	< 8.14 kg (17.9 lb) including 4" flange and standard Easy Aimer with 4" horn antenna
Liquids	<ul style="list-style-type: none"> • 2" horn: 20 m (65.6 ft) • 3" horn: 30 m (98.4 ft) • 4" horn: 30 m (98.4 ft) 	Display (local)	Graphic LCD, with bar graph representing level
Output - HART		Flange and horn (easy aimer model)	
Power	4 ... 20 mA (± 0.02 mA accuracy)	• Material	304 stainless steel
Fail signal	Nominal 24 V DC (max. 30 V DC)	• Horn antenna	2" horn 3" horn 4" horn
Load	3.6 mA ... 23 mA; or last value 230 ... 600 Ω	Process connections	
Output - PROFIBUS PA		• Universal flanges ²⁾	2 inch/50 mm, 3 inch/80 mm, 4 inch/100 mm, 6 inch/150 mm
	<ul style="list-style-type: none"> • Per IEC 61158-2 • 15.0 mA • Profile version 3.01, Class B 	Mechanical (Threaded Connection model)	
Performance (according to reference conditions IEC60770-1)		• Threaded connection	2" NPT (ASME B1.20.1), R (BSPT, EN 10226-1), or G (BSPP, EN ISO 228-1) 316L/1.4404 or 316L/1.4435 stainless steel PTFE emitter
Maximum measured error (including hysteresis and non-repeatability)	<ul style="list-style-type: none"> • 25 mm (1 inch) from minimum detectable distance to 300 mm (11.8 inch) • Remainder of range = 6 mm (0.23 inch) or 0.05 % of spa (whichever is greater) 	• Materials	
Rated operating conditions		Certificates and approvals	
Installation conditions		General	CSA _{US/C} , CE, FM
Location	Indoor/outdoor	Radio	Europe (RED), FCC, Industry Canada, RCM
Ambient conditions (enclosure)		Hazardous	CSA/FM Class II, Div. 1, Groups E, F, G, Class III ATEX II 1D, 1/2D, 2D Ex ta IIIC T100 °C Da IECEx/ATEX II 1 GD Ex ia IIC T4 Ga, Ex ta IIIC T100 °C Da CSA/FM Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G SABS ARP0108 Ex ia IIC T4 Ga
• Ambient temperature	-40 ... +80 °C (-40 ... +176 °F)	Programming	
• Installation category	I	Intrinsically Safe Siemens handheld programmer	Infrared receiver
• Pollution degree	4	• Approvals for handheld programmer	IS model: ATEX II 1GD Ex ia IIC T4 GaEx iaD 20 T135 °C Ta = -20 ... +50 °C CSA/FM Class I, II, and III, Div. 1, Groups A, B, C, D, E, F, G, T6 Ta = 50 °C
Medium conditions		Handheld communicator	HART communicator 375
Dielectric constant ϵ_r	$\epsilon_r > 1.6$, antenna and application dependent	PC	SIMATIC PDM
Process temperature	-40 ... +200 °C (-40 ... +392 °F)	Display (local)	Graphic local user interface including quick start wizard and echo profile displays
Process pressure	<ul style="list-style-type: none"> • 0.5 bar g (7.25 psi g) maximum • 3 bar g (43.5 psi g) optional with 80 °C (176 °F) temperature max 		

¹⁾ From sensor reference point

²⁾ Universal flange mates with EN 1092-1 (PN 16)/ASME B16.5 (150 lb)/JIS 2220 (10K) bolt hole pattern

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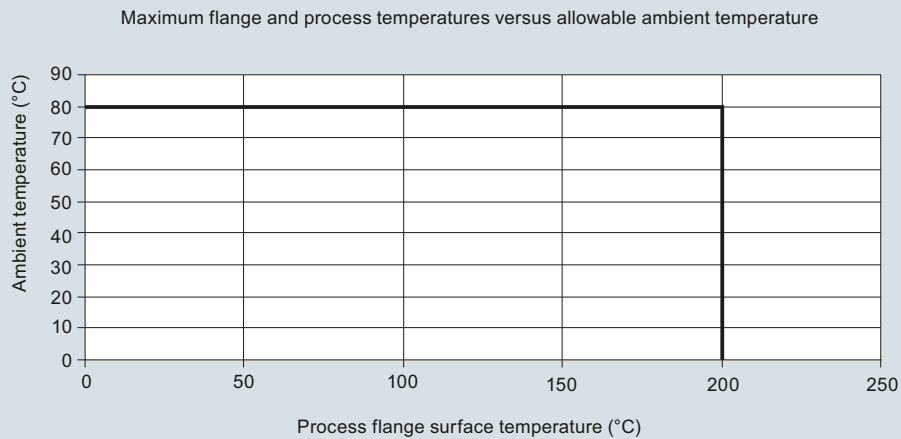
Level Measurement

Continuous level measurement

Radar transmitters

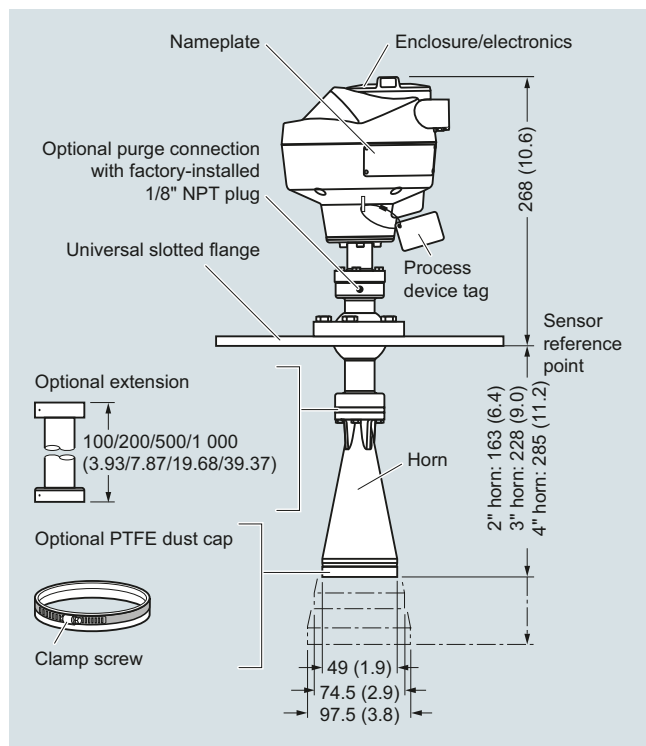
SITRANS LR260

Characteristic curves

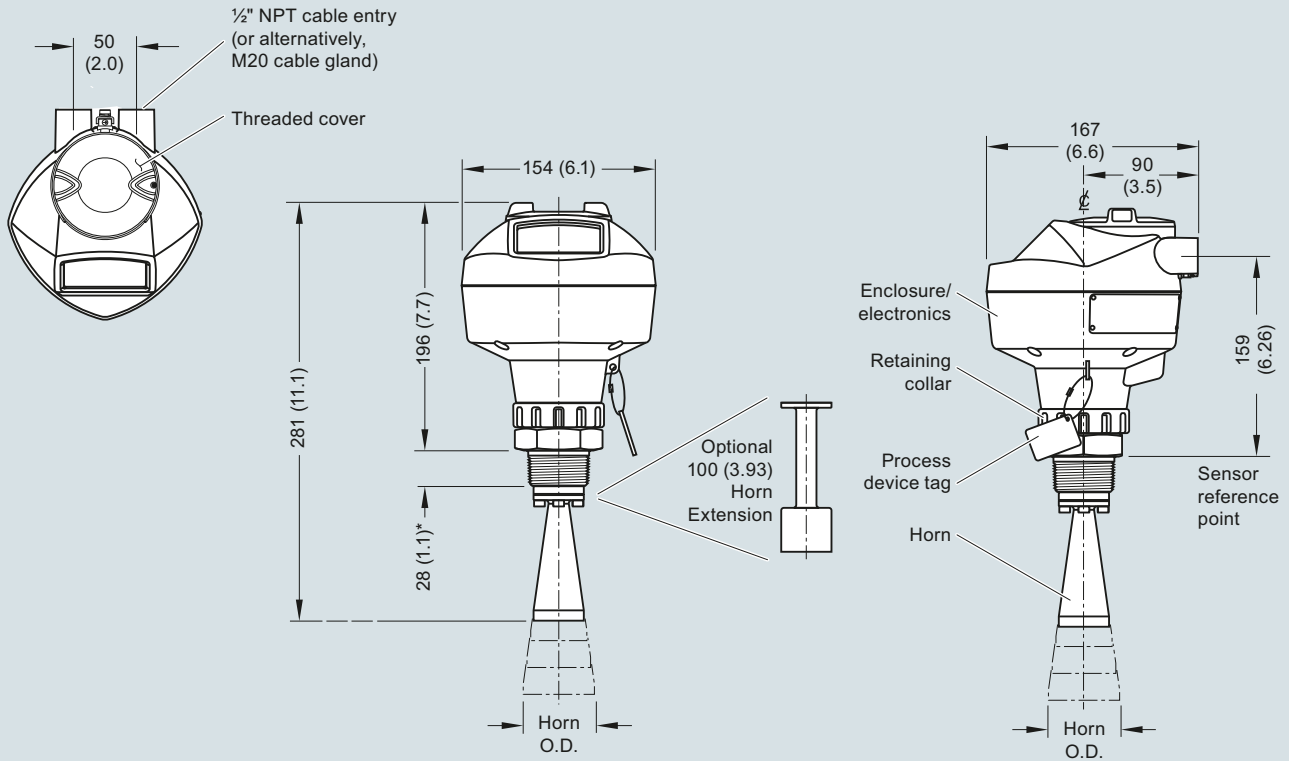


SITRANS LR260 ambient/process flange surface temperature curve

Dimensional drawings



SITRANS LR260, dimensions in mm (inch)

SITRANS LR260

Antenna Type	Antenna O.D.	Height to sensor reference point			Beam angle	Measurement range
		1-1/2" threaded connection	2" threaded connection	3" threaded connection		
2" horn	47.8 (1.88)	N/A	166 (6.55)	180 (7.09)	15 degrees	20 m (65.6 ft)
3" horn	74.8 (2.94)	N/A	199 (7.85)	213 (8.39)	10 degrees	30 m (98.4 ft)
4" horn	94.8 (3.73)	N/A	254 (10)	268 (10.55)	8 degrees	30 m (98.4 ft)

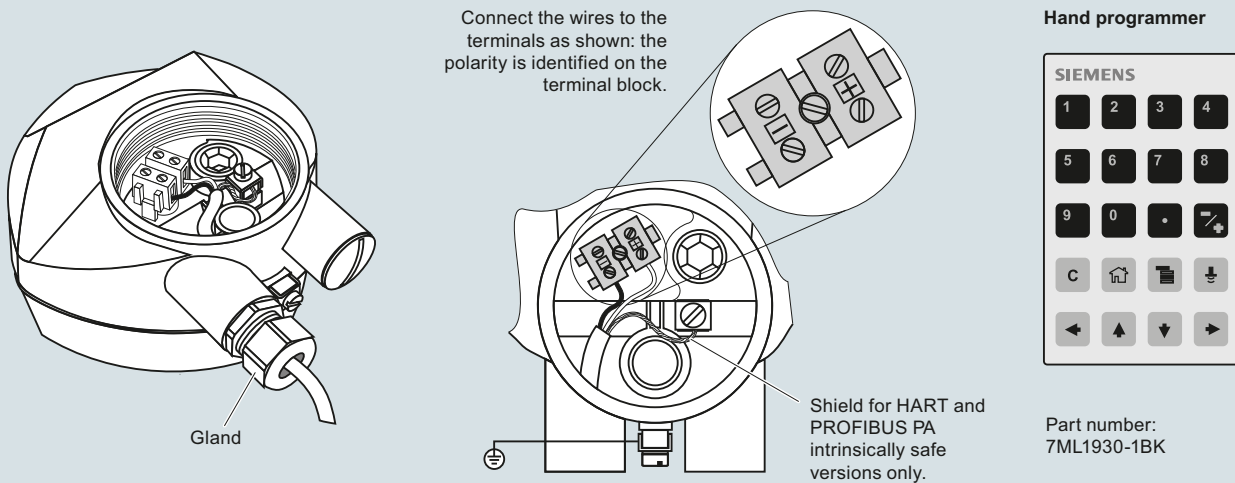
SITRANS LR260, dimensions in mm (inch)

Level Measurement

Continuous level measurement
Radar transmitters

SITRANS LR260

Circuit diagrams



Notes:

1. DC terminal shall be supplied from a source providing electrical isolation between the input and output, to meet the applicable safety requirements of IEC 61010-1.
2. All field wiring must have insulation suitable for rated input voltages.
3. Use shielded twisted pair cable (14 ... 22 AWG) for HART version.
4. Separate cables and conduit may be required to conform to standard instrumentation wiring practices or electrical codes.

SITRANS LR260 connections

Overview



The SITRANS LR460 is a 4-wire, 24 GHz FMCW radar level transmitter with extremely high signal-to-noise ratio and advanced signal processing for continuous monitoring of solids up to 100 m (328 ft). It is ideal for measurement in extreme dust and high temperature.

Benefits

- Process Intelligence for advanced signal processing and quick and easy adjustment
- Self-guided quick start wizard for plug and play startup
- 24 GHz provides superior reflective properties on solids surfaces
- 100 m (328 ft) range for long-range and difficult applications
- Easy Aimer optimizes signal quality on sloped surfaces
- Programming using infrared Intrinsically Safe handheld programmer or with SIMATIC PDM or HART handheld device

Application

SITRANS LR460 provides excellent results even during conditions of extreme dust. The integral Easy Aimer included on the SITRANS LR460 allows for easy positioning for optimum measurement on solids.

Process Intelligence onboard SITRANS LR460 means advanced signal processing is harnessed for reliable operation on both simple and difficult solids application.

SITRANS LR460 features a robust enclosure, flange and horn components. It is virtually unaffected by atmospheric or temperature conditions within the vessel.

An optional dust cap is available for sticky solids. Optional air purging is also available for extremely sticky applications.

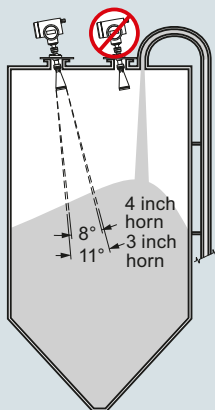
Safe on-site local programming is simple using the Intrinsically Safe handheld programmer. SIMATIC PDM can be used for easy remote programming using HART or PROFIBUS PA.

The characteristics of 24 GHz and high signal-to-noise ratio contribute to exceptional signal reflection, regardless of the dielectric value of the medium.

- Key Applications: long-range dusty applications, cement powder, fly-ash, coal, flour, grain, plastics

Configuration

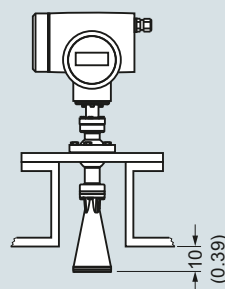
Beam angle



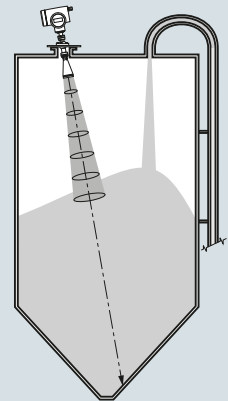
Note: For best signal, always use largest horn size possible.

Mounting unit on vessel

Installation in mounting nozzle



Positioning with Easy Aimer



SITRANS LR460 installation, dimensions in mm (inch)

Level Measurement

Continuous level measurement

Radar transmitters

SITRANS LR460

Technical specifications

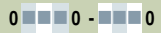
Mode of operation		Programming	
Measuring principle	FMCW radar level measurement	Intrinsically Safe Siemens handheld programmer (ordered separately)	Infrared receiver
Frequency	24.2 ... 25.2 GHz FMCW	• Approvals for handheld programmer	IS model: ATEX II 1G EEx ia IIC T4, CSA/FM Class I, Div. 1, Groups A, B, C, D T6 at max. ambient temperature of 40 °C (104 °F)
Measuring range	0.35 ... 100 m (1.15 ... 328.08 ft)		
Output		Handheld communicator	HART Communicator 375
Analog output (HART)		PC	SIMATIC PDM
• Signal range	Optically isolated	Display (local)	Alphanumeric LCD for readout and entry
• Load	Max. 600 Ω		
• Fail-safe	mA signal programmable as high, low or hold (LOE)		
Communication	HART, optional PROFIBUS PA		
Digital output	Relay, NC or NO function, max. 50 V DC, max. 200 mA, rating 5 W	Power supply	100 ... 230 V AC ± 15 % (50/60 Hz), 6 W (12 VA) or 24 V DC +25/-20 %, 6 W (optional)
PROFIBUS PA protocol	Layer 1 and 2, Class A, Profile 3.01		
Performance (Reference conditions according to IEC 60770-1)		Certificates and approvals	
Non-linearity	Greater of 25 mm (1 inch) or 0.25 % of span (including hysteresis and non-repeatability), over the full ambient temperature range	General	CSA _{US/C} , CE, FM, RCM
Non-repeatability	≤ 10 mm (0.4 inch)	Radio	European Radio (RED), Industry Canada, FCC, RCM
Rated operating conditions		Hazardous Areas	CSA/FM Class II, Div. 1, Groups E, F, and G, Class III ATEX II 1D, 1/2 D, 2D T85 °C INMETRO ExtD A20 IP67 T85 °C EAC Ex DIP A20 T _a 85 °C IP67
Amb. temperature for enclosure	-40 ... +65 °C (-40 ... +149 °F)		
Location	Indoor/outdoor	Optional equipment	
Installation category	II	Dust cap	PTFE
Pollution degree	4	Air purge connection	1/8" NPT
Medium conditions			
Dielectric constant	$\epsilon_r > 1.4$		
Process temperature range	-40 ... +200 °C (-40 ... +392 °F)		
Vessel pressure	0.5 bar g (7.25 psi g) maximum		
Design			
Weight	Approx. 6.1 kg (13.4 lb) with 3 inch universal flange		
Materials			
• Enclosure	Die-cast aluminum, painted		
• Degree of protection	IP67/Type 4X/NEMA 4X/Type 6/NEMA 6		
• Cable inlet	2 x M20 x 1.5 or ½" NPT		
Process connections			
• Universal flanges, 304 stainless steel, flat faced, with integral Easy Aimer	3 inch/80 mm, 4 inch/100 mm, 6 inch/150 mm (mates with flange EN 1092-1, ASME B16.5, or JIS B2238 bolt pattern), 0.5 bar g (7.25 psi g) max. pressure		

Level Measurement

Continuous level measurement

Radar transmitters

SITRANS LR460

Selection and Ordering data	Article No.	Selection and Ordering data	Order code
SITRANS LR460 4-wire, 24 GHz FMCW radar level transmitter with extremely high signal-to-noise ratio and advanced signal processing for continuous monitoring of solids up to 100 m (328 ft). It is ideal for measurement in extreme dust. Order handheld programmer separately ➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5426- 	Further designs Please add "-Z" to Article No. and specify Order code(s). Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters); specify in plain text Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000	 Y15 C11
Process connection Universal, flat faced, 0.5 bar g (7.25 psi g) maximum with integral Easy Aimer ball 3 inch (80 mm) 4 inch (100 mm) 6 inch (150 mm)	A B C	Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Antenna 3" horn antenna, fits 80 mm (3 inch) nozzles 3" horn antenna, fits 80 mm (3 inch) nozzles with 100 mm extension 3" horn antenna, fits 80 mm (3 inch) nozzles with 200 mm extension 3" horn antenna, fits 80 mm (3 inch) nozzles with 500 mm extension ¹⁾ 3" horn antenna, fits 80 mm (3 inch) nozzles with 1 000 mm extension ¹⁾ 4" horn antenna, fits 100 mm (4 inch) nozzles 4" horn antenna, fits 100 mm (4 inch) nozzles with 100 mm extension 4" horn antenna, fits 100 mm (4 inch) nozzles with 200 mm extension 4" horn antenna, fits 100 mm (4 inch) nozzles with 500 mm extension ¹⁾ 4" horn antenna, fits 100 mm (4 inch) nozzles with 1 000 mm extension ¹⁾	A B C D E F G H J K	Accessories Handheld programmer, Infra-red, Intrinsically Safe, EEx ia Dust cap, PTFE, for 3 inch/80 mm horn Dust cap, PTFE, for 4 inch/100 mm horn HART modem/USB (for use with a PC and SIMATIC PDM) One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), HART ¹⁾ One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), PROFIBUS PA ¹⁾ SITRANS RD100, loop powered display - see Chapter 7 SITRANS RD200, universal input display with Modbus conversion - see Chapter 7 SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7 SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7 For applicable back up point level switch - see point level measurement section	Article No. 7ML5830-2AJ 7ML1930-1BL 7ML1930-1BM 7MF4997-1DB 7ML1930-1AP 7ML1930-1AQ 7ML5741-... 7ML5740-... 7ML5744-... 7ML5750-...
Purge (self-cleaning) connection No purge connection Purge connection	 0 1		
Output/Communication 4 ... 20 mA, HART PROFIBUS PA	 0 1		
Power supply/cable inlet 100 ... 230 V AC • 2 x M20 x 1.5 • 2 x 1/2" NPT 24 V DC • 2 x M20 x 1.5 • 2 x 1/2" NPT	 A B C D		
Approvals General Purpose, CSAAus/c, Industry Canada, FM, FCC, CE, RED, RCM CSA/FM Class II, Div. 1, Groups E, F, and G, Class III ATEX II 1/2 D T6, CE, RED	 A B C		

¹⁾ Available with Purge option 0 only

Level Measurement

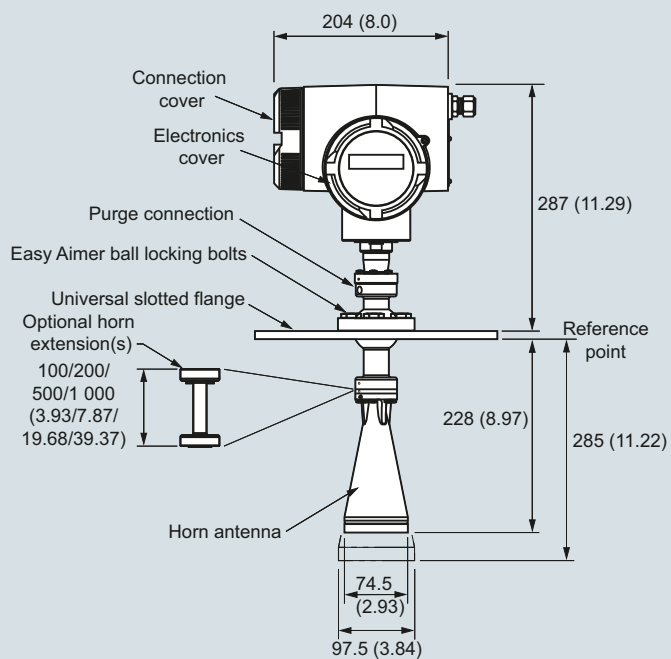
Continuous level measurement

Radar transmitters

SITRANS LR460

Dimensional drawings

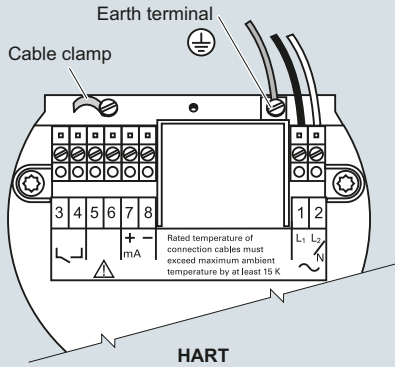
SITRANS LR460 (7ML5426)



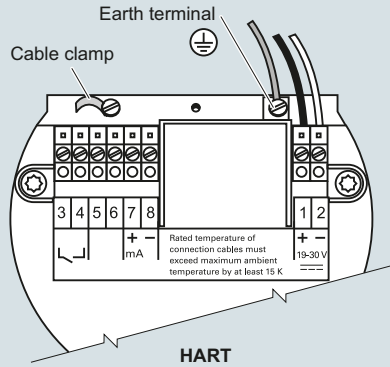
SITRANS LR460, dimensions in mm (inch)

Circuit diagrams

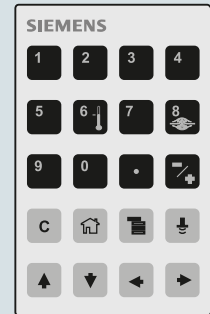
AC version



DC version

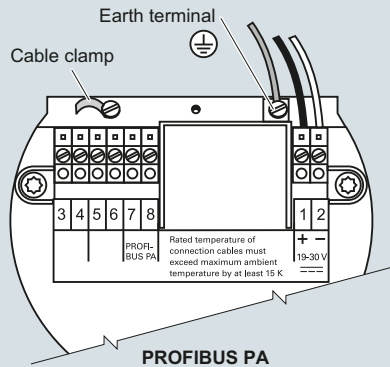
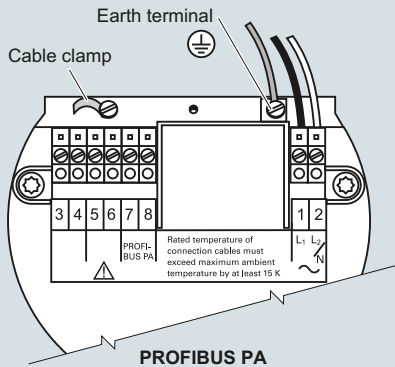


Hand programmer



SITRANS LR460

Part number:
7ML5830-2AJ



Notes

- Recommended torque on terminal clamping screws, 0.5 ... 0.6 Nm
- 4 ... 20 mA, PROFIBUS PA, DC input circuits, 14 ... 20 AWG, shielded copper wire
- AC input circuit, min. 14 AWG copper wire
- All field wiring must have insulation suitable for at least 250 V
- The equipment must be protected by a 15 A fuse or circuit breaker in the building installation

SITRANS LR460 connections

Level Measurement

Continuous level measurement
Radar transmitters

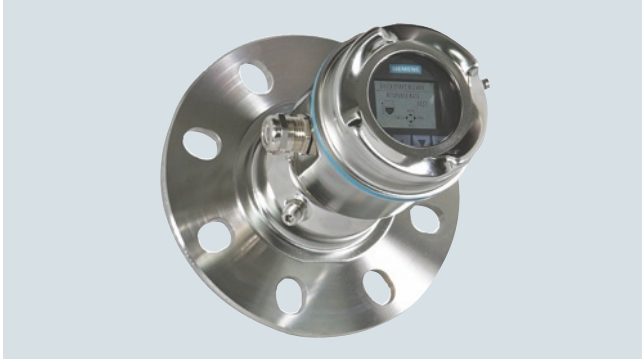
SITRANS LR260/LR460 Specials

Selection and ordering data

SITRANS LR260/LR460 Specials		Article No.
NOTE: LR260 head can be supplied with any LR250 process connection or antenna as special order. For LR250, this means a stronger signal and longer measurement range is possible.		
Process connection part kits - non-pressure-rated		
SITRANS LR260/LR460, 100 mm extension for horn antenna, no purge ¹⁾		A5E01087872
SITRANS LR260/LR460, 200 mm extension for horn antenna, no purge ¹⁾		A5E01091262
SITRANS LR260/LR460, 100 mm extension for horn antenna with purge ¹⁾		A5E01261979
SITRANS LR260/LR460, 200 mm extension for horn antenna with purge ¹⁾		A5E01261981
SITRANS LR260/LR460, horn 2", no purge, no emitter ¹⁾		A5E02083905
SITRANS LR260/LR460, horn 3", no purge, no emitter ¹⁾		A5E01623511
SITRANS LR260/LR460, horn 4", no purge, no emitter ¹⁾		A5E01623512
SITRANS LR260/LR460, horn 2", with purge, no emitter ¹⁾		A5E02083906
SITRANS LR260/LR460, horn 3", with purge, no emitter ¹⁾		A5E01623513
SITRANS LR260/LR460, horn 4", with purge, no emitter ¹⁾		A5E01623514
SITRANS LR260/LR460, 3" universal flat faced flange ¹⁾		A5E02303897
SITRANS LR260/LR460, 4" universal flat faced flange ¹⁾		A5E01259467
SITRANS LR260/LR460, 6" universal flat faced flange ¹⁾		A5E01261834
SITRANS LR260/LR460 O-rings for Easy Aimer ¹⁾		A5E01261836
Kit, Emitter for LR260/LR460 ¹⁾		A5E02360694
SITRANS LR260 lid with O-ring		A5E02465410
Purge conversion kit – non-pressure-rated (no flange or extension included)		
SITRANS LR260/LR460 purge conversion, 2" horn ¹⁾		A5E02083914
SITRANS LR260/LR460 purge conversion, 3" horn ¹⁾		A5E02083915
SITRANS LR260/LR460 purge conversion, 4" horn ¹⁾		A5E02083916
Enclosure with electronics (LR260)		
		
SITRANS LR260 enclosure with board stack, HART communication, M20 cable inlet, approval option A, no process connection		A5E02203605
SITRANS LR260 enclosure with board stack, PROFIBUS PA communication, M20 cable inlet, approval option A, no process connection		A5E02213423
SITRANS LR260 enclosure with board stack, HART communication, NPT cable inlet, approval option A, no process connection		A5E02165924
SITRANS LR260/LR460 Specials		Article No.
SITRANS LR260 enclosure with board stack, PROFIBUS PA communication, NPT cable inlet, approval option A, no process connection		A5E02213428
SITRANS LR260 enclosure with board stack, HART communication, NPT cable inlet, approval option D, no process connection		A5E03934184
SITRANS LR260 enclosure with board stack, HART communication, M20 cable inlet, approval option E, no process connection		A5E03934187
SITRANS LR260 enclosure with board stack, HART communication, M20 cable inlet, approval option F, no process connection		A5E03934191
SITRANS LR260 enclosure with board stack, PROFIBUS PA communication, M20 cable inlet, approval option E, no process connection		A5E37217558
SITRANS LR260 enclosure with board stack, PROFIBUS PA communication, M20 cable inlet, approval option E, no process connection		A5E31820689
Sun shield for SITRANS LR260 enclosure, stainless steel		
		
		A5E39142556
Enclosure with electronics (LR460)		
		
SITRANS LR460 enclosure with board stack, HART communication, AC power, M20 cable inlet, approval option A, no process connection		A5E02182085
SITRANS LR460 enclosure with board stack, PROFIBUS PA communication, AC power, M20 cable inlet, approval option A, no process connection		A5E02212422
SITRANS LR460 enclosure with board stack, HART communication, AC power, NPT cable inlet, approval option A, no process connection		A5E02212423
SITRANS LR460 enclosure with board stack, PROFIBUS PA communication, AC power, NPT cable inlet, approval option A, no process connection		A5E02212424
SITRANS LR460 enclosure with board stack, HART communication, DC power, M20 cable inlet, approval option A, no process connection		A5E02212425
SITRANS LR460 enclosure with board stack, PROFIBUS PA communication, DC power, M20 cable inlet, approval option A, no process connection		A5E02212426
SITRANS LR460 enclosure with board stack, HART communication, DC power, NPT cable inlet, approval option A, no process connection		A5E02212428
SITRANS LR460 enclosure with board stack, PROFIBUS PA communication, DC power, NPT cable inlet, approval option A, no process connection		A5E02212429

¹⁾ Available with no pressure rating, 0.5 bar g maximum.
Customers interested in a custom designed device should consult a local sales person. For more information, please visit http://www.automation.siemens.com/aspa_app.

Overview



SITRANS LR560 2-wire, 78 GHz FMCW radar level transmitter for continuous monitoring of solids and liquids to a range of 100 m (328 ft).

Benefits

- Rugged stainless steel design for industrial applications
- 78 GHz high frequency provides very narrow beam, virtually no mounting nozzle noise, and optimal reflection from sloped solids
- Aimer option to direct beam to area of interest, such as draw point of cone
- Lens antenna is highly resistant to product buildup
- Air purge connection is included for self-cleaning of extremely sticky solids
- Local display interface (LDI) allows local programming and diagnostics

Application

SITRANS LR560's plug and play performance is ideal for most solids applications and long range liquid applications, including those with extreme dust and high temperatures to 200 °C (392 °F). Unique design allows safe and simple programming using the Intrinsically Safe handheld programmer without having to open the instrument's lid.

SITRANS LR560 includes an optional graphical local display interface (LDI) that improves setup and operation using an intuitive Quick Start Wizard, and echo profile display for diagnostic support. Startup is easy using the Quick Start wizard with a few parameters required for basic operation.

SITRANS LR560 measures practically any solids material to a range of 100 m (328 ft).

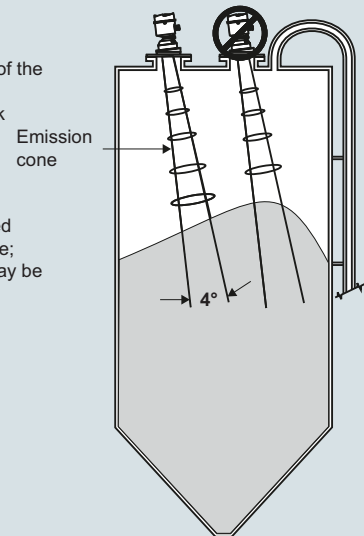
- Key Applications: cement powder, plastic powder/pellets, grain, coal, wood powder, fly ash

Configuration

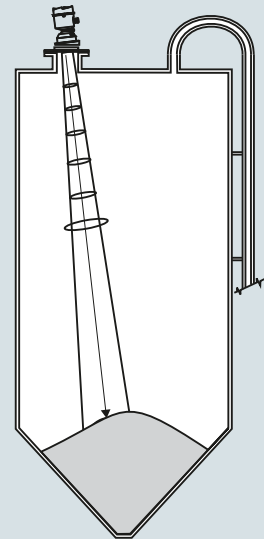
Installation

Note:

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



Aiming will assist in measuring material in the cone



SITRANS LR560 installation, dimensions in mm (inch)

Level Measurement

Continuous level measurement

Radar transmitters

SITRANS LR560

Technical specifications

Mode of operation	
Measuring principle	Radar level measurement
Frequency	78 GHz FMCW
Minimum detectable distance	400 mm (15.75 inch) from sensor reference point
Maximum measuring range ¹⁾	<ul style="list-style-type: none"> 40 m (131 ft) version 100 m (328 ft) version
Output	
Analog output	4 ... 20 mA
Communications	<ul style="list-style-type: none"> HART Optional: PROFIBUS PA Optional: FOUNDATION Fieldbus
Fail-safe	<ul style="list-style-type: none"> Programmable as high, low or hold (Loss of Echo) NE43 programmable
Performance (according to reference conditions IEC60770-1)	
Maximum measured error (including hysteresis and non-repeatability) ²⁾	5 mm (0.2 inch)
Rated operating conditions (according to reference conditions IEC60770-1)	
Installation conditions	
• Location	Indoor/outdoor
Ambient conditions (enclosure)	
• Ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
• Installation category	I
• Pollution degree	4
Medium conditions	
Dielectric constant ϵ_r	> 1.6
Process temperature and pressure	See chart below
Design	
Enclosure	
• Construction	316L/1.4404 stainless steel
• Conduit entry	M20 x 1.5, or 1/2" NPT via adapter
• Purge inlet	1/8" NPT, 30 cfm at max. 100 psi
• Lens material	<ul style="list-style-type: none"> 40 m version: PEI 100 m version: PEEK
	Damage to lens could result from continuous purging/cleaning (due to abrasive solids). Recommended to purge/clean only a few seconds every hour.
• Degree of protection	Type 4X/NEMA 4X, Type 6/NEMA 6, IP68
• Weight	3.15 kg (6.94 lb) including 3 inch flange
• Optional local display interface	Graphic LCD, with bar graph representing level
Process connections	
• Universal flat-faced flanges ³⁾	<ul style="list-style-type: none"> 3, 4, 6 inch/80, 100, 150 mm, 304 stainless steel 3, 4, 6 inch/80, 100, 150 mm, 316L/1.4404 or 316L/1.4435 stainless steel
• Aimer flanges ³⁾	3, 4, 6 inch/80, 100, 150 mm, polyurethane powder-coated cast aluminum

Power supply	
4 ... 20 mA/HART	Nominal 24 V DC (max. 30 V DC) with max. 550 Ω
PROFIBUS PA/ FOUNDATION Fieldbus	13.5 mA 9 ... 32 V DC, per IEC 61158-2
Certificates and approvals	
General	CSA _{US/C} , CE, FM
Radio	Europe (RED), FCC, Industry Canada, RCM
Hazardous	
• Europe/International	IECEX SIR 09.0149X ATEX II 1D, 1/2D, 2D Ex ta IIIC T139 °C Da ATEX II 3G Ex nA II T4 Gc Ex nL IIC T4 Gc
• US/Canada	FM/CSA Class II, Div. 1, Groups E, F, G Class III T4 FM/CSA Class I, Div. 2, Groups A, B, C, D, T4
• China	NEPSI Ex nA II T4 Ex nL IIC T4 DIP A20 TA, T139 °C
• Brazil	INMETRO Ex na IIC T4 Gc Ex ta IIIC T139 °C Da
Programming	
Intrinsically Safe Siemens handheld programmer	Infrared receiver
• Approvals for handheld programmer	IS model: 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
Handheld communicator	HART communicator 375/475
PC	SIMATIC PDM, AMS, PACTware
Display (local)	Graphic local user interface including quick start wizard and echo profile displays

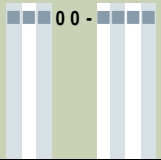
¹⁾ From sensor reference point

²⁾ Under severe EMI/EMC environments per IEC61326-1 or NAMUR NE21, the device error may increase to a maximum of 25 mm (1 inch)

³⁾ Universal flange mates with EN 1092-1 (PN16)/ASME B16.5 (150 lb)/JIS 2220 (10K) bolt hole pattern.

Process temperature and pressure

Version	Stainless steel -1 ... 0.5 bar -1 ... 3.0 bar	Aimer flange: -1 ... 0.5 bar	Aimer flange: -1 ... 3.0 bar
40 m	-40 ... +100 °C (-40 ... +212 °F)	-40 ... +100 °C (-40 ... +212 °F)	-40 ... +100 °C (-40 ... +212 °F)
100 m	-40 ... +200 °C (-40 ... +392 °F)	-40 ... +200 °C (-40 ... +392 °F)	-40 ... +120 °C (-40 ... +248 °F)

Selection and Ordering data	Article No.	Selection and Ordering data	Order code
SITRANS LR560 2-wire, 78 GHz FMCW radar level transmitter for continuous monitoring of solids and liquids to a range of 100 m (328 ft). Order handheld programmer separately ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5440- 	Further designs Please add "-Z" to Article No. and specify Order code(s). Plug M12 with mating connector ¹⁾²⁾³⁾ Plug 7/8" with mating connector ¹⁾³⁾⁴⁾ Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters); specify in plain text Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000 Material inspection Certificate Type 3.1 per EN 10204 ⁵⁾ NAMUR NE43 compliant, device preset to failsafe < 3.6 mA ⁶⁾	 A50 A55 Y15 C11 C12 N07
Measurement and process temperature range 40 m (131 ft) max range, -40 ... +100 °C 100 m (328 ft) max range, -40 ... +200 °C	0 1	Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Process connection <u>Universal flat-faced flange fits ANSI/DIN/JIS flanges</u> 80 mm/3 inch, 304 stainless steel 100 mm/4 inch, 304 stainless steel 150 mm/6 inch, 304 stainless steel 80 mm/3 inch, 316L stainless steel 100 mm/4 inch, 316L stainless steel 150 mm/6 inch, 316L stainless steel 80 mm/3 inch, painted aluminum, with integral aim ¹⁾ 100 mm/4 inch, painted aluminum, with integral aim ¹⁾ 150 mm/6 inch, painted aluminum, with integral aim ¹⁾	A B C D E F G H J	Accessories Hand Programmer, Intrinsically safe Local display interface Sun Shield Cover, 304 stainless steel Housing lid with window One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), HART ⁷⁾ One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), PROFIBUS PA ⁷⁾ SITRANS RD100, loop powered display - see Chapter 7 SITRANS RD200, universal input display with Modbus conversion - see Chapter 7 SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7 SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7 For applicable back up point level switch - see point level measurement section	Article No. 7ML1930-1BK 7ML1930-1FJ 7ML1930-1FK 7ML1930-1FL 7ML1930-1AP 7ML1930-1AQ 7ML5741-... 7ML5740-... 7ML5744-... 7ML5750-...
Enclosure (with cable inlet) Stainless steel, 1 X ½" NPT Stainless steel, 1 X M20 x 1.5 (plastic gland included)	A B		
Pressure rating 0.5 bar g (7.5 psi g) maximum 3 bar g (40 psi g) maximum	0 1		
Output/communication 4 ... 20 mA, HART PROFIBUS PA FOUNDATION Fieldbus	A B C		
Approvals General Purpose, FM, CSA US/CA, Industry Canada, FCC, CE, RED, RCM CSA/FM Class I, Div. 2, Groups A, B, C, D, Class II, Div. 1, Groups E, F, G, Class III, Industry Canada, FCC ATEX II 3G Ex nA/nL, 1D, 1/2D, 2D Ex ta, INMETRO CE, RED, RCM	A B C		
Local display interface Without With	1 2		

¹⁾ Rated to 120 °C max. when used with Pressure rating option 1.

- ¹⁾ Available with Approval option A only.
- ²⁾ Available with Enclosure option B only.
- ³⁾ Available with Output/communication options B and C only.
- ⁴⁾ Only available with enclosure option A (NPT thread).
- ⁵⁾ Available with Pressure rating option 1 only.
- ⁶⁾ Available with Output/communication option A only.
- ⁷⁾ Product shipped with plastic cable gland, rated to -20 °C. If -40 °C rating required, then metallic cable gland is recommended.

Level Measurement

Continuous level measurement

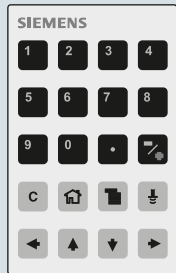
Radar transmitters

SITRANS LR560

Options

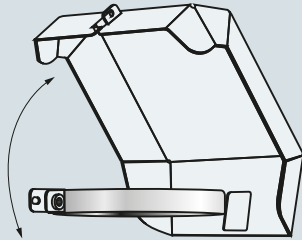
Handheld programmer

Article number:
7ML1930-1BK



Sun shield cover (304 stainless steel)

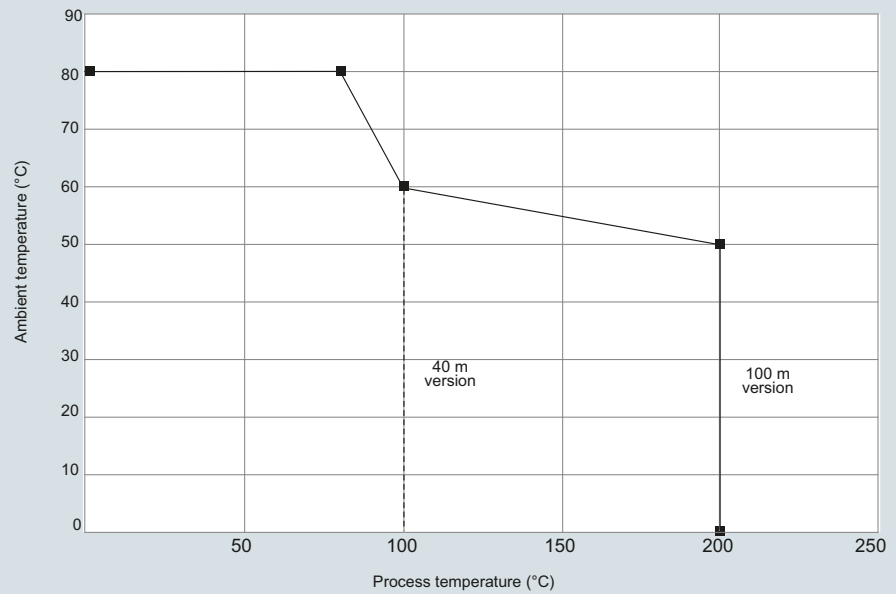
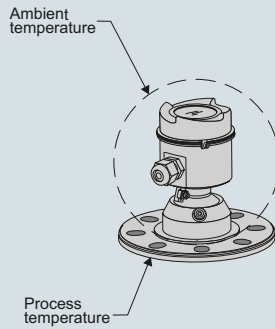
Article number:
7ML1930-1FK



SITRANS LR560 handheld programmer and sun shield cover

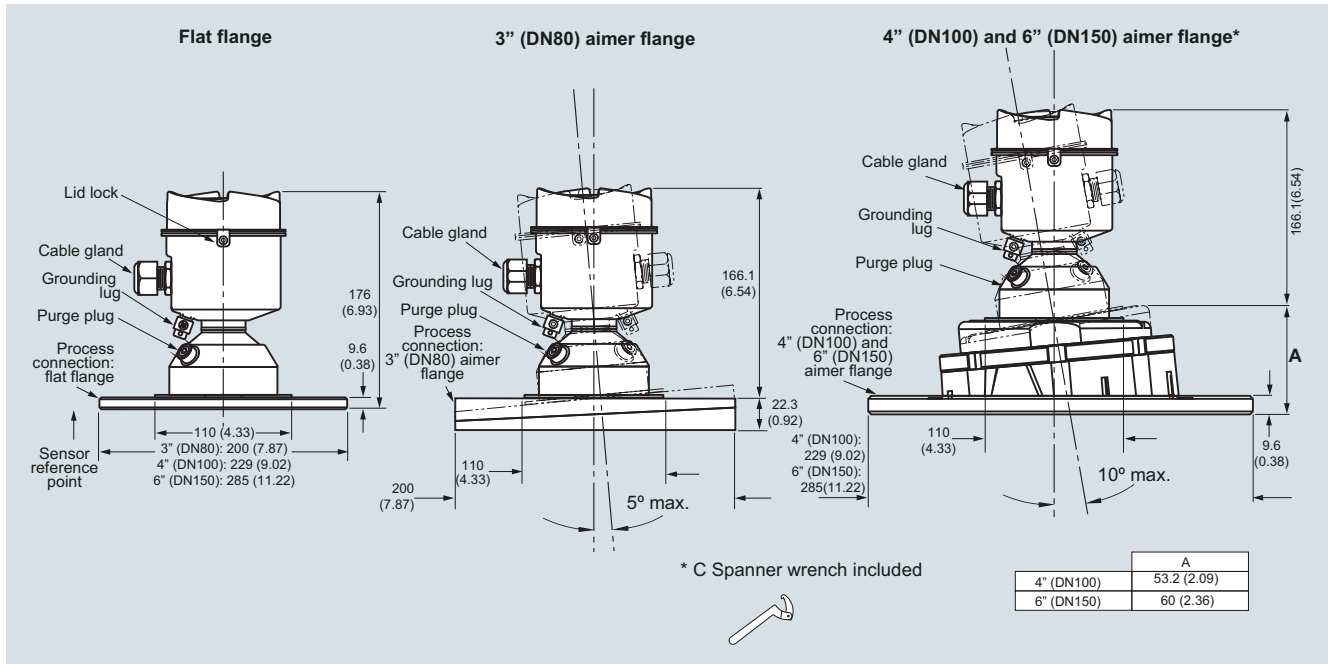
Characteristic curves

Temperature derating curve



SITRANS LR560 temperature derating curve

Dimensional drawings



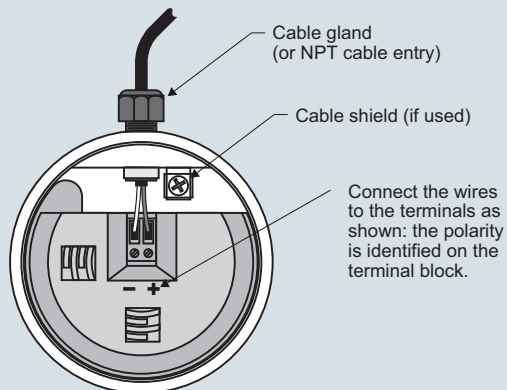
SITRANS LR560, dimensions in mm (inch)

Level Measurement

Continuous level measurement
Radar transmitters

SITRANS LR560 Specials

Circuit diagrams



Notes:

1. Depending on the approval rating, glands and plugs may be supplied with your instrument.
2. DC terminal shall be supplied from a source providing electrical isolation between the input and output, to meet the applicable safety requirements of IEC 61010-1.
3. All field wiring must have insulation suitable for rated input voltages.
4. Use shielded twisted pair cable (14 ... 22 AWG) for HART version.
5. Separate cables and conduit may be required to conform to standard instrumentation wiring practices or electrical codes.

SITRANS LR560 connections

Selection and ordering data

SITRANS LR560 Specials

	Article No.
SITRANS LR560 Electronics Modules	
SITRANS LR560 Electronics Module, HART, 100 m range, compatible with 7ML5440-1..00-.A..., no enclosure or process connection included.	7ML1830-3AC
SITRANS LR560 Electronics Module, PROFIBUS PA, 100 m range, compatible with 7ML5440-1..00-.B..., no enclosure or process connection included.	7ML1830-3AH
SITRANS LR560 Electronics Module, FOUNDATION Fieldbus, 100 m range, compatible with 7ML5440-1..00-.C..., no enclosure or process connection included.	7ML1830-3AJ
SITRANS LR560 Electronics Module, HART, 40 m range, compatible with 7ML5440-0..00-.A..., no enclosure or process connection included.	7ML1830-3AK
SITRANS LR560 Electronics Module, PROFIBUS PA, 40 m range, compatible with 7ML5440-0..00-.B..., no enclosure or process connection included.	7ML1830-3AL
SITRANS LR560 Electronics Module, FOUNDATION Fieldbus, 40 m range, compatible with 7ML5440-0..00-.C..., no enclosure or process connection included.	7ML1830-3AM
SITRANS LR560 Miscellaneous Spare Kits	
Kit, lid gasket, EPDM	7ML1830-3AA
Kit, wrench for 4" and 6" Aimers	7ML1830-3AB
Kit, O-rings for 3" Aimer	7ML1830-3AD
Kit, O-rings for 4" Aimer	7ML1830-3AE
Kit, O-rings for 6" Aimer	7ML1830-3AF
Kit, lid screw and purge plug set with hex keys	7ML1830-3AG
Kit, lid, no window	7ML1830-3AP

Customers interested in a custom designed device should consult a local sales person. For more information, please visit http://www.automation.siemens.com/aspa_app.

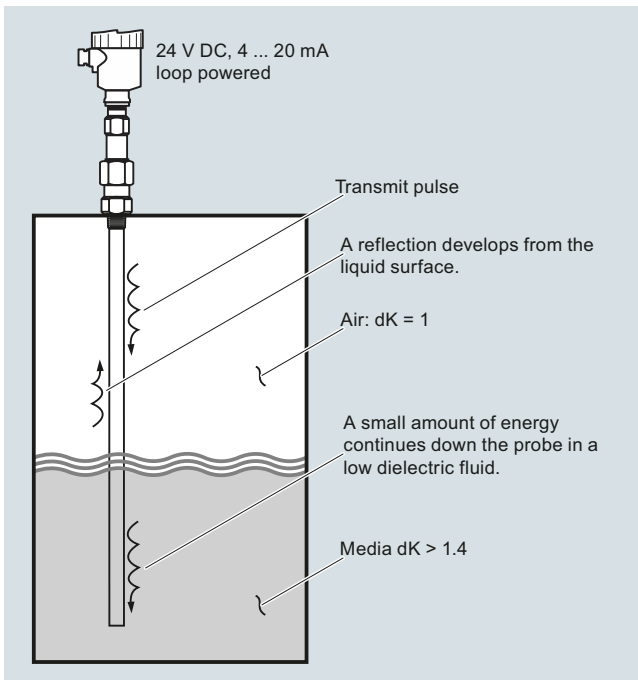
Overview**Introduction**

Guided Wave Radar transmitters use TDR (time domain reflectometry).

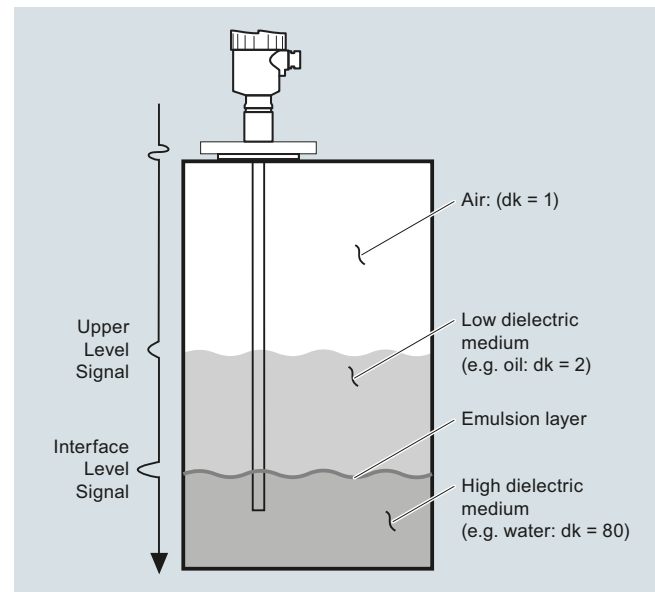
Time Domain Reflectometry (TDR)

TDR uses pulses of electromagnetic (EM) energy to measure distances or levels. When a pulse reaches a dielectric discontinuity (created by media surface), part of the energy is reflected. The greater the dielectric difference, the greater the amplitude (strength) of the reflection.

The SITRANS LG includes a transmitter and waveguide that has a characteristic impedance in air and is used as a probe. When part of the probe is immersed in a material other than air, there is lower impedance due to the increase in the dielectric. When an EM pulse is sent down the probe and meets the dielectric discontinuity, a reflection is generated.

**Mode of operation****Interface Detection**

The SITRANS LG, is a transmitter capable of measuring both an upper level and an interface level. The upper liquid must have a dielectric constant between 1.6 and 10 and the two liquids have a difference in dielectric constants greater than 10. A typical application would be oil over water, with the upper layer of oil being non-conductive with a dielectric constant of approximately 2 and the lower layer of water being very conductive with a dielectric constant of approximately 80. This interface measurement can only be accomplished when the dielectric constant of the upper medium is lower than the dielectric constant of the lower medium.



Level Measurement

Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

Overview



The Siemens SITRANS LG series are guided wave radar transmitters for level, level/interface, and volume measurement of liquids and solids. The SITRANS LG product line can handle changes in process conditions, high temperatures and pressures, and steam.

Benefits

- High accuracy to ± 2 mm
- Advanced Diagnostics available for high degree of safety
- Simple menu driven display offers ease of setup
- Large range of options offers reliability in most continuous level measurement applications
- Ease of maintenance through module design and field replaceable and adjustable probe options
- Perfect solution for wide range of applications from storage to interface with options for extreme pressure and temperature conditions
- Universally applicable in liquids, interface, slurries and solids
- Highly immune to buildup using auto learn function
- Ability to measure in loss of echo situations with probe end tracking
- Suitable for API 2350
- Convenient access using USB and remote interface accessories

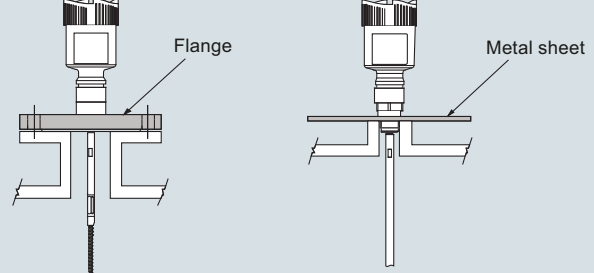
Application

The SITRANS LG series comes in four different models, depending on the applications, level of performance, and functionality required:

- SITRANS LG240 offers configuration options for your hygienic and corrosive application requirements
- SITRANS LG250 Highly flexible solution for liquid level and interface applications. Extremely versatile offering solutions for storage, separation of materials or difficult ammonia applications
- SITRANS LG260 Ideal for measuring level in medium range solids applications including; grains, plastics, and cement
- SITRANS LG270 offers configuration options for extreme conditions including high temperature and high pressure applications such as: harsh applications found in chemical, HPI and energy industries for example, LPG gas tanks, steam boilers and distillation columns

Configuration

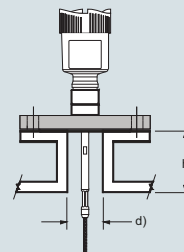
Mounting on nozzle



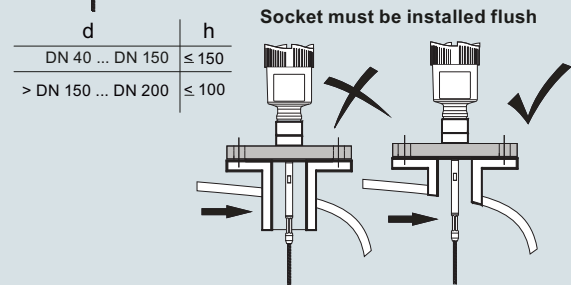
Installation in non-metal vessel

The guided microwave principle requires a metal surface on the process fitting. Therefore, use in plastic vessels etc. an instrument version with flange (from DN 50) or place a metal sheet, $\varnothing > 200$ mm (8 inch), beneath the process fitting when screwing it in. Make sure that the plate has direct contact with the process fitting

Mounting socket



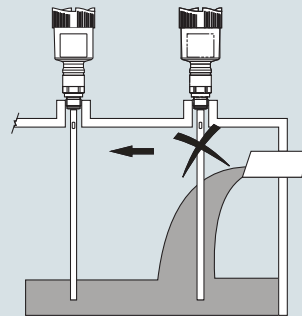
If possible, avoid sockets, mount the sensor flush with the vessel top. If this is not possible, use short sockets with small diameter. Higher sockets or sockets with a bigger diameter can generally be used. They simply increase the upper blocking distance. Check if this is relevant for your measurement. In such cases, always carry out a false signal suppression after installation.



Socket must be installed flush

When welding the socket, make sure that the socket is flush to the vessel top.

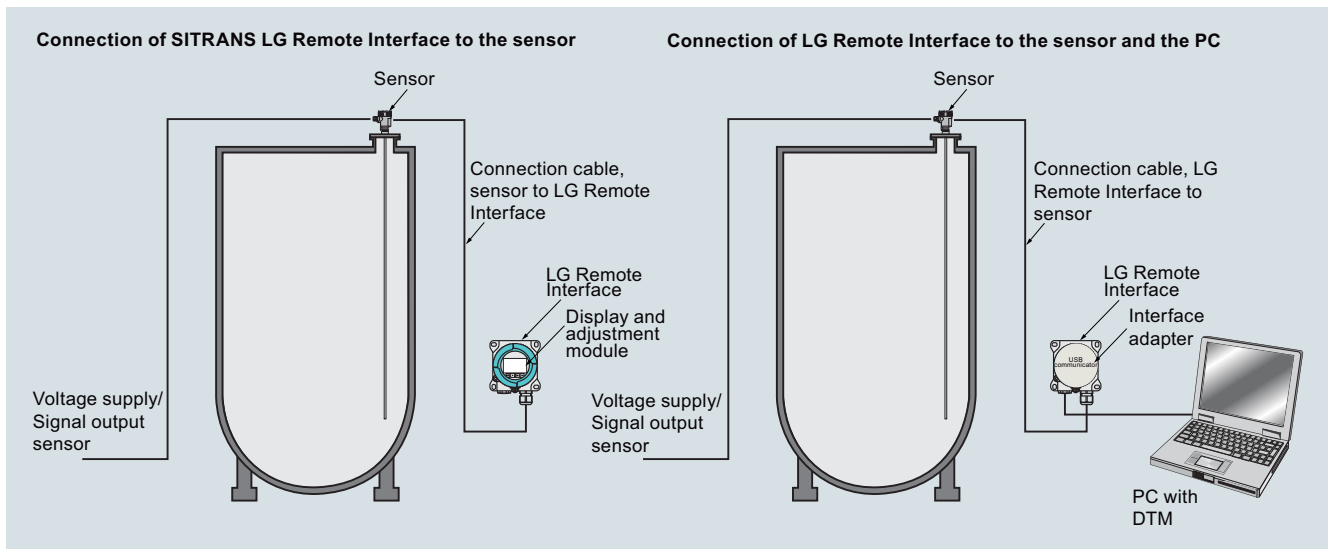
Before beginning the welding work, remove the electronics module from the sensor. By doing this, you avoid damage to the electronics through inductive coupling.



Inflowing medium

Do not mount the instruments in or above the filling stream. Make sure that you detect the product surface, not the inflowing product.

SITRANS LG Series installation



SITRANS LG Remote Interface installation

Level Measurement

Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

Technical specifications

Mode of operation		Medium conditions	
Measuring principle	Guided wave radar measurement	Dielectric constant	dK ≥ 1.4 (configuration dependent)
Measuring range	300 ... 75 000 mm (11.81 ... 2 952.75 inch)	Process temperature range	-196 ... +450 °C (-321 ... +842 °F)
Output		Vessel pressure	-1 ... +400 bar (-100 ... +40 000 kPa)
mA analog output with HART digital signal	4 ... 20 mA/HART (SIL optional)	Design	
Output range	Current: minimum 3.8 mA, maximum 20.5 mA ≤ 10 mA for 5 ms after switching on, ≤ 3.6 mA	Instrument weight (dependent on process fitting) - see manual for further details	Approx. 0.8 ... 8 kg (0.176 ... 17.64 lb)
• Analog		Materials	<ul style="list-style-type: none"> Plastic housing plastic PBT (Polyester) Aluminum die-cast housing, aluminum die-cast AlSi10 mg, powder-coated- basis: polyester Stainless steel housing, precision casting 316L Stainless steel housing, electropolished 316L
• Startup current		• Enclosure	
Diagnostic alarm	Failure signal current output (adjustable): last valid measured value, ≥ 21 mA, ≤ 3.6 mA	• Degree of protection	
Digital communication	HART Version 7 x and multidrop compatible	• Cable inlet	<ul style="list-style-type: none"> Type 4/NEMA 4, IP65 Plastic housing IP66/IP67 Aluminum and stainless steel housings are IP 66/68
Modbus	Modbus RTU, Modbus ASCII	Process connections	2 x M20 x 1.5 or 2 x ½" NPT
PROFIBUS PA	PROFIBUS PA profile 3.02	• Pipe thread, cylindrical (ISO 228 T1)	G¾" A, G1" A, G1½" A according to DIN 3852-A
FOUNDATION Fieldbus	FOUNDATION Fieldbus protocol Physical layer according to IEC 61158-2	• American pipe thread, conical (ASME B1.20.1)	¾" NPT, 1" NPT, 1½" NPT
Performance		• Flanged	DIN from DN 25, ASME from 1"
• Measuring cycle time	Process reference conditions according to DIN EN 61298-1	• Hygienic	Hygienic fittings
• Step response time	< 500 ms	Programming	
• Temperature Effects	≤ 3 s	Local	Four button, menu-driven data entry
Non-linearity	The measurement error from the process conditions is in the specified pressure and temperature range of below 1 %	Handheld communicator	Hart communicator
• Coaxial		PC	SIMATIC PDM, AMS, PACTware
• Single rod probes		Power	
• Interface models	See manual for more details	2-wire Hart version	9.6 ... 35 V DC
Resolution and repeatability	Accuracy +/- 2 mm (0.08 inch)	4-wire versions	9.6 ... 48 V DC, 20 ... 42 V AC, 50/60 Hz, and 90 ... 253 V AC, 50/60 Hz
Accuracy	+/- 2 mm (0.08 inch)	Modbus	8 ... 30 V DC
• Coaxial/rod/cable probes	+/- 5 mm (0.197 inch)	PROFIBUS PA	9 ... 32 V DC
• Interface models	Note: Typical deviation, Interface measurement. See manual for full explanation.	FOUNDATION Fieldbus	9 ... 32 V DC
Rated operating conditions			Note: see manual for specific power based on ordered options
Ambient temperature for enclosure	-40 ... +80 °C (-40 ... +176 °F)	Certificates and approvals	
LCD readable temperature range	-40 ... +80 °C (-40 ... +176 °F) with display heated option	Hazardous approvals:	ATEX, FM, CSA, IECex Note: other regional approvals are available
Location	Indoor/outdoor	Hygienic approvals:	EHEDG, FDA
Installation category	II	Overfill protection	WHG, Vlare
Pollution degree	2	Ship approval	ABS, CCS, GL, BV, LR
Relative Humidity	20 ... 85 %		

Level Measurement

Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

Industries	SITRANS LG240 Food, Beverage and Pharmaceutical	SITRANS LG250 Chemical/HPI/Power/General	SITRANS LG260 Cement, power generation, food, processing, mineral pro- cessing, mining	SITRANS LG270 Chemical/HPI/Power/General
Applications	Hygienic and corrosive applications	Liquids, storage and process vessels with agitators, vaporous liquids, interface	Cement, fly ash, grain, coal, flour, plastics	Aggressive applications in liquids, storage and process vessels with agitators, vaporous liquids, high temperatures and pressures, low dielectric media
Range	32 m	75 m	60 m	60 m
Performance	± 2 mm	± 2 mm	± 2 mm	± 2 mm
Temperature	-40 ... +150 °C (-40 ... +302 °F)	-40 ... +200 °C (-40 ... +392 °F)	-40 ... +200 °C (-40 ... +392 °F)	-196 ... +450 °C (-320.8 ... +842 °F)
Communications	<ul style="list-style-type: none"> • 4 ... 20 mA/HART • Modbus: Modbus RTU, Modbus ASCII • PROFIBUS PA • FOUNDATION Fieldbus • SIMATIC PDM • DTM/FDT for PACTware • Fieldcare 	<ul style="list-style-type: none"> • 4 ... 20 mA/HART • Modbus: Modbus RTU, Modbus ASCII • PROFIBUS PA • FOUNDATION Fieldbus • SIMATIC PDM • DTM/FDT for PACTware • Fieldcare 	<ul style="list-style-type: none"> • 4 ... 20 mA/HART • Modbus: Modbus RTU, Modbus ASCII • PROFIBUS PA • FOUNDATION Fieldbus • SIMATIC PDM • DTM/FDT for PACTware • Fieldcare 	<ul style="list-style-type: none"> • 4 ... 20 mA/HART • Modbus: Modbus RTU, Modbus ASCII • PROFIBUS PA • FOUNDATION Fieldbus • SIMATIC PDM • DTM/FDT for PACTware • Fieldcare

Level Measurement

Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

Selection and Ordering data	Article No.	Ord. Code
SITRANS LG240	7ML5880-	
Guided Wave Radar sensor for Hygienic and corrosive continuous level and interface measurement of liquids.		
➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Approvals		
General purpose (CSA, FM, CE)	0 A	
Overfill protection (WHG; VLAREM) ⁽⁹⁾⁽¹¹⁾	0 C	
ATEX II 1G, 1/2G, 2G Ex ia IIC T6 ⁽¹⁴⁾	0 E	
ATEX II 1G, 1/2G, 2G Ex ia IIC + Overfill (WHG;VLAREM) ⁽¹¹⁾	0 F	
ATEX II 1G, 1/2G 2G Ex ia IIC + ATEX II 1D, 1/2D, 2D IP6x ⁽¹⁾⁽⁹⁾⁽¹⁵⁾⁽¹⁷⁾	0 H	
ATEX II 1/2G, 2G Ex d ia IIC T6 ⁽³⁾⁽¹³⁾⁽¹⁶⁾	0 J	
ATEX II 1/2G, 2G Ex d ia IIC + ATEX II 1/2D, 2D IP6x ⁽³⁾⁽¹³⁾⁽¹⁶⁾⁽¹⁷⁾	0 K	
ATEX II 1D, 1/2D, 2D IP6x ⁽¹⁾⁽⁹⁾⁽¹⁷⁾⁽¹⁸⁾	0 N	
ATEX II 1G, II 1/2G, II 2G Ex ia IIC T6...T1 Ga, Ga/Gb, Gb /IEC Ex ia IIC T6...T1 Ga, Ga/Gb, Gb ⁽¹⁾⁽¹⁴⁾	0 W	
IEC Ex ia IIC T6 ⁽¹⁴⁾	0 P	
IEC Ex ia IIC T6 + IEC IP6x T tD ⁽¹⁾⁽⁹⁾⁽¹⁵⁾⁽¹⁷⁾	0 Q	
IEC Ex d ia IIC T6 ⁽³⁾⁽¹³⁾⁽¹⁶⁾	0 R	
IEC Ex d ia IIC T6 + IEC IP6x T tD ⁽³⁾⁽¹³⁾⁽¹⁶⁾	0 S	
FM (NI) Class I, Div. 2, Groups A, B, C, D ⁽⁹⁾⁽¹²⁾⁽¹⁶⁾	1 A	
FM (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G ⁽⁹⁾⁽¹⁵⁾	1 B	
FM (XP-AIS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G ⁽³⁾⁽¹³⁾⁽¹⁶⁾	1 C	
CSA (NI) Class I, Div. 2, Groups A, B, C, D; (DIP) Class II, III, Div. 1, Groups E, F, G ⁽¹⁾⁽⁵⁾⁽¹⁷⁾	1 E	
CSA (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G ⁽¹⁾	1 F	
CSA (XP-IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G ⁽³⁾⁽¹³⁾⁽¹⁶⁾	1 G	
NEPSI Ex ia IIC T6 ⁽¹⁴⁾	2 A	
NEPSI Ex ia IIC T6 + DIP A20/21 TA T* ⁽¹⁾⁽⁹⁾⁽¹⁵⁾	2 B	
NERSI Ex d ia IIC T6 ⁽⁹⁾⁽¹³⁾⁽¹⁶⁾	2 C	
NEPSI Ex d ia IIC T6 + DIP A20/21 TA T* ⁽⁹⁾⁽¹³⁾⁽¹⁶⁾	2 D	
NEPSI DIP A20/21 TA T* ⁽¹⁾⁽⁹⁾⁽¹⁶⁾	2 G	
INMETRO Ex ia IIC T6 ... T1 ⁽¹⁴⁾	3 A	
INMETRO Ex t IIC T* IP6X, Da, Da/Db, Da/Dc, Db + Ex ia IIC T6, Ga, Ga/Gb ⁽¹⁾⁽⁹⁾⁽¹⁵⁾	3 B	
INMETRO Ex d ia IIC T6 ... T1 ⁽⁹⁾⁽¹³⁾⁽¹⁶⁾	3 C	
INMETRO Ex t IIC T* IP6X, Da, Da/Db, Da/Dc, Db + Ex d ia IIC T6 Ga/Gb ⁽⁹⁾⁽¹³⁾⁽¹⁶⁾	3 D	
INMETRO Ex t IIC T* IP6X, Da, Da/Db, Da/Dc, Db ⁽¹⁾⁽¹³⁾⁽¹⁶⁾	3 G	
Korea KC ex free area	6 A	
GOST-R/EAC 0 Ex ia IIC T1 ... T6 X ⁽¹⁴⁾	5 A	
GOST-R/EAC 0 Ex ia IIC T1 ... T6 X + Ex t IIC T ... IP66 ⁽¹⁾⁽¹⁵⁾	5 B	
GOST-R/EAC 1 Ex d ia IIC T1 ... T6 X ⁽⁹⁾⁽¹³⁾⁽¹⁶⁾	5 C	
GOST-R/EAC 1 Ex d ia IIC T1 ... T6 X + Ex t IIC T ... IP66 ⁽⁹⁾⁽¹³⁾⁽¹⁶⁾	5 D	

Selection and Ordering data	Article No.	Ord. Code
SITRANS LG240	7ML5880-	
Guided Wave Radar sensor for Hygienic and corrosive continuous level and interface measurement of liquids.		
Note: Version/Material, Process fitting/Material, and Length options are available only with options of corresponding type.		
Probe version/Material		
Probe cable ø 4 mm (0.16 inch) with gravity weight/PFA ⁽¹⁷⁾	A	
Probe exchangeable rod ø 8 mm (0.31 inch)/1.4435 (Bastle standard) ⁽¹⁷⁾	B	
Probe exchangeable rod ø 8 mm (0.31 inch)/1.4435 (Bastle standard) can be autoclaved ⁽¹⁷⁾	C	
Probe rod ø 10 mm (0.39 inch)/PFA ⁽¹⁷⁾	D	
Probe exchangeable rod (ø 8 mm) /1.4435 (BN2), electropolished (Ra < 0.38 µm) ⁽¹⁷⁾	E	
Process fitting/Material		
Clamp 2" PN 16 (ø 64 mm) DIN 32676, ISO2852/1.4435 (BN2)	0 0	
Clamp 2" PN 16 (ø 64 mm) DIN 32676, ISO2852/PTFE-TFM 1600	0 1	
Clamp 2 1/2" PN 10 (ø 77.5 mm) DIN 32676, ISO2852/1.4435 (BN2)	0 2	
Clamp 2 1/2" PN 10 (ø 77.5 mm) DIN 32676, ISO2852/PTFE-TFM 1600	0 3	
Clamp 3" PN 10 (ø 91 mm) D N 32676, ISO2852/1.4435 (BN2)	0 4	
Clamp 3" PN 10 (ø 91 mm) DIN 32676, ISO2852/PTFE-TFM 1600	0 5	
Clamp 4" PN 6 (ø 119 mm) DIN 32676, ISO2852/1.4435(BN2)	0 6	
Clamp 4" PN 6 (ø 119 mm) DIN 32676, ISO2852/PTFE-TFM 1600	0 7	
Clamp 1½" PN 16 (ø 50.5 mm) DIN 32676, ISO2852/1.4435 (BN2)	4 0	
Bolting DN 32, PN 40 DIN 11851/1.4435(BN2)	0 8	
Bolting DN 32, PN 40 DIN 11851/PTFE-TFM 1600	1 0	
Bolting DN 40, PN 40 DIN 11851/1.4435 (BN2)	1 1	
Bolting DN 40, PN 40 DIN 11851/PTFE-TFM 1600	1 2	
Bolting DN 50, PN 25 DIN 11851/1.4435(BN2)	1 3	
Bolting DN 50, PN 25 DIN 11851/PTFE-TFM 1600	1 4	
Bolting DN 65, PN 25 DIN 11851/PTFE-TFM 1600	1 5	
Flange DN 25, PN 40 Form C, DIN 2501/PTFE-TFM 1600	2 0	
Flange DN 40, PN 40 Form C, DIN 2501/PTFE-TFM 1600	2 1	
Flange DN 50, PN 40 Form C, DIN 2501/PTFE-TFM 1600	2 2	
Flange DN 50, PN 40 Form V13, DIN 2513/PTFE-TFM 1600	2 3	
Flange DN 65, PN 40 Form C, DIN 2513/PTFE-TFM 1600	2 4	
Flange DN 80, PN 40 Form C, DIN 2501/PTFE-TFM 1600	2 5	
Flange DN 100, PN 16 Form C, DIN 2501/PTFE-TFM 1600	2 6	

Level Measurement

Continuous level measurement

Guided wave radar transmitters


SITRANS LG series

Selection and Ordering data	Article No.	Ord. Code	Selection and Ordering data	Article No.	Ord. Code
SITRANS LG240	7ML5880-		SITRANS LG240	7ML5880-	
Guided Wave Radar sensor for Hygienic and corrosive continuous level and interface measurement of liquids.			Guided Wave Radar sensor for Hygienic and corrosive continuous level and interface measurement of liquids.		
Flange DN 80, PN 40 EN 1092-1 Form B1/PTFE-TFM 1600	2 7		Aluminum double chamber/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland stainless steel	P	
Flange DN 100, PN 40 EN 1092-1 Form B1/PTFE-TFM 1600	2 8		Stainless steel (precision casting) 316L/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland stainless steel	Q	
Flange 2" 150 lb RF, ASME B16.5/PTFE-TFM 1600	3 0		Stainless steel (electropolished) 316L/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland stainless steel	R	
Flange 2" 300 lb RF, ASME B16.5/PTFE-TFM 1600	3 1		Aluminum single chamber / IP66/IP68 (0.2 bar) M20 x 1.5/cable gland brass nickel-plated	W	
Flange 3" 150 lb RF, ASME B16.5/PTFE-TFM 1600	3 2		Aluminum double chamber / IP66/IP68 (0.2 bar) M20 x 1.5/cable gland brass nickel-plated	X	
Flange 4" 150 lb RF, ASME B16.5/PTFE-TFM 1600	3 3		Stainless steel single chamber (precision casting) / IP66/IP68 (0.2 bar) M20 x 1.5/cable gland brass nickel-plated	Y	
Note: The pressure limit for all PTFE coated versions is 16 bar (per manual).			Stainless steel double chamber / IP66/IP68 (0.2 bar) M20 x 1.5/cable gland brass nickel-plated	S	
Electronics			Remote stainless steel single chamber housing, electropolished/IP66/IP67 with cable outlet IP68 (electronics separated by cable); M20 x 1.5/blind plug ¹⁰⁾	Z	Q 2 A
Two-wire 4 ... 20 mA/HART	0		Remote plastic single chamber housing / IP66/IP67 with cable outlet IP68 (electronics separated by cable); M20 x 1.5/blind plug ¹⁰⁾	Z	Q 2 B
Four-wire Modbus ³⁾¹³⁾	1				
Two-wire 4 ... 20 mA/HART with SIL qualification ⁹⁾	2				
Four-wire 4 ... 20 mA/HART; 90 ... 253 V AC; 50/60 Hz ³⁾¹³⁾	3				
Four-wire 4 ... 20 mA/HART; 9.6 ... 48 V DC; 20 ... 42 V AC ³⁾¹³⁾	4				
PROFIBUS PA ⁹⁾	5				
FOUNDATION Fieldbus ⁹⁾	6				
Seal/Process temperature			Lengths		
Without glass seal/-40 ... +150 °C (-40 ... +302 °F) ²⁾	A		Rod ø 8 mm (0.31 inch)/1.4435 (Basic standard 300 ... 4 000 mm)		
FFKM (Kalrez 6221)/-20 ... 150 °C (-4 ... +302 °F) ⁴⁾	B		300 ... 1 000 mm (11.81 ... 39.37 inch) ⁶⁾	0	
EPDM (Freudenberg 70 EPDM 291)/-20 ... 130 °C (-4 ... +266 °F) ⁴⁾	C		1 001 ... 2 000 mm (39.41 ... 78.74 inch) ⁶⁾	1	
Housing/Protection/Cable			2 001 ... 3 000 mm (78.78 ... 118.11 inch) ⁶⁾	2	
Note: for installation of remote display, 7ML5840, with LG two chamber housing options, contact PVC			3 001 ... 4 000 mm (118.15 ... 157.48 inch) ⁶⁾	3	
Plastic IP66/IP67 M20 x 1.5/blind stopper	A		Rod ø 10 mm (0.24 inch)/PFA (300 ... 4 000 mm)		
Plastic IP66/IP67 1/2" NPT/blind stopper	B		300 mm (11.81 inch) ⁶⁾	9	R 1 A
Aluminum/IP66/IP68 (0.2 bar) M20 x 1.5/blind stopper	C		500 mm (19.69 inch) ⁶⁾	9	R 1 B
Aluminum/IP66/IP68 (0.2 bar) 1/2" NPT/blind stopper	D		300 ... 1 000 mm (11.81 ... 39.37 inch) ⁶⁾	9	R 1 C
Aluminum double chamber/IP66/IP68 (0.2 bar) M20 x 1.5/blind stopper	E		1 001 ... 5 000 mm (39.41 ... 78.74 inch) ⁶⁾	9	R 1 D
Aluminum double chamber/IP66/IP68 (0.2 bar) 1/2" NPT/blind stopper	F		2 001 ... 3 000 mm (78.78 ... 118.11 inch) ⁶⁾	9	R 1 E
Stainless steel (precision casting) 316L/IP66/IP68 (0.2 bar) M20 x 1.5/blind stopper	G		3 001 ... 4 000 mm (118.15 ... 157.48 inch) ⁶⁾	9	R 1 F
Stainless steel (precision casting) 316L/IP66/IP68 (0.2 bar) 1/2" NPT/blind stopper	H		Cable ø 4 mm (0.16 inch)/PFA (500 ... 32 000 mm)		
Stainless steel (electropolished) 316L/IP66/IP68 (0.2 bar) M20 x 1.5/blind stopper	J		500 mm (9.69 inch)	9	R 1 G
Stainless steel (electropolished) 316L/IP66/IP68 (0.2 bar) 1/2" NPT/blind stopper	K		501 ... 1 000 mm (19.72 ... 39.37 inch)	9	R 1 H
Stainless steel double chamber/IP66/IP68 (0.2 bar) M20 x 1.5/blind stopper	L		1 001 ... 2 000 mm (39.41 ... 78.74 inch)	9	R 1 J
Stainless steel double chamber/IP66/IP68 (0.2 bar) 1/2" NPT/blind stopper	M		2 001 ... 4 000 mm (78.78 ... 157.40 inch)	9	R 1 K
Aluminum/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland stainless steel	N		4 001 ... 5 000 mm (157.52 ... 196.85 inch)	9	R 1 L
			5 001 ... 10 000 mm (196.89 ... 393.70 inch)	9	R 1 M
			10 001 ... 15 000 mm (393.74 ... 590.55 inch)	9	R 1 N
			15 001 ... 20 000 mm (590.59 ... 787.40 inch)	9	R 1 P
			20 001 ... 25 000 mm (787.44 ... 984.25 inch)	9	R 1 Q
			25 001 ... 32 000 mm (984.29 ... 1 259.52 inch)	9	R 1 R

Level Measurement

Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

Selection and Ordering data	Article No.	Ord. Code
SITRANS LG240	7ML5880-	
Guided Wave Radar sensor for Hygienic and corrosive continuous level and interface measurement of liquids.		
Exchange rod \varnothing 8 mm (0.31 inch)/1.4435 (BN2), electropolished (Ra < 0.38 μ m)		
300 ... 1 000 mm (11.81 ... 39.37 inch) ⁶⁾		9 R 2 A
1 001 ... 2 000 mm (39.41 ... 78.74 inch) ⁶⁾		9 R 2 B
2 001 ... 3 000 mm (78.78 ... 118.11 inch) ⁶⁾		9 R 2 C
3 001 ... 4 000 mm (118.15 ... 157.48 inch) ⁶⁾		9 R 2 D

Selection and Ordering data	Order code
Further designs (mandatory)	
Please add "-Z" to Article No. and specify Order code(s).	
Supplementary electronics	
Without	A00
Additional current output 4 ... 20 mA ¹⁰⁾	A01
Indicating/adjustment module	
Without	E00
Mounted	E01
Laterally mounted	E02
Language of display	
German	L00
English	L01
French	L02
Dutch	L03
Italian	L04
Spanish	L05
Portuguese	L06
Russian	L07
Chinese	L08
Japanese	L09
Operating instructions	
German	M00
English	M01
French	M02
Spanish	M03

Selection and Ordering data	Order code
Further designs (optional)	
Please add "-Z" to Article No. and specify Order code(s).	
Enter the total insertion length in plain text description	Y01
Enter the total length of rigid part (cable version only) range from 100 ... 1 000 mm	Y02
Cleaning included certificate: oil, grease and silicone free	W01
Remote electronic cable lengths: 2 m (6.6 ft). Only available with Housing options Q2A and Q2B	Y10
Remote electronic cable lengths: 5 m (16.4 ft). Only available with Housing options Q2A and Q2B	Y11
Remote electronic cable lengths: 10 m (32.8 ft). Only available with Housing options Q2A and Q2B	Y12
Identification label (measurement loop) stainless steel, 40 characters max, add in plain text. To add more than one line use a comma ",", for line break.	Y17
Identification Label (measurement loop) foil, 40 characters max, add in plain text. To add more than one line use a comma ",", for line break.	Y18
3.1-Inspection Certificate for instrument (EN 10204) ⁸⁾	C12
NACE0175 to 3.1 Material Certificate for material (EN10204 NACE MR 0175) (NACE not in scope for Hygienic process connections) ^{9),19)}	D07
3.1-Inspection Certificate for instrument with test data (EN 10204) ⁸⁾	C25
2.2-Factory certificate for material (EN 10204) ⁸⁾	C15
Quality and test plan ⁸⁾	C26
Dye penetration test, results confirmed via a 3.1 certificate/instrument (EN10204) ⁸⁾	C13
X-ray test + 3.1 certificate/instrument ⁸⁾	C14
Positive material identification test + 3.1 certificate/instrument ⁸⁾	C16
Roughness test + 3.1 certificate/instrument ⁸⁾	C18
Pressure test + 3.1 certificate/instrument ⁸⁾	C31
Helium leak test + 3.1 certificate/instrument ⁸⁾	C32
Ferrite measuring accuracy to DIN 32514-1 + 3.1 certificate/instrument ⁸⁾	C60
Pressure test according to Norsok + 3.1 certificate/instrument ⁸⁾	C61
5 point calibration certificate (min. length 1 000 mm) ⁸⁾	C62

Selection and Ordering data	Article No.
Operating Instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories	
SITRANS LG, GWR sensor Display Module	A5E34143449
SITRANS LG, two-wire 4 ... 20 mA/HART electronic	A5E35637821
SITRANS LG, USB communicator	A5E35192015
SITRANS LG, Mounting eye M12 x 20	PBD:51041448
SITRANS LG, Mounting spring	PBD:51041449
Siemens Intrinsically Safe Barrier (DC powered), ATEX II 1 G EEx ia	7NG4124-0AA00
SITRANS RD100, loop powered display - see Chapter 7	7ML5741-...
SITRANS RD200, universal input display with Modbus conversion - see Chapter 7	7ML5740-...
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7	7ML5744-...
SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7	7ML5750-...
For applicable back up point level switch - see point level measurement section	

Note: some configuration options are not available.
For restriction information see the online PIA configuration tool.

- 1) Some approvals are not available with Plastic and Stainless steel (electropolished) Housing/Protection/Cable options and certain glands.
- 2) Available only with Rod ø 10 mm/PFA and Cable ø 4 mm/PFA Length options.
- 3) Available only with Supplementary electronic option A00 and Indicating/adjustment module options E00, E01.
- 4) Not available with Remote Housing/Protection/Cable options Q2A and Q2B.
- 5) Not available with Electronic option 5.
- 6) Not available with Y02.
- 7) Available only with Electronic options 0, 2, and 6.
- 8) Listed Certificates are not available with all configurations, please contact factory for more information.
- 9) Available only with Supplementary electronic option A00.
- 10) Not available with Indicating/adjustment module option E02.
- 11) Available only with Electronics options 0, 2, and 5.
- 12) Some approvals are not available with Remote or Stainless steel (electropolished) Housing/Protection/Cable options and certain glands.
- 13) Available only with Double chamber, Metallic Housing/Protection/Cable options and certain glands.
- 14) Available only with Electronics options 0, 2, 5, 6.
- 15) Available only with Electronics options 0 and 2.
- 16) Available only with Electronics options 0 ... 4.
- 17) Not available with some Seal/Process Temperature options.
- 18) Available only with Electronic options 0, 2, 3, and 4.
- 19) Available only with 316L Probes. NACE is not available with coated, plated, or hygienic connections.

Note: Please consult manual for further detail.

Level Measurement

Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

Selection and Ordering data	Article No.	Ord. Code	Selection and Ordering data	Article No.	Ord. Code
SITRANS LG250	7ML5881-		SITRANS LG250	7ML5881-	
A guided wave radar sensor for continuous level and interface measurement of liquids.			A guided wave radar sensor for continuous level and interface measurement of liquids.		
➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.					
Approvals					
General purpose (CSA, FM, CE)	0 A		CSA (XP) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G ⁽⁹⁾⁽¹⁸⁾⁽¹⁹⁾⁽²⁶⁾	1 H	
Shipping approval ⁽⁴⁾⁽⁶⁾⁽⁷⁾⁽⁸⁾⁽⁹⁾	0 B		CSA (NI) Class I, II, III Div. 2, Groups A, B, C, D, F, G + Ship approval ⁽¹⁾⁽⁶⁾⁽¹⁰⁾	7 K	
Overfill protection (WHG; VLAREM) ⁽⁹⁾⁽¹⁰⁾⁽¹¹⁾⁽¹²⁾	0 C		CSA (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G + Ship approval ⁽⁶⁾⁽¹⁰⁾⁽²²⁾	7 L	
ATEX II 1G, 1/2G, 2G Ex ia IIC T6 ⁽¹²⁾⁽¹³⁾	0 E		CSA (XP-IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G + Ship approval ⁽⁶⁾⁽⁹⁾⁽¹⁵⁾⁽⁴⁰⁾	7 M	
ATEX II 1G, 1/2G, 2G Ex ia IIC + Overfill (WHG; VLAREM) ⁽¹⁰⁾⁽¹²⁾	0 F		CSA (XP) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G + Ship approval ⁽⁶⁾⁽⁹⁾⁽¹⁰⁾⁽¹⁹⁾⁽²⁶⁾	7 N	
ATEX II 1G, 1/2G, 2G Ex ia IIC T6 + shipping approval ⁽⁴⁾⁽⁶⁾⁽⁸⁾⁽⁹⁾⁽¹⁰⁾⁽¹⁵⁾	0 G		NEPSI Ex ia IIC T6 ⁽⁵⁾⁽¹³⁾	2 A	
ATEX II 1G, 1/2G, 2G Ex ia IIC + ATEX II 1D, 1/2D, 2D IP6x ⁽¹⁾⁽⁹⁾⁽¹⁴⁾	0 H		NEPSI Ex ia IIC T6 + DIP A20/21 TA T* ⁽¹⁾⁽⁹⁾⁽¹⁴⁾	2 B	
ATEX II 1/2G, 2G Ex d ia IIC T6 ⁽²⁾⁽⁹⁾⁽¹⁵⁾⁽¹⁶⁾⁽¹⁷⁾	0 J		NEPSI Ex d ia IIC T6 ⁽²⁾⁽⁹⁾⁽¹⁷⁾	2 C	
ATEX II 1/2G, 2G Ex d ia IIC + ATEX II 1/2D, 2D IP6x ⁽²⁾⁽⁹⁾⁽¹⁵⁾⁽¹⁶⁾⁽¹⁷⁾	0 K		NEPSI Ex d ia IIC T6 + DIP A20/21 TA T* ⁽²⁾⁽⁹⁾⁽¹⁷⁾	2 D	
ATEX II 1/2G, 2G Ex d IIC T6 ⁽¹⁾⁽⁹⁾⁽¹⁸⁾⁽¹⁹⁾	0 L		NEPSI Ex d IIC T6 ⁽⁹⁾⁽¹⁴⁾⁽¹⁹⁾⁽²⁶⁾	2 E	
ATEX II 1/2G, 2G Ex d IIC + ATEX II 1/2D, 2D IP6x ⁽¹⁾⁽⁹⁾⁽¹⁹⁾⁽²⁰⁾	0 M		NEPSI Ex d IIC T6 + DIP A20/21 TA T* ⁽⁹⁾⁽¹⁴⁾⁽¹⁹⁾⁽²⁶⁾	2 F	
ATEX II 1D, 1/2D, 2D IP6x T ⁽¹⁾⁽⁹⁾⁽¹⁷⁾⁽¹⁹⁾	0 N		NEPSI DIP A20/21 TA T* ⁽¹⁾⁽⁹⁾⁽¹⁷⁾⁽¹⁹⁾	2 G	
ATEX II 1G, II 1/2G, II 2G Ex ia IIC T6...T1 Ga, Ga/Gb, Gb / IEC Ex ia IIC T6...T1 Ga, Ga/Gb, Gb ⁽¹³⁾	0 W		INMETRO Ex ia IIC T6 ... T1 ⁽⁵⁾⁽¹³⁾	3 A	
ATEX II 1/2G, II 2G Ex db IIC T6 ... T1 Ga/Gb, Gb / IEC Ex db IIC T6 ... T1 Ga/Gb, Gb ⁽¹⁸⁾⁽¹⁹⁾⁽²⁶⁾	1 K		INMETRO Ex t IIIC T* IP6X, Da, Da/Db, Da/Dc, Db + Ex ia IIC T6, Ga, Ga/Gb ⁽¹⁾⁽⁹⁾⁽¹⁴⁾	3 B	
ATEX II 1/2G, II 2G Ex d ia IIC T6...T1 Ga/Gb, Gb + Ship approval ⁽²⁾⁽⁶⁾⁽⁹⁾⁽¹⁴⁾⁽¹⁵⁾⁽¹⁶⁾	7 A		INMETRO Ex d ia IIC T6 ... T1 ⁽²⁾⁽⁹⁾⁽¹⁷⁾	3 C	
ATEX II 1/2G, II 2G Ex db IIC T6...T1 Ga/Gb, Gb + Ship approval ⁽¹⁾⁽⁶⁾⁽⁹⁾⁽¹⁰⁾⁽¹⁵⁾	7 B		INMETRO Ex t IIIC T* IP6X, Da, Da/Db, Da/Dc, Db + Ex d IIC T6 Ga/Gb ⁽¹⁾⁽⁹⁾⁽¹⁷⁾	3 D	
IEC Ex ia IIC T6 ⁽¹²⁾⁽¹³⁾	0 P		INMETRO Ex d IIC T6 ... T1 ⁽⁹⁾⁽¹³⁾⁽¹⁹⁾⁽²⁶⁾	3 E	
IEC Ex ia IIC T6 + IEC IP6x T d ⁽¹⁾⁽⁹⁾⁽¹⁴⁾⁽¹⁹⁾	0 Q		INMETRO Ex t IIIC T* IP6X, Da, Da/Db, Da/Dc, Db ⁽⁹⁾⁽¹⁷⁾⁽¹⁹⁾⁽²⁶⁾	3 F	
IEC Ex d ia IIC T6 ⁽²⁾⁽⁹⁾⁽¹⁵⁾⁽¹⁶⁾⁽¹⁷⁾	0 R		INMETRO Ex t IIIC T* IP6X, Da, Da/Db, Da/Dc, Db ⁽⁹⁾⁽¹⁷⁾⁽¹⁹⁾⁽²⁶⁾	3 G	
IEC Ex d ia IIC T6 + IEC IP6x T d ⁽²⁾⁽⁹⁾⁽¹⁵⁾⁽¹⁶⁾⁽¹⁷⁾⁽²¹⁾	0 S		KOSHA Ex d IIC T6 ... T1 – KE ⁽⁹⁾⁽¹⁴⁾⁽¹⁹⁾⁽²⁶⁾	4 A	
IEC Ex d IIC T6 ⁽¹⁾⁽⁹⁾⁽¹⁸⁾⁽¹⁹⁾	0 T		Korea KC ex free area	6 A	
IEC Ex d IIC T6 + IEC IP6x T d ⁽¹⁾⁽⁹⁾⁽¹⁹⁾	0 U		GOST-R/EAC 0 Ex ia IIC T1 ... T6 X ⁽¹³⁾	5 A	
IEC Ex db IIC T6 ... T1 Ga/Gb, Gb + Ship approval ⁽¹⁾⁽⁶⁾⁽⁹⁾⁽¹⁰⁾⁽¹⁹⁾	7 C		GOST-R/EAC 0 Ex ia IIC T1 ... T6 X + Ex t IIIC T ... IP66 ⁽¹⁾⁽¹⁴⁾	5 B	
IEC Ex ia IIC T6 ... T1 Ga, Ga/Gb, Gb + Ship approval ⁽⁶⁾⁽¹⁰⁾⁽²²⁾	7 D		GOST-R/EAC 1 Ex d ia IIC T1 ... T6 X ⁽²⁾⁽⁹⁾⁽¹⁷⁾	5 C	
IEC Ex d ia IIC T6 ... T1 Ga/Gb, Gb + Ship approval ⁽²⁾⁽⁶⁾⁽⁹⁾⁽¹⁴⁾⁽¹⁵⁾⁽²¹⁾	7 E		GOST-R/EAC 1 Ex d ia IIC T1 ... T6 X + Ex t IIIC T ... IP66 ⁽²⁾⁽⁹⁾⁽¹⁷⁾	5 D	
FM (NI) Class I, Div. 2, Groups A, B, C, D ⁽³⁾⁽⁹⁾⁽¹⁷⁾⁽²³⁾	1 A		GOST-R/EAC 1 Ex d IIC T1 ... T6 X ⁽¹⁴⁾⁽²⁶⁾	5 E	
FM (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F ⁽⁵⁾⁽⁹⁾⁽¹⁴⁾	1 B		GOST-R/EAC 0 Ex d IIC T1 ... T6 X + Ex t IIIC T ... IP66 ⁽¹⁴⁾⁽²⁶⁾	5 F	
FM (XP-AIS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G ⁽²⁾⁽⁹⁾⁽¹⁵⁾⁽¹⁶⁾⁽¹⁷⁾	1 C		GOST-R/EAC Ex t IIIC T ... IP66 ⁽¹⁾⁽¹⁷⁾	5 G	
FM (XP) Class I, Div. 1, Groups A, B, C, D ⁽⁹⁾⁽¹⁹⁾⁽²⁰⁾⁽²⁶⁾	1 D		Note: Version/Material, Process fitting/ Material, and Length options are available only with options of corresponding type.		
FM (NI) Class I, II, III, Div. 2, Groups A, B, C, D, F, G + Ship approval ⁽⁶⁾⁽⁹⁾⁽¹⁴⁾⁽²³⁾⁽⁴¹⁾	7 F		Probe version/Material		
FM (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G + Ship approval ⁽⁶⁾⁽⁹⁾⁽¹⁴⁾⁽²²⁾	7 G		Probe exchangeable cable ø 2 mm (0.08 inch) with gravity weight/316L ⁽¹¹⁾⁽²⁷⁾⁽²⁸⁾	A	
FM (XP-AIS) Class I, Div. 1, Groups A, B, C, D, + Ship approval ⁽⁶⁾⁽⁹⁾⁽¹⁴⁾⁽²²⁾	7 H		Probe exchangeable cable ø 2 mm (0.08 inch) center weight/316L ⁽¹¹⁾⁽²⁸⁾⁽²⁹⁾	B	
M (XP) Class I, Div. 1, Groups A, B, C, D + Ship approval ⁽⁶⁾⁽¹⁴⁾⁽¹⁹⁾⁽²⁶⁾	7 J		Probe exchangeable cable ø 4 mm (0.16 inch) with gravity weight/316L ⁽¹¹⁾⁽²⁷⁾⁽²⁸⁾	C	
CSA (NI) Class I, Div. 2, Groups A, B, C, D (DIP) Class II, III, Div. 1, Groups E, F, G ⁽¹⁾	1 E		Probe exchangeable cable ø 4 mm (0.16 inch) with center weight/316L ⁽¹¹⁾⁽²⁸⁾⁽²⁹⁾	D	
CSA (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G ⁽³⁾⁽¹³⁾	1 F		Probe exchangeable rod ø 8 mm (0.31 inch)/316L ⁽¹¹⁾⁽²⁷⁾	E	
CSA (XP-IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G ⁽²⁾⁽⁹⁾⁽¹⁵⁾⁽¹⁶⁾⁽¹⁷⁾	1 G		Probe exchangeable rod ø 12 mm (0.47 inch)/316L ⁽¹¹⁾⁽²⁷⁾	F	

Level Measurement

Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

Selection and Ordering data	Article No.	Ord. Code	Selection and Ordering data	Article No.	Ord. Code
SITRANS LG250	7ML5881-		SITRANS LG250	7ML5881-	
A guided wave radar sensor for continuous level and interface measurement of liquids.			A guided wave radar sensor for continuous level and interface measurement of liquids.		
Probe coax version ø 21.3 mm (0.84 inch) with single hole/316L ¹¹⁾²⁷⁾²⁸⁾	G		Flange 3" 150 lb RF, ASME B16.5/316L	4 0	
Probe coax version ø 21.3 mm (0.84 inch) with multiple hole/316L ²⁷⁾²⁸⁾	H		Flange 3" 300 lb RF, ASME B16.5/316L	4 1	
Probe coax version ø 42.2 mm (1.66 inch) with multiple hole/316L ¹¹⁾²⁷⁾²⁸⁾	K		Flange 4" 150 lb RF, ASME B16.5/316L	4 2	
Probe exchangeable cable ø 4 mm (0.16 inch) with gravity weight/ Alloy C22 (2.4602) ¹¹⁾	L		Flange 4" 300 lb RF, ASME B16.5/316L	4 3	
Probe exchangeable cable ø 4 mm (0.16 inch) with centre weight/ Alloy C22 (2.4602) ¹¹⁾	M		Flange 6" 150 lb RF, ASME B16.5/316L	4 4	
Probe exchangeable rod ø 8 mm (0.31 inch)/ Alloy C22 (2.4602) ¹¹⁾	N		Flange 6" 300 lb RF, ASME B16.5/316L	4 5	
Probe exchangeable rod ø 12 mm (0.47 inch)/Alloy C22 (2.4602) ¹¹⁾	P		Thread G 3/4" PN 40, DIN3852-A / Alloy C22 (2.4602)	4 6	
Probe coax version ø 21.3 mm (0.84 inch) with multiple hole/Alloy C22 (2.4602) ¹¹⁾	Q		Thread G 1" PN 40, DIN 3852-A/ Alloy C22 (2.4602)	4 7	
Probe coax version ø 42.2 mm (1.66 inch) with multiple hole/Alloy C22 (2.4602) ¹¹⁾	R		Thread G 1 1/2" PN 40, DIN 3852-A/ Alloy C22 (2.4602)	4 8	
Probe exchangeable rod ø 8 mm (0.31 inch)/ Duplex (1.4462) ¹¹⁾	S		Thread 1 1/2" NPT PN 40, ASME B1.20.1/ Alloy C22 (2.4602)	5 0	
Exchangeable rod ø 12 mm (0.47 inch)/ Alloy C22 and 400 (2.4360) ¹¹⁾	T		Flange DN 50 PN 40 Form C, DIN 2501/ 316L with Alloy C22 (2.4602) coating	5 1	
Process fitting/Material			Flange DN 50 PN 40 Form B1, EN 1092-1/ 316L with Alloy C22 (2.4602) coating	5 2	
Thread G 3/4" (DIN 3852-A) PN 6/316L	0 0		Flange DN 80 PN 40 Form B1, EN 1092-1/ 316L with Alloy C22 (2.4602) coating	5 3	
Thread 3/4" NPT (ASME B1.20.1) PN 6/316L	0 1		Flange DN 100 PN 40 Form B1, EN 1092-1/ 316L with Alloy C22 (2.4602) coating	5 4	
Thread G 3/4" (DIN 3852-A) PN 40/316L	0 2		Flange DN 150 PN 16 Form B1, EN 1092-1/ 316L with Alloy C22 (2.4602) coating	5 5	
Thread 3/4" NPT (ASME B1.20.1) PN 40/316L	0 3		Flange DN 200 PN 16 Form B1, EN 1092-1/ 316L with Alloy C22 (2.4602) coating	5 6	
Thread G 3/4" (DIN 3852-A) PN 100 / 316L ³⁰⁾	0 4		Flange 2" 150 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	5 7	
Thread 3/4" NPT (ASME B1.20.1) PN 100/ 316L ³⁰⁾	0 5		Flange 2" 300 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	5 8	
Thread G 1" (DIN 3852-A) PN 40/316L	0 6		Flange 3" 150 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	6 0	
Thread 1" NPT (ASME B1.20.1) PN 40/316L	0 7		Flange 4" 150 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	6 1	
Thread G 1" (DIN 3852-A) PN 100/316L ³⁰⁾	0 8		Flange 4" 300 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	6 2	
Thread 1" NPT (ASME B1.20.1) PN 100/316L ³⁰⁾	1 0		Flange 6" 150 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	6 3	
Thread G 1 1/2" (DIN 3852-A) PN 40/316L	1 1		Flange 6" 300 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	6 4	
Thread 1 1/2" NPT (ASME B1.20.1) PN 40/316L	1 2		Thread G 3/4" (DIN 3852-A) PN 40/Duplex 1.4462	6 5	
Thread G1 1/2" (DIN 3852-A) PN 100/316L ³⁰⁾	1 3		Flange DN 80 PN 40 Form F, DIN 2501/Duplex (1.4462)	6 6	
Thread 1 1/2" NPT (ASME B1.20.1) PN 100/ 316L ³⁰⁾	1 4		Flange DN 50 PN 40 Form B1, EN 1092-1/ Duplex (1.4462)	6 7	
Thread 2 NPT PN 40, ASME B1.20.1/316L ³¹⁾³²⁾	1 5		Flange 1" 150 lb RF, ASME16.5/Duplex (1.4462)	6 8	
Flange DN 25 PN 40 Form C, DIN 2501/316L	2 0		Flange 1 1/2" 150 lb RF, ASME B16.5/Duplex (1.4462)	7 0	
Flange DN 25 PN 40 Form F, DIN 2501/316L	2 1		Flange 2" 150 lb RF, ASME B16.5/Duplex (1.4462)	7 1	
Flange DN 40 PN 40 Form C, DIN 2501/316L	2 2		Flange 2" 300 lb RF, ASME B16.5/Duplex (1.4462)	7 2	
Flange DN 50 PN 40 Form C, DIN 2501/316L	2 3		Flange 2" 600 lb RF, ASME B16.5/Duplex (1.4462)	7 3	
Flange DN 50 PN 40 Form V13, DIN 2513/316L	2 4		Flange 3" 150 lb RF, ASME B16.5/Duplex (1.4462)	7 4	
Flange DN 80 PN 40 Form C, DIN 2501/316L	2 5		Flange 3" 300 lb RF, ASME B16.5/Duplex (1.4462)	7 5	
Flange DN 80 PN 40 Form V13, DIN 2501/316L	2 6				
Flange DN 100 PN 16 Form C, DIN 2501/316L	2 7				
Flange DN 100 PN 16 Form C, DIN 2501/ 316L	2 8				
Flange DN 100 PN 40 Form C, DIN 2501 /316L	3 0				
Flange DN 100 PN 40 Form V13, DIN 2513/ 316L	3 1				
Flange DN 150 PN 16 Form C, DIN 2501/316L	3 2				
Flange DN 50 PN 40 EN 1092-1 Form B1/316L	3 3				
Flange DN 80 PN 40 EN 1092-1 Form B1/316L	3 4				
Flange 1" 150 lb RF, ASME B16.5/316L	3 5				
Flange 1 1/2" 150 lb RF, ASME B16.5/316L	3 6				
Flange 2" 150 lb RF, ASME B16.5/316L	3 7				
Flange 2" 300 lb RF, ASME B16.5/316L	3 8				

Level Measurement

Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

Selection and Ordering data	Article No.	Ord. Code	Selection and Ordering data	Article No.	Ord. Code
SITRANS LG250	7ML5881-		SITRANS LG250	7ML5881-	
A guided wave radar sensor for continuous level and interface measurement of liquids.			A guided wave radar sensor for continuous level and interface measurement of liquids.		
Flange 4" 150 lb RF, ASME B16.5/Duplex (1.4462)	7 6		Electronics		
Flange 4" 150 lb FF, ASME B16.5/Duplex (1.4462)	7 7		Two-wire 4 ... 20 mA/HART	0	
Flange 4" 300 lb RF, ASME B16.5/Duplex (1.4462)	7 8		Four-wire Modbus ²⁾⁹⁾¹⁵⁾	1	
Flange 4" 600 lb RF, ASME B16.5/Duplex (1.4462)	8 0		Two-wire 4 ... 20 mA/HART with SIL qualification ⁹⁾¹²⁾	2	
Thread 1 1/2" NPT PN 40, ASME B1.20.1/ Alloy 400 (2.4360)	8 1		Four-wire 4 ... 20 mA/HART; 90 ... 253 V AC; 50/60Hz ²⁾⁹⁾¹⁵⁾⁴²⁾	3	
Flange 2" 150 lb RF, ASME B16.5/Alloy 400 (2.4360)	8 2		Four-wire 4 ... 20 mA/HART; 9.6 ... 48 V DC; 20 ... 42 V AC ²⁾⁹⁾¹⁵⁾⁴²⁾	4	
Flange 2" 300 lb RF, ASME B16.5/Alloy 400 (2.4360) solid	8 3		PROFIBUS PA ⁵⁾⁹⁾	5	
Flange 3" 150 lb RF, ASME B16.5/Alloy 400 (2.4360)	8 4		FOUNDATION Fieldbus ⁵⁾⁹⁾	6	
Flange 3" 300 lb RF, ASME B16.5/Alloy 400 (2.4360)	8 5		Seal/Second line of defense/ Process temperature		
Flange 3" 300 lb RJF, ASME B16.5/Alloy 400 (2.4360)	8 6		FKM (SHS FPM 70C3 GLT)/without glass seal/-40 ... +80 °C (-40 ... +176 °F)	A	
Flange 4" 150 lb RF, ASME B16.5/Alloy 400 (2.4360)	8 7		FKM (SHS FPM 70C3 GLT)/without glass seal/-40 ... +150 °C (-40 ... +302 °F)	B	
Flange 4" 300 lb RF, ASME B16.5/Alloy 400 (2.4360)	8 8		FKM (SHS FPM 70C3 GLT)/with glass seal/-40 ... +150 °C (-40 ... +302 °F) ³⁴⁾	C	
Flange DN 25 PN 40 Form C, DIN 2501/ Alloy C22 (2.4602) solid	9 0	L 1 A	EPDM (A+P 75.5/KW75F)/without glass seal/-40 ... +80 °C (-40 ... +176 °F)	D	
Flange DN 25 PN 40 Form B1, EN 1092-1/ Alloy C22 (2.4602) solid	9 0	L 1 B	EPDM (A+P 75.5/KW75F)/with glass seal/-40 ... +150 °C (-40 ... +302 °F) ³⁴⁾	E	
Flange DN 80 PN 40 Form B1, EN 1092-1/ Alloy C22 (2.4602) solid	9 0	L 1 C	FFKM (Kalrez 6375)/with glass seal/-20 ... +200 °C (-4 ... +392 °F) ³⁴⁾	F	
Flange 1" 150 lb RF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 D	EPDM (A+P 75.5/KW75F)/without glass seal/-40 ... +80 °C (-40 ... +176 °F)	G	
Flange 1 1/2" 150 lb RF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 E	EPDM (A+P 75.5/KW75F)/without glass seal/-40 ... +150 °C (-40 ... +302 °F) ³⁴⁾	H	
Flange 1 1/2" 300 lb RF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 F	EPDM (A+P 75.5/KW75F)/with glass seal/-40 ... +150 °C (-40 ... +302 °F) ³⁴⁾	J	
Flange 2" 150 lb RF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 G	Silicone FEP coated (A+P FEP-O-SEAL)/ without glass seal/-40 ... +80 °C (-40 ... +176 °F)	K	
Flange 2" 300 lb RF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 H	Silicone FEP coated (A+P FEP-O-SEAL)/ without glass seal/-40 ... +150 °C (-40 ... +302 °F)	L	
Flange 2" 600 lb RF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 J	Silicone FEP coated (A+P FEP-O-SEAL)/with glass seal/-40 ... +150 °C (-40 ... +302 °F) ³⁴⁾	M	
Flange 2" 1500 lb RJF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 K	With borosilicate glass lead through for volatile substances, e.g. ammonia/with glass seal/-60 ... +150 °C (-76 ... +302 °F) ³⁴⁾	N	
Flange 3" 150 lb RF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 L	FFKM (Kalrez 6375)/without glass seal/-20 ... +200 °C (-4 ... +392 °F)	P	
Flange 3" 300 lb RF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 M	FKM (SHS FPM 70C3 GLT)/with glass seal/-40 ... 80 °C (-40 ... +176 °F) ³⁴⁾	Q	
Flange 3" 300 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	9 0	L 1 N	Housing/Protection/Cable		
Flange 4" 150 lb RF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 P	Note: for installation of remote display, 7ML5840, with LG two chamber housing options, contact PVC		
Flange 4" 150 lb FF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 Q	Plastic IP66/IP67 M20 x 1.5/blind stopper ¹⁾¹⁵⁾	A	
Flange 4" 300 lb RF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 R	Plastic IP66/IP67 1/2" NPT/blind stopper ⁹⁾¹⁵⁾	B	
Flange 4" 300 lb RJF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 S	Plastic 2-chamber/IP66/IP67/M20 x 1.5/blind stopper	G	
Flange 4" 300 lb LT, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 T	Plastic 2-chamber/IP66/IP67 /1/2" NPT/blind stopper	H	
Flange 4" 600 lb RJF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 U	Aluminum/IP66/IP68 (0.2 bar) M20 x 1.5/ Blind stopper ⁹⁾¹⁵⁾	C	
Flange 6" 150 lb RF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 V	Aluminum/IP66/IP68 (0.2 bar) 1/2" NPT/Blind stopper ⁹⁾¹⁵⁾	D	
Flange 2 1/2" 600 lb RF, Masoneilan/ Alloy C22 (2.4602) solid	9 0	L 1 W			
Flange 2" 600 lb RF, ASME B16.5/316/316 L ³²⁾	9 0	L 1 X			
Flange 3" 600 lb RF, ASME B16.5/316/316 L ³²⁾³³⁾	9 0	L 1 Y			

Level Measurement

Continuous level measurement

Guided wave radar transmitters

SITRANS LG series

Selection and Ordering data	Article No.	Ord. Code	Selection and Ordering data	Article No.	Ord. Code
SITRANS LG250	7ML5881-		SITRANS LG250	7ML5881-	
A guided wave radar sensor for continuous level and interface measurement of liquids.			A guided wave radar sensor for continuous level and interface measurement of liquids.		
Aluminum double chamber/IP66/IP68 (0.2 bar) M20 x 1.5 / Blind stopper		E	Lengths		
Aluminum double chamber/IP66/IP68 (0.2 bar) 1/2" NPT/Blind stopper		F	<u>Rod ø 8 mm/316L</u>		
Stainless Steel (precision casting) 316L/IP66/IP68 (0.2 bar) M20 x 1.5/Blind stopper ¹¹⁾¹⁵⁾		L	300 ... 1 000 mm (11.81 ... 39.37 inch) ³⁷⁾	0	
Stainless Steel (precision casting) 316L/IP66/IP68 (0.2 bar) 1/2" NPT/Blind stopper ⁹⁾¹⁵⁾		M	1 001 ... 2 000 mm (39.41 ... 78.74 inch) ³⁷⁾	1	
Stainless Steel (electropolished) 316L/IP66/IP68 (0.2 bar) M20 x 1.5/Blind stopper ⁹⁾¹⁵⁾		N	2 001 ... 3 000 mm (78.78 ... 118.11 inch) ³⁷⁾	2	
Stainless Steel (electropolished) 316L/IP66/IP68 (0.2 bar) 1/2" NPT/Blind stopper ⁹⁾¹⁵⁾		P	3 001 ... 4 000 mm (118.15 ... 157.48 inch) ³⁷⁾	3	
Stainless Steel double chamber/IP66/IP68 (0.2 bar) M20 x 1.5/Blind stopper		Q	4 001 ... 5 000 mm (157.52 ... 196.85 inch) ³⁷⁾	4	
Stainless Steel double chamber/IP66/IP68 (0.2 bar) 1/2" NPT/Blind stopper		R	5 001 ... 6 000 mm (196.89 ... 236.22 inch) ³⁷⁾	5	
Aluminum/IP66/IP68 (0.2 bar) M20 x 1.5/ Cable gland stainless steel ⁹⁾¹⁵⁾		S	<u>Rod ø 8 mm/Duplex</u>		
Aluminum double chamber/IP66/IP68 (0.2 bar) M20 x 1.5/Cable gland stainless steel		T	300 ... 1 000 mm (11.81 ... 39.37 inch) ³⁷⁾	9	R1 A
Stainless Steel (precision casting) 316L/IP66/IP68 (0.2 bar) M20 x 1.5/Cable gland stainless steel ¹⁵⁾³⁶⁾		U	1 001 ... 2 000 mm (39.41 ... 78.74 inch) ³⁷⁾	9	R1 B
Stainless Steel (electropolished) 316L/IP66/IP68 (0.2 bar) M20 x 1.5/Cable gland stainless steel ¹⁵⁾³⁶⁾		V	2 001 ... 3 000 mm (78.78 ... 118.11 inch) ³⁷⁾	9	R1 C
Stainless steel single chamber (precision casting)/IP66/IP68 (0.2 bar) M20 x 1.5/ Cable gland brass nickel-plated		W	3 001 ... 4 000 mm (118.15 ... 157.48 inch) ³⁷⁾	9	R1 D
Aluminum single chamber/IP66/IP68 (0.2 bar) M20 x 1.5/Cable gland brass nickel-plated		X	4 001 ... 5 000 mm (157.52 ... 196.85 inch) ³⁷⁾	9	R1 E
Stainless steel single chamber (precision casting)/IP66/ IP68 (0.2 bar) M20 x 1.5/ Cable gland brass nickel-plated		Y	5 001 ... 6 000 mm (196.89 ... 236.22 inch) ³⁷⁾	9	R1 F
Stainless steel double chamber / IP66/ IP68 (0.2 bar) M20 x 1.5 / Cable gland brass nickel-plated		J	<u>Rod ø 12 mm or ø 12 mm /Alloy C22 and 400</u>		
Aluminum single chamber/IP66/IP68 (0.2 bar) with M20 x 1.5/Plug connector Harting HAN 7D (straight)		Z	300 ... 1 000 mm (11.81 ... 39.37 inch) ³⁷⁾	9	R1 J
Aluminum single chamber/IP66/IP68 (0.2 bar) with M20 x 1.5/Special HARTING plug (bent) according to Tier One (ZB7555)		Z	1 001 ... 2 000 mm (39.41 ... 78.74 inch) ³⁷⁾	9	R1 K
Remote stainless steel single chamber housing, electropolished/IP66/IP67 with cable outlet IP68 (electronics separated by cable); M20 x 1.5/blind plug ¹⁵⁾³⁵⁾		Z	2 001 ... 3 000 mm (78.78 ... 118.11 inch) ³⁷⁾	9	R1 L
Remote plastic single chamber housing / IP66/IP67 with cable outlet IP68 (electronics separated by cable); M20 x 1.5/ blind plug ¹⁵⁾³⁵⁾		Z	3 001 ... 4 000 mm (118.15 ... 157.48 inch) ³⁷⁾	9	R1 M
			<u>Cable lengths ø 2 or 4 mm/316L</u>		
			501 ... 1 000 mm (19.72 ... 39.37 inch)	9	R2 A
			1 000 ... 5 000 mm (39.37 ... 196.85 inch)	9	R2 B
			5 001 ... 10 000 mm (196.89 ... 393.70 inch)	9	R2 C
			10 001 ... 15 000 mm (393.74 ... 590.55 inch)	9	R2 D
			15 001 ... 20 000 mm (590.59 ... 787.40 inch)	9	R2 E
			20 001 ... 25 000 mm (787.44 ... 984.25 inch)	9	R2 F
			25 001 ... 30 000 mm (984.29 ... 1 181.10 inch)	9	R2 G
			30 001 ... 35 000 mm (1 181.14 ... 1 377.95 inch)	9	R2 H
			35 001 ... 40 000 mm (1 377.99 ... 1 574.80 inch)	9	R2 J
			40 001 ... 45 000 mm (1 574.84 ... 1 771.65 inch)	9	R2 K
			45 001 ... 50 000 mm (1 771.69 ... 1 968.50 inch)	9	R2 L
			50 001 ... 55 000 mm (1 968.54 ... 2 165.35 inch)	9	R2 M
			55 001 ... 60 000 mm (2 165.39 ... 2 362.20 inch)	9	R2 N
			60 001 ... 65 000 mm (2 362.24 ... 2 559.06 inch)	9	R2 P
			65 001 ... 70 000 mm (2 559.09 ... 2 755.91 inch)	9	R2 Q
			70 001 ... 75 000 mm (2 755.94 ... 2 952.76 inch)	9	R2 R
				9	R2 S
				9	R2 T
				9	R2 U
				9	R2 V

Level Measurement

Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

Selection and Ordering data	Article No.	Ord. Code	Selection and Ordering data	Order code
SITRANS LG250	7ML5881-		Further designs (mandatory)	
A guided wave radar sensor for continuous level and interface measurement of liquids.			Please add "-Z" to Article No. and specify Order code(s).	
<u>Cable Lengths ø 2 mm or ø 4 mm/Alloy C22</u>			Supplementary electronics	
501 ... 1 000 mm (19.72 ... 39.37 inch)	9	R 4 A	Without	A00
1 001 ... 5 000 mm (39.41 ... 196.85 inch)	9	R 4 B	Additional current output 4 ... 20 mA ¹⁵⁾	A01
5 001 ... 10 000 mm (196.89 ... 393.70 inch)	9	R 4 C	Dimensions centering weight (diameter/height)	
10 001 ... 15 000 mm (393.74 ... 590.55 inch)	9	R 4 D	Without	B00
15 001 ... 20 000 mm (590.59 ... 787.40 inch)	9	R 4 E	ø 40/30 mm	B01
20 001 ... 25 000 mm (787.44 ... 984.25 inch)	9	R 4 F	ø 45/30 mm (for 2 inch tubes)	B02
25 001 ... 30 000 mm (984.29 ... 1 181.10 inch)	9	R 4 G	ø 75/30 mm (for 3 inch tubes)	B03
30 001 ... 35 000 mm (1 181.14 ... 1 377.95 inch)	9	R 4 H	ø 95/30 mm (for 4 inch tubes)	B04
35 001 ... 40 000 mm (1 377.99 ... 1 574.80 inch)	9	R 4 J	ø 40 mm/30 mm	B05
40 001 ... 45 000 mm (1 574.84 ... 1 771.65 inch)	9	R 4 K	ø 1.57/1.18 inch (for 2 inch Schedule 160)	B06
45 001 ... 50 000 mm (1 771.69 ... 1 968.50 inch)	9	R 4 L	ø 45 mm/30 mm (for 2 inch tubes)	B07
50 001 ... 55 000 mm (1 968.54 ... 2 165.35 inch)	9	R 4 M	ø 1.77/1.18 inch (for 2 inch Schedule 40/80)	B08
55 001 ... 60 000 mm (2 165.39 ... 2 362.20 inch)	9	R 4 N	ø 75 mm/30 mm (for 3 inch tubes)	
60 001 ... 65 000 mm (2 362.24 ... 2 559.06 inch)	9	R 4 P	ø 2.95/1.18 inch (for 3 inch Schedule 10/40)	
65 001 ... 70 000 mm (2 559.09 ... 2 755.91 inch)	9	R 4 Q	ø 95 mm/30 mm (for 4 inch tubes)	
70 001 ... 75 000 mm (2 755.94 ... 2 952.76 inch)	9	R 4 R	ø 3.74/1.18 inch (for 4 inch Schedule 80)	
<u>Coax ø 21.3 mm/316L</u>			Rod mounted	
300 ... 1 000 mm (11.81 ... 39.37 inch) ³⁷⁾	9	R 3 A	Without Rod, applicable for coax or cable probe types only	C00
1 001 ... 2 000 mm (39.41 ... 78.74 inch) ³⁷⁾	9	R 3 B	Mounted	C01
2 001 ... 3 000 mm (78.78 ... 118.11 inch) ³⁷⁾	9	R 3 C	Not mounted	C02
3 001 ... 4 000 mm (118.15 ... 157.48 inch) ³⁷⁾	9	R 3 D	Indicating/adjustment module	
4 001 ... 5 000 mm (157.52 ... 196.85 inch) ³⁷⁾	9	R 3 E	Without	E00
5 001 ... 6 000 mm (196.89 ... 236.22 inch) ³⁷⁾	9	R 3 F	Mounted	E01
<u>Coax ø 21.3 mm/Alloy C22</u>			Laterally mounted	E02
300 ... 1 000 mm (11.81 ... 39.37 inch) ³⁷⁾	9	R 5 A	Language of display	
1 001 ... 2 000 mm (39.41 ... 78.74 inch) ³⁷⁾	9	R 5 B	German	L00
2 001 ... 3 000 mm (78.78 ... 118.11 inch) ³⁷⁾	9	R 5 C	English	L01
3 001 ... 4 000 mm (118.15 ... 157.48 inch) ³⁷⁾	9	R 5 D	French	L02
4 001 ... 5 000 mm (157.52 ... 196.85 inch) ³⁷⁾	9	R 5 E	Dutch	L03
5 001 ... 6 000 mm (196.89 ... 236.22 inch) ³⁷⁾	9	R 5 F	Italian	L04
<u>Coax ø 42.2 mm/316L</u>			Spanish	L05
300 ... 1 000 mm (11.81 ... 39.37 inch) ³⁷⁾	9	R 3 G	Portuguese	L06
1 001 ... 2 000 mm (39.41 ... 78.74 inch) ³⁷⁾	9	R 3 H	Russian	L07
2 001 ... 3 000 mm (78.78 ... 118.11 inch) ³⁷⁾	9	R 3 J	Chinese	L08
3 001 ... 4 000 mm (118.15 ... 157.48 inch) ³⁷⁾	9	R 3 K	Japanese	L09
4 001 ... 5 000 mm (157.52 ... 196.85 inch) ³⁷⁾	9	R 3 L	Operating instructions	
5 001 ... 6 000 mm (196.89 ... 236.22 inch) ³⁷⁾	9	R 3 M	German	M00
<u>Coax ø 42.2 mm/Alloy C22</u>			English	M01
300 ... 1 000 mm (11.81 ... 39.37 inch) ³⁷⁾	9	R 5 G	French	M02
1 001 ... 2 000 mm (39.41 ... 78.74 inch) ³⁷⁾	9	R 5 H	Spanish	M03
2 001 ... 3 000 mm (78.78 ... 118.11 inch) ³⁷⁾	9	R 5 J	Further designs (optional)	
3 001 ... 4 000 mm (118.15 ... 157.48 inch) ³⁷⁾	9	R 5 K	Please add "-Z" to Article No. and specify Order code(s).	
4 001 ... 5 000 mm (157.52 ... 196.85 inch) ³⁷⁾	9	R 5 L	Enter the total insertion length in plain text description	Y01
5 001 ... 6 000 mm (196.89 ... 236.22 inch) ³⁷⁾	9	R 5 M	Enter the total length of rigid part (cable version only) range from 100 ... 1 000 mm	Y02
			Remote electronic cable lengths: 2 m (6.6 ft). Only available with Housing options Q2A and Q2B	Y10
			Remote electronic cable lengths: 5 m (16.4 ft). Only available with Housing options Q2A and Q2B	Y11
			Remote electronic cable lengths: 10 m (32.8 ft). Only available with Housing options Q2A and Q2B	Y12
			Identification Label (measurement loop) stainless steel, 40 characters max, add in plain text. To add more than one line use a coma "," for line break.	Y17
			Identification Label (measurement loop) foil, 40 characters max, add in plain text. To add more than one line use a coma "," for line break.	Y18
			3.1-Inspection Certificate for instrument (EN 10204) ³⁸⁾	C12

Level Measurement

Continuous level measurement

Guided wave radar transmitters

SITRANS LG series

4

Selection and Ordering data

Order code

Further designs (optional), continued

Please add **"-Z"** to Article No. and specify Order code(s).

NACE0175 to 3.1 Material Certificate for material (EN10204 NACE MR 0175) (NACE not in scope for Hygienic process connections)^{38/39)}

D07

3.1-Inspection Certificate for instrument with test data (EN 10204)³⁸⁾

C25

2.2-Factory certificate for material (EN 10204)³⁸⁾

C15

Quality and test plan³⁸⁾

C26

Dye penetration test, results confirmed via a 3.1 certificate/instrument (EN10204)³⁸⁾

C13

X-ray test + 3.1 certificate/instrument³⁸⁾

C14

Positive material identification test + 3.1 certificate/instrument³⁸⁾

C16

Roughness test + 3.1 certificate/instrument³⁸⁾

C18

Pressure test + 3.1 certificate/instrument³⁸⁾

C31

Helium leak test + 3.1 certificate/instrument³⁸⁾

C32

Pressure test according to Norsok + 3.1 certificate/instrument³⁸⁾

C61

5 point calibration certificate (min. length 1 000 mm)³⁸⁾

C62

Pressure test (acc. to ASME B31.1), incl. 3.1 Inspection certificate³⁸⁾

C63

Certificate suitable for tropical regions with, all attachment parts of metal (2.1 factory certificate)³⁸⁾

C65

Operating Instructions

All literature is available to download for free, in a range of languages, at <http://www.siemens.com/processinstrumentation/documentation>

Accessories

Article No.

SITRANS LG, GWR sensor Display Module

A5E34143449

SITRANS LG, two-wire 4 ... 20 mA/HART electronic

A5E35637821

SITRANS LG, USB communicator

A5E35192015

SITRANS LG, Mounting eye M8 x 20

A5E36653574

SITRANS LG, Mounting eye M12 x 20

PBD:51041448

SITRANS LG, Mounting spring

PBD:51041449

Siemens Intrinsically Safe Barrier (DC powered), ATEX II 1 G EEx ia

7NG4124-0AA00

SITRANS RD100, loop powered display - see Chapter 7

7ML5741-...

SITRANS RD200, universal input display with Modbus conversion - see Chapter 7

7ML5740-...

SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7

7ML5744-...

SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7

7ML5750-...

For applicable back up point level switch - see point level measurement section

Note: some configuration options are not available. For restriction information see the online PIA configuration tool.

- 1) Not available with Plastic and Stainless steel (electropolished) Housing/Protection/Cable options and certain glands.
- 2) Available only with Metallic, Double chamber Housing/Protection/Cable options and certain glands.
- 3) Not available with Remote or Stainless steel (electropolished) Housing/Protection/Cable options and certain glands.
- 4) Not available with Stainless steel (electropolished) Housing/Protection/Cable options and certain glands.
- 5) Not available with certain glands.
- 6) Not available with Version/Material option K, L, M, N, P, Q, R, S, T.
- 7) Available only with Electronic options 0, 1, 2, and 5.

- 8) Not available with Length options 3, 4, 5, R2C, and R2D.
- 9) Available only with Supplementary electronic option A00.
- 10) Available only with Electronic options 0, 2, and 5.
- 11) Not available with Seal/Second line of defense/Process temperature option N.
- 12) Not available with Housing/Protection/Cable option Q1B.
- 13) Available only with Electronic options 0, 2, 5, and 6.
- 14) Available only with Electronic options 0 and 2.
- 15) Not available with Indicating/adjustment module option E02.
- 16) Not available with Process fitting/Material options 00 and 01.
- 17) Available only with Electronic options 0 ... 4.
- 18) Not available with Modbus Electronic options.
- 19) Available only with Seal/Second line of defense/Process temperature options C, E, F, J, M, N, Q.
- 20) Available only with HART Electronic options.
- 21) Available only with Seal/Second line of defense/Process temperature options C, D, E, F, H, J, M, N, Q.
- 22) Not Available with Housing/Protection/Cable options W, X, Y, J, Q1A, and Q1B.
- 23) Not Available with Seal/Second line of defense/Process temperature option P.
- 25) Available only with Electronic options 0, 2, and 6.
- 26) Available only with Single chamber, Aluminum and Stainless steel (precision casting) Housing/Protection/Cable options.
- 27) Available only with Dimensions centering weight option B00.
- 28) Available only with Rod mounted option C00.
- 29) Not available with Dimensions centering weight option B00.
- 30) Available only with Seal/Second line of defense/Process temperature option N.
- 31) Not available with Version/Material options F, K, L, M, N, P, Q, R, S, and T.
- 32) Not available with Seal/Process temperature options A, G, K, N, and Q.
- 33) Available only with Version/Material options A ... K.
- 34) Not available with Remote Housing/Protection/Cable options.
- 35) Not available with some Seal/Process temperature options including glass.
- 36) Not available with Supplementary electronics options.
- 37) Not available with Y02.
- 38) Listed Certificates are not available with all configurations, please contact factory for more information.
- 39) Available only with 316L Probes. NACE is not available with coated, plated, or hygienic connections.
- 40) Available only with Housing/Protection/Cable options E, F, N, Q, R, T.
- 41) Available only with Housing/Protection/Cable options C, D, E, F, L, M, N, P, Q, R, S, T, U, V, Q2A, and Q2B.
- 42) Available only with Double chamber, Plastic and Metallic Housing/Protection/Cable options and certain glands.

Note: Please consult manual for further details.

Level Measurement

Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

Selection and Ordering data	Article No.	Ord. Code
SITRANS LG260	7ML5882-	
A guided wave radar sensor for level measurement of solids.		
➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Approvals		
General purpose (CSA, FM, CE) ⁽⁵⁾⁽⁶⁾	0 A	
Shipping approval ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾⁽⁹⁾	0 B	
Overfill protection (WHG; VLAREM) ⁽⁵⁾⁽⁹⁾⁽¹⁰⁾	0 C	
ATEX II 1G, 1/2G, 2G Ex ia IIC T6 ⁽⁵⁾⁽¹¹⁾	0 E	
ATEX II 1G, 1/2G, 2G Ex ia IIC + Overfill (WHG; VLAREM) ⁽⁵⁾⁽¹⁰⁾	0 F	
ATEX II 1G, 1/2G, 2G Ex ia IIC T6 + shipping approval ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾⁽⁹⁾⁽¹²⁾	0 G	
ATEX II 1G, 1/2G, 2G Ex ia IIC + II 1D, 1/2D, 1/3D, 2D IP66 ⁽¹⁾⁽⁵⁾⁽⁸⁾⁽⁹⁾	0 H	
ATEX II 1/2G, 2G Ex d ia IIC T6 ⁽²⁾⁽⁵⁾⁽⁹⁾⁽¹²⁾⁽¹³⁾	0 J	
ATEX II 1/2G, 2G Ex d ia IIC + shipping approval ⁽²⁾⁽⁵⁾⁽⁷⁾⁽⁹⁾⁽¹²⁾⁽¹⁴⁾	0 L	
ATEX II 1/2G, 2G Ex d ia IIC + II 1D, 1/2D, 1/3D, 2D IP66 ⁽²⁾⁽⁵⁾⁽⁹⁾⁽¹²⁾⁽¹⁴⁾	0 M	
ATEX II 1/2G, 2G Ex d IIC T6 ⁽¹⁾⁽⁹⁾⁽¹⁵⁾⁽¹⁶⁾	0 N	
ATEX II 1G, II 1/2G, II 2G Ex ia IIC T6...T1 Ga, Ga/Gb, Gb /IEC Ex ia IIC T6...T1 Ga, Ga/Gb, Gb ⁽¹⁾	0 W	
ATEX II 1/2G, 2G Ex d IIC + shipping approval ⁽¹⁾⁽⁷⁾⁽⁸⁾⁽⁹⁾⁽¹²⁾⁽¹⁶⁾	0 Q	
ATEX II 1/2G, 2G Ex d IIC + II 1D, 1/2D, 1/3D, 2D IP66 ⁽¹⁾⁽⁸⁾⁽⁹⁾⁽¹⁶⁾	0 R	
ATEX II 1D, 1/2D, 2D IP66x T ⁽¹⁾⁽⁹⁾⁽¹⁶⁾⁽¹⁷⁾	0 S	
IEC Ex ia IIC T6 ⁽⁵⁾⁽¹¹⁾	0 T	
IEC Ex ia IIC T6...T1 Ga, Ga/Gb, Gb + Ex t IIC T ⁽¹⁾⁽⁸⁾⁽⁹⁾⁽¹⁶⁾	0 U	
IEC Ex d ia IIC T6 ⁽²⁾⁽⁵⁾⁽⁹⁾⁽¹²⁾⁽¹³⁾	1 A	
IEC Ex d ia IIC T6 + IEC IP66x T ⁽²⁾⁽⁵⁾⁽⁹⁾⁽¹²⁾⁽¹⁴⁾	1 B	
IEC Ex db IIC T6 ... T1 Ga/Gb, Gb ⁽¹⁾⁽⁹⁾⁽¹⁵⁾⁽¹⁶⁾	1 C	
IEC Ex db IIC T6 ... T1 Ga/Gb, Gb + IEC Ex t IIC T ⁽⁸⁾⁽⁹⁾⁽¹⁶⁾⁽²⁶⁾	1 D	
FM (NI) Class I, Div. 2, Groups A, B, C, D ⁽³⁾⁽⁵⁾⁽⁹⁾⁽¹³⁾	1 F	
FM (NI) Class I, Div. 2, Groups A, B, C, D + Ship approval ⁽³⁾⁽⁵⁾⁽⁷⁾⁽⁹⁾⁽¹²⁾⁽¹⁴⁾	1 G	
FM (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F ⁽⁵⁾⁽⁸⁾⁽⁹⁾	1 H	
FM (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G + shipping approval ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾⁽⁹⁾⁽¹²⁾	1 J	
FM (XP-AIS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G ⁽²⁾⁽⁵⁾⁽⁹⁾⁽¹²⁾⁽¹³⁾	1 K	
FM (XP-AIS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G + shipping approval ⁽²⁾⁽⁵⁾⁽⁷⁾⁽⁹⁾⁽¹²⁾⁽¹⁴⁾	1 L	
FM (XP) Class I, Div. 1, Groups A, B, C, D ⁽⁸⁾⁽⁹⁾⁽¹⁸⁾⁽²⁶⁾	1 M	
CSA (NI) Class I, Div. 2, Groups A, B, C, D; (DIP) Class II, III, Div. 1, Groups E, F, G ⁽¹⁾⁽⁵⁾⁽¹⁹⁾	1 N	
CSA (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G ⁽⁵⁾⁽¹⁵⁾	1 P	
CSA (XP-IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G ⁽²⁾⁽⁵⁾⁽⁹⁾⁽¹²⁾⁽¹³⁾	1 Q	
CSA (XP) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G ⁽⁹⁾⁽¹⁵⁾⁽¹⁶⁾⁽²⁶⁾	1 R	
NEPSI Ex ia IIC T6 ⁽⁵⁾⁽¹¹⁾	2 A	
NEPSI Ex ia IIC T6 + DIP A20/21 TA T ^{(*)1)(5)(8)(9)}	2 B	
NERSI Ex d ia IIC T6 ⁽²⁾⁽⁵⁾⁽⁹⁾⁽¹³⁾	2 C	
NEPSI Ex d ia IIC T6 + DIP A20/21 TA T ^{(*)2)(5)(9)(13)}	2 D	
NEPSI Ex d IIC T6 ⁽⁸⁾⁽⁹⁾⁽²⁶⁾	2 E	

Selection and Ordering data	Article No.	Ord. Code
SITRANS LG260	7ML5882-	
A guided wave radar sensor for level measurement of solids.		
NEPSI Ex d IIC T6 + DIP A20/21 TA T ^{(*)8)(9)(26)}	2 F	
NEPSI DIP A20/21 TA T ^{(*)1)(9)(13)(15)}	2 G	
INMETRO Ex ia IIC T6 ... T10 ⁽⁵⁾⁽¹¹⁾	3 A	
INMETRO Ex t IIC T [*] IP6X, Da, Da/Db, Da/Dc, Db + Ex ia IIC T6, Ga, Ga/Gb ⁽¹⁾⁽⁵⁾⁽⁸⁾⁽⁹⁾	3 B	
INMETRO Ex d ia IIC T6 ... T1 ⁽²⁾⁽⁵⁾⁽⁹⁾⁽¹³⁾	3 C	
INMETRO Ex t IIC T [*] IP6X, Da, Da/Db, Da/Dc, Db + Ex d ia IIC T6 Ga/Gb ⁽²⁾⁽⁵⁾⁽⁹⁾⁽¹³⁾	3 D	
INMETRO Ex d IIC T6 ... T1 ⁽⁹⁾⁽¹¹⁾⁽²⁶⁾	3 E	
INMETRO Ex t IIC T [*] IP6X, Da, Da/Db, Da/Dc, Db + Ex d IIC T6 Ga/Gb ⁽⁸⁾⁽⁹⁾⁽²⁶⁾	3 F	
INMETRO Ex t IIC T [*] IP6X, Da, Da/Db, Da/Dc, Db ⁽¹⁾⁽⁵⁾⁽⁹⁾⁽¹³⁾	3 G	
KOSHA Ex d IIC T6 ... T1 – KE ⁽⁸⁾⁽⁹⁾⁽²⁶⁾	4 A	
Korea KC ex free area	6 A	
GOST-R/EAC 0 Ex ia IIC T1 ... T6 X	5 A	
GOST-R/EAC 0 Ex ia IIC T1 ... T6 X + Ex t IIC T ... IP66 ⁽¹⁾⁽⁸⁾	5 B	
GOST-R/EAC 1 Ex d ia IIC T1 ... T6 X ⁽²⁾⁽⁹⁾⁽¹³⁾	5 C	
GOST-R/EAC 1 Ex d ia IIC T1 ... T6 X + Ex t IIC T ... IP66 ⁽²⁾⁽⁹⁾⁽¹³⁾	5 D	
GOST-R/EAC 1 Ex d IIC T1 ... T6 X ⁽⁸⁾⁽²⁶⁾	5 E	
GOST-R/EAC 0 Ex d IIC T1 ... T6 X + Ex t IIC T ... IP66 ⁽⁸⁾⁽²⁶⁾	5 F	
GOST-R/EAC Ex t IIC T ... IP66 ⁽¹⁾⁽¹³⁾	5 G	
Note: Version/Material, Process fitting/Material, and Length options are available only with options of corresponding type.		
Probe version/Material		
Probe exchangeable cable ø 4 mm (0.16 inch) with gravity weight/316 ⁽²⁰⁾⁽²¹⁾	A	
Probe exchangeable cable ø 6 mm (0.24 inch) with gravity weight/316 ⁽²⁰⁾⁽²¹⁾	B	
Probe exchangeable cable ø 6 mm (0.24 inch) with gravity weight/PA coated ⁽²²⁾	C	
Probe exchangeable cable ø 11 mm (0.43 inch) with gravity weight/PA coated ⁽²²⁾	D	
Probe exchangeable rod ø 16 mm (0.63 inch)/316L ⁽²⁰⁾	E	
Process fitting/Material		
Thread G 3/4" (DIN 3852-A) PN 40/316L	0 0	
Thread 3/4" NPT (ASME B1.20.1) PN 40/316L	0 1	
Thread G 1" (DIN 3852-A) PN 40/316L	0 2	
Thread 1" NPT (ASME B1.20.1) PN 40/316L	0 3	
Thread G 1 1/2" (DIN 3852-A) PN 40/316L	0 4	
Thread 1 1/2" NPT (ASME B1.20.1) PN 40/316L	0 5	
Thread G 2" (DIN 3852-A) PN 40/316L	0 6	
Flange DN 50 PN 40 Form C, DIN 2501/316L	1 0	
Flange DN 80 PN 40 Form C, DIN 2501/316L	1 2	
Flange DN 100 PN 16 Form C, DIN 2501/316L	1 3	
Flange DN 100 PN 40 Form C, DIN 2501/316L	1 4	
Flange DN 150 PN 16 Form C, DIN 2501/316L	1 5	
Flange DN 50 PN 40 EN 1092-1 Form B1/316L	1 6	
Flange DN 80 PN 40 EN 1092-1 Form B1/316L	1 7	
Flange DN 100 PN 16 EN 1092-1 Form B1/316L	1 8	
Flange 2" 150 lb RF, ASME B16.5/316L	3 0	
Flange 2" 300 lb RF, ASME B16.5/316L	3 2	
Flange 3" 150 lb RF, ASME B16.5/316L	3 3	

Level Measurement

Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

Selection and Ordering data	Article No.	Ord. Code	Selection and Ordering data	Article No.	Ord. Code
SITRANS LG260	7ML5882-		SITRANS LG260	7ML5882-	
A guided wave radar sensor for level measurement of solids.			A guided wave radar sensor for level measurement of solids.		
Flange 3" 300 lb RF, ASME B16.5/316L	3 4		Stainless steel (precision casting) 316L/IP66/ IP68 (0.2 bar) M20 x 1.5/cable gland stainless steel ⁹⁾¹²⁾	S	
Flange 4" 150 lb RF, ASME B16.5/316L	3 5		Stainless steel (electropolished) 316L/IP66/ IP68 (0.2 bar) M20 x 1.5/cable gland stainless steel ⁹⁾¹²⁾	T	
Flange 4" 300 lb RF, ASME B16.5/316L	3 6		Aluminum single chamber/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland brass nickel-plated	W	
Flange 6" 150 lb RF, ASME B16.5/316L	3 7		Aluminum double chamber/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland brass nickel-plated	X	
Electronics			Stainless steel single chamber (precision casting)/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland brass nickel-plated	Y	
Two-wire 4 ... 20 mA/HART	0		Stainless steel double chamber/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland brass nickel-plated	U	
Four-wire Modbus ²⁾⁹⁾¹²⁾	1		Remote stainless steel single chamber housing, electropolished/IP66/IP67 with cable outlet IP68 (electronics separated by cable); M20 x 1.5/blind plug ¹²⁾	Z	Q 2 A
Two-wire 4 ... 20 mA/HART with SIL qualification ⁹⁾	2		Remote plastic single chamber housing / IP66/IP67 with cable outlet IP68 (electronics separated by cable); M20 x 1.5/blind plug ¹²⁾	Z	Q 2 B
Four-wire 4 ... 20 mA/HART; 90 ... 253 V AC; 50/60 Hz ²⁾⁹⁾¹²⁾	3				
Four-wire 4 ... 20 mA/HART; 9.6 ... 48 V DC; 20 ... 42 V AC ²⁾⁹⁾¹²⁾	4		Lengths		
PROFIBUS PA ⁹⁾	5		<u>Rod ø 16 mm/316L</u>		
FOUNDATION Fieldbus ⁹⁾	6		500 mm (19.69 inch)	0	
Seal/Process temperature			501 ... 1 000 mm (19.72 ... 39.37 inch)	1	
FKM (SHS FPM 70C3 GLT)/-40 ... +80 °C (-40 ... +176 °F) ²³⁾	A		1 001 ... 2 000 mm (39.41 ... 78.74 inch)	2	
FKM (SHS FPM 70C3 GLT)/-40 ... +150 °C (-40 ... +302 °F)	B		2 001 ... 3 000 mm (78.78 ... 118.11 inch)	3	
FFKM (Kalrez 6375)/-20 ... +200 °C (-4 ... +392 °F)	C		3 001 ... 4 000 mm (118.15 ... 157.48 inch)	4	
EPDM (A+P 75.5/KW75F)/-40 ... +80 °C (-40 ... +176 °F) ²³⁾	D		4 001 ... 5 000 mm (157.52 ... 196.85 inch)	5	
EPDM (A+P 75.5/KW75F)/without/ -40 ... +150 °C (-40 ... +392 °F)	E		5 001 ... 6 000 mm (196.89 ... 236.22 inch)	6	
Housing/Protection/Cable			<u>Cable lengths ø 4 mm/316</u>		
Note: for installation of remote display, 7ML5840, with LG two chamber housing options, contact PVC			501 ... 1 000 mm (19.72 ... 39.37 inch)	9	R 2 E
Plastic IP66/IP67 M20 x 1.5/blind stopper ⁹⁾¹²⁾	A		1 001 ... 5 000 mm (39.41 ... 196.85 inch)	9	R 2 F
Plastic IP66/IP67 1/2" NPT/blind stopper ⁹⁾¹²⁾	B		5 001 ... 10 000 mm (196.89 ... 393.70 inch)	9	R 2 G
Plastic 2-chamber/IP66/IP67/M20 x 1.5/ blind stopper	C		10 001 ... 15 000 mm (393.74 ... 590.55 inch)	9	R 2 H
Plastic 2-chamber/IP66/IP67/ 1/2" NPT/ blind stopper	D		15 001 ... 20 000 mm (590.59 ... 787.40 inch)	9	R 2 J
Aluminum/IP66/IP68 (0.2 bar) M20 x 1.5/ blind stopper ⁹⁾¹²⁾	E		20 001 ... 25 000 mm (787.44 ... 984.25 inch)	9	R 2 K
Aluminum/IP66/IP68 (0.2 bar) 1/2" NPT/ blind stopper ⁹⁾¹²⁾	F		25 001 ... 30 000 mm (984.29 ... 1 181.10 inch)	9	R 2 L
Aluminum double chamber/IP66/IP68 (0.2 bar) M20 x 1.5/blind stopper	G		30 001 ... 35 000 mm (1 181.14 ... 1 377.95 inch)	9	R 2 M
Aluminum double chamber/IP66/ IP68 (0.2 bar) 1/2" NPT/blind stopper	H		35 001 ... 40 000 mm (1 377.99 ... 1 574.80 inch)	9	R 2 N
Stainless Steel (precision casting) 316L/IP66/ IP68 (0.2 bar) M20 x 1.5/blind stopper ⁹⁾¹²⁾	J		40 001 ... 45 000 mm (1 574.84 ... 1 771.65 inch)	9	R 2 P
Stainless steel (precision casting) 316L/IP66/ IP68 (0.2 bar) 1/2" NPT/blind stopper ⁹⁾¹²⁾	K		45 001 ... 50 000 mm (1 771.69 ... 1 968.50 inch)	9	R 2 Q
Stainless steel (electropolished) 316L/IP66/ IP68 (0.2 bar) M20 x 1.5/blind stopper ⁹⁾¹²⁾	L		50 001 ... 55 000 mm (1 968.54 ... 2 165.35 inch)	9	R 2 R
Stainless steel (electropolished) 316L/IP66/ IP68 (0.2 bar) 1/2" NPT/blind stopper ⁹⁾¹²⁾	M		55 001 ... 60 000 mm (2 165.39 ... 2 362.20 inch)	9	R 2 S
Stainless steel double chamber/IP66/IP68 (0.2 bar) M20 x 1.5/blind stopper	N		<u>Cable lengths ø 6 mm/316L</u>		
Stainless steel double chamber/IP66/ IP68 (0.2 bar) 1/2" NPT/blind stopper	P		500 mm (19.69 inch)	9	R 4 A
Aluminum/IP66/IP68 (0.2 bar) M20 x 1.5/ cable gland stainless steel ⁹⁾¹²⁾	Q		501 ... 1 000 mm (19.72 ... 39.37 inch)	9	R 4 B
Aluminum double chamber/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland stainless steel	R		1 001 ... 5 000 mm (39.41 ... 196.85 inch)	9	R 4 C
			5 001 ... 10 000 mm (196.89 ... 393.70 inch)	9	R 4 D

Level Measurement

Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

Selection and Ordering data	Article No.	Ord. Code	Selection and Ordering data	Order code
SITRANS LG260	7ML5882-		Further designs (mandatory)	
A guided wave radar sensor for level measurement of solids.			Please add "-Z" to Article No. and specify Order code(s).	
10 001 ... 15 000 mm (393.74 ... 590.55 inch)		9 R 4 E	Supplementary electronics	
15 001 ... 20 000 mm (590.59 ... 787.40 inch)		9 R 4 F	Without	A00
20 001 ... 25 000 mm (787.44 ... 984.25 inch)		9 R 4 G	Additional current output 4 ... 20 mA ¹²⁾	A01
25 001 ... 30 000 mm (984.29 ... 1 181.10 inch)		9 R 4 H	Rod mounted	
30 001 ... 35 000 mm (1 181.14 ... 1 377.95 inch)		9 R 4 J	Without Rod, applicable for coax or cable probe types only	C00
35 001 ... 40 000 mm (1 377.99 ... 1 574.80 inch)		9 R 4 K	Mounted	C01
40 001 ... 45 000 mm (1 574.84 ... 1 771.65 inch)		9 R 4 L	Not mounted	C02
45 001 ... 50 000 mm (1 771.69 ... 1 968.50 inch)		9 R 4 M	Indicating/adjustment module	
50 001 ... 55 000 mm (1 968.54 ... 2 165.35 inch)		9 R 4 N	Without	E00
55 001 ... 60 000 mm (2 165.39 ... 2 362.20 inch)		9 R 4 P	Mounted	E01
Cable lengths ø 6 mm or ø 11 mm/PA coated			Laterally mounted	E02
501 ... 1 000 mm (19.72 ... 39.37 inch)		9 R 6 A	Language of display	
1 001 ... 5 000 mm (39.41 ... 196.85 inch)		9 R 6 B	German	L00
5 001 ... 10 000 mm (196.89 ... 393.70 inch)		9 R 6 C	English	L01
10 001 ... 15 000 mm (393.74 ... 590.55 inch)		9 R 6 D	French	L02
15 001 ... 20 000 mm (590.59 ... 787.40 inch)		9 R 6 E	Dutch	L03
20 001 ... 25 000 mm (787.44 ... 984.25 inch)		9 R 6 F	Italian	L04
25 001 ... 30 000 mm (984.29 ... 1 181.10 inch)		9 R 6 G	Spanish	L05
30 001 ... 35 000 mm (1 181.14 ... 1 377.95 inch)		9 R 6 H	Portuguese	L06
35 001 ... 40 000 mm (1 377.99 ... 1 574.80 inch)		9 R 6 J	Russian	L07
40 001 ... 45 000 mm (1 574.84 ... 1 771.65 inch)		9 R 6 K	Chinese	L08
45 001 ... 50 000 mm (1 771.69 ... 1 968.50 inch)		9 R 6 L	Japanese	L09
50 001 ... 55 000 mm (1 968.54 ... 2 165.35 inch)		9 R 6 M	Operating instructions	
55 001 ... 65 000 mm (2 165.39 ... 2 559.06 inch)		9 R 6 N	German	M00
			English	M01
			French	M02
			Spanish	M03
Selection and Ordering data	Article No.	Ord. Code	Selection and Ordering data	Order code
			Further designs (optional)	
			Please add "-Z" to Article No. and specify Order code(s).	
			Enter the total insertion length in plain text description	Y01
			Remote electronic cable lengths: 2 m (6.6 ft). Only available with Housing options Q2A and Q2B.	Y10
			Remote electronic cable lengths: 5 m (16.4 ft). Only available with Housing options Q2A and Q2B.	Y11
			Remote electronic cable lengths: 10 m (32.8 ft). Only available with Housing options Q2A and Q2B.	Y12
			Identification Label (measurement loop) stainless steel, 40 characters max, add in plain text. To add more than one line use a comma ",", for line break.	Y17
			Identification Label (measurement loop) foil, 40 characters max, add in plain text. To add more than one line use a comma ",", for line break.	Y18
			3.1-Inspection Certificate for instrument (EN 10204) ²⁴⁾	C12
			NACE0175 to 3.1 Material Certificate for material (EN10204 NACE MR 0175) (NACE not in scope for Hygienic process connections) ²⁴⁾²⁵⁾	D07
			3.1-Inspection Certificate for instrument with test data (EN 10204) ²⁴⁾	C25
			2.2-Factory certificate for material (EN 10204) ²⁴⁾	C15
			Quality and test plan ²⁴⁾	C26
			Dye penetration test, results confirmed via a 3.1 certificate/instrument (EN10204) ²⁴⁾	C13
			X-ray test + 3.1 certificate/instrument ²⁴⁾	C14
			Positive material identification test + 3.1 certificate/instrument ²⁴⁾	C16

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Continuous level measurement

Guided wave radar transmitters

SITRANS LG series

Selection and Ordering data	Order code
Roughness test + 3.1 certificate/instrument ²⁴⁾	C18
Pressure test + 3.1 certificate/instrument ²⁴⁾	C31
Helium leak test + 3.1 certificate/instrument ²⁴⁾	C32
Pressure test according to Norsok + 3.1 certificate/instrument ²⁴⁾	C61
5 point calibration certificate (min. length 1 000 mm) ²⁴⁾	C62
Operating Instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories	
SITRANS LG, GWR sensor Display Module	Article No.
SITRANS LG, two-wire 4 ... 20 mA/HART electronic	A5E34143449
SITRANS LG, USB communicator	A5E35637821
SITRANS LG, Mounting eye M12 x 20	A5E35192015
SITRANS LG, Mounting spring	PBD:51041448
Siemens Intrinsically Safe Barrier (DC powered), ATEX II 1 G EEx ia	PBD:51041449
SITRANS RD100, loop powered display - see Chapter 7	7NG4124-0AA00
SITRANS RD200, universal input display with Modbus conversion - see Chapter 7	7ML5741-...
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7	7ML5740-...
SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7	7ML5744-...
For applicable back up point level switch - see point level measurement section	7ML5750-...

Note: some configuration options are not available.
For restriction information see the online PIA configuration tool.

- 1) Not available with Plastic and Stainless steel (electropolished) Housing/Protection/Cable options and certain glands.
- 2) Available only with Double chamber, Metallic Housing/Protection/Cable options and certain glands.
- 3) Not available with Remote and Stainless steel (electropolished) Housing/Protection/Cable options and certain glands.
- 4) Not available with Stainless steel (electropolished) Housing/Protection/Cable options and certain glands.
- 5) Not available with Seal/Process temperature option C.
- 6) Not available with Housing/Protection/Cable options W, X, Y, and U.
- 7) Not available with Probe version/Material option E.
- 8) Available only with Electronic options 0 and 2.
- 9) Available only with Supplementary electronic option A00.
- 10) Available only with Electronic options 0, 2, and 5.
- 11) Available only with Electronic options 0, 2, 5, and 6.
- 12) Not available with Indicating/adjustment module option E02.
- 13) Available only with Electronic options 0 ... 4.
- 14) Available only with Electronic options 0, 1, and 2.
- 15) Available only with Electronic options 0, 2, and 6.
- 16) Not available with Seal/Process temperature options B and E.
- 17) Available only with HART Electronic options.
- 18) Available only with Seal/Process temperature option C.
- 19) Not available with PROFIBUS PA Electronic options.
- 20) Not available with Seal/Process temperature options A and D.
- 21) Available only with Rod mounted option C00.
- 22) Available only with Seal/Process temperature options A and D.
- 23) Not available with Housing/Protection/Cable options Q2A and Q2B.
- 24) Listed Certificates are not available with all configurations, please contact factory for more information.
- 25) Available only with 316L Probes. NACE is not available with coated, plated, or hygienic connections.
- 26) Available only with Single chamber, Aluminum and Stainless steel (precision casting) Housing/Protection/Cable options.

Note: Please consult manual for further details.

Level Measurement

Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

Selection and Ordering data	Article No.	Ord. Code
SITRANS LG270	7ML5883-	
A guided wave radar sensor for continuous level and interface measurement of liquids in aggressive applications		
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Approvals		
General purpose (CSA, FM, CE)	0 A	
Shipping approval ¹⁾³⁾⁴⁾⁵⁾⁶⁾	0 B	
Overfill protection (WHG; VLAREM) ³⁾⁵⁾⁶⁾	0 C	
ATEX II 1G, 1/2G, 2G Ex ia IIC T6 ⁷⁾	0 E	
ATEX II 1G, 1/2G, 2G Ex ia IIC + Overfill (WHG; VLAREM) ³⁾⁶⁾	0 F	
ATEX II 1G, 1/2G, 2G Ex ia IIC T6 + shipping approval ¹⁾³⁾⁴⁾⁵⁾⁶⁾⁸⁾	0 G	
ATEX II 1G, 1/2G, 2G Ex ia IIC + ATEX II 1D, 1/2D, 2D IP6x ²⁾⁵⁾⁹⁾	0 H	
ATEX II 1/2G, 2G Ex d ia IIC T6 ⁵⁾⁸⁾¹⁰⁾¹¹⁾	0 J	
ATEX II 1/2G, 2G Ex d ia IIC + shipping approval ¹⁾³⁾⁵⁾⁸⁾¹¹⁾¹²⁾	0 L	
ATEX II 1/2G, 2G Ex d ia IIC + ATEX II 1/2D, 2D IP6x ⁵⁾⁸⁾¹⁰⁾¹¹⁾	0 M	
ATEX II 1/2G, 2G Ex d IIC T6 ⁵⁾⁹⁾¹⁷⁾	0 N	
ATEX II 1G, II 1/2G, II 2G Ex ia IIC T6...T1 Ga, Ga/Gb, Gb /IEC Ex ia IIC T6 ... T1 Ga, Ga/Gb, Gb ³⁾⁷⁾	0 W	
ATEX II 1/2G, 2G Ex d IIC + ship approval ¹⁾³⁾⁵⁾⁶⁾⁸⁾⁹⁾	0 Q	
ATEX II 1/2G, 2G Ex d IIC + ATEX II 1/2D, 2D IP6x ⁵⁾⁹⁾¹³⁾	0 R	
ATEX II 1D, 1/2D, 2D IP6x T ⁵⁾⁹⁾¹³⁾	0 S	
IEC Ex ia IIC T6 ⁷⁾	0 T	
IEC Ex ia IIC T6 + IEC IP6x T tD ²⁾⁵⁾⁹⁾	0 U	
IEC Ex d ia IIC T6 ⁵⁾⁸⁾¹⁰⁾¹¹⁾	1 A	
IEC Ex d ia IIC T6 + IEC IP6x T tD ⁵⁾⁸⁾¹⁰⁾¹¹⁾	1 B	
IEC Ex d IIC T6 ³⁾⁵⁾⁹⁾¹⁷⁾	1 C	
IEC Ex d IIC T6 + IEC IP6x T tD ³⁾⁵⁾⁹⁾¹³⁾	1 D	
IEC Ex db IIC T6 ... T1 Ga/Gb, Gb + Ship approval ³⁾⁵⁾⁹⁾¹⁴⁾¹⁷⁾	7 C	
IEC Ex ia IIC T6 ... T1 Ga, Ga/Gb, Gb + Ship approval ⁷⁾¹⁴⁾²⁰⁾	7 D	
IEC Ex d ia IIC T6 ... T1 Ga/Gb, Gb + Ship approval ⁵⁾⁸⁾¹⁰⁾¹¹⁾¹⁴⁾	7 E	
FM (NI) Class I, Div. 2, Groups A, B, C, D ⁵⁾¹⁰⁾¹⁵⁾	1 F	
FM (NI) Class I, Div. 2, Groups A, B, C, D + ship approval ¹⁾³⁾⁵⁾⁸⁾¹¹⁾¹²⁾	1 G	
FM (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F ²⁾⁵⁾	1 H	
FM (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G + ship approval ¹⁾²⁾³⁾⁴⁾⁵⁾⁸⁾	1 J	
FM (XP-AIS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G ⁵⁾⁸⁾¹⁰⁾¹¹⁾	1 K	
FM (XP-AIS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G + shipping approval ¹⁾³⁾⁵⁾⁸⁾¹¹⁾¹²⁾	1 L	
FM (XP) Class I, Div. 1, Groups A, B, C, D ⁵⁾¹³⁾¹⁶⁾	1 M	
CSA (NI) Class I, Div. 2, Groups A, B, C, D; (DIP) Class II, III, Div. 1, Groups E, F, G ³⁾⁹⁾	1 N	
CSA (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G ³⁾⁷⁾	1 P	
CSA (XP-IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G ³⁾⁵⁾⁸⁾¹⁰⁾¹¹⁾	1 Q	
CSA (XP) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G ³⁾⁵⁾¹⁶⁾¹⁹⁾	1 R	

Selection and Ordering data	Article No.	Ord. Code
SITRANS LG270	7ML5883-	
A guided wave radar sensor for continuous level and interface measurement of liquids in aggressive applications		
CSA (NI) Class I, II, III Div. 2, Groups A, B, C, D, F, G + Ship approval ³⁾⁹⁾¹⁴⁾	7 K	
CSA (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G + Ship approval ¹⁴⁾²⁰⁾	7 L	
CSA (XP-IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G + Ship approval ³⁾⁵⁾⁸⁾¹⁰⁾¹¹⁾¹⁴⁾	7 M	
NEPSI Ex ia IIC T6 ³⁾⁷⁾	2 A	
NEPSI Ex ia IIC T6 + DIP A20/21 TA T* ²⁾³⁾⁵⁾⁹⁾	2 B	
NERSI Ex d ia IIC T6 ³⁾⁵⁾¹⁰⁾¹¹⁾	2 C	
NEPSI Ex d ia IIC T6 + DIP A20/21 TA T* ³⁾⁵⁾¹⁰⁾¹¹⁾	2 D	
NEPSI Ex d IIC T6 ²⁾³⁾⁵⁾¹⁶⁾	2 E	
NEPSI Ex d IIC T6 + DIP A20/21 TA T* ²⁾³⁾⁵⁾¹⁶⁾	2 F	
NEPSI DIP A20/21 TA T* ³⁾⁵⁾⁹⁾¹⁰⁾	2 G	
INMETRO Ex ia IIC T6 ... T1 ⁷⁾	3 A	
INMETRO Ex t IIIC T* IP6X, Da, Da/Db, Da/Dc, Db + Ex ia IIC T6, Ga, Ga/Gb ²⁾⁵⁾⁹⁾	3 B	
INMETRO Ex d ia IIC T6 ... T1 ⁵⁾¹⁰⁾¹¹⁾	3 C	
INMETRO Ex t IIIC T* IP6X, Da, Da/Db, Da/Dc, Db + Ex d ia IIC T6 Ga/Gb ⁵⁾¹⁰⁾¹¹⁾	3 D	
INMETRO Ex d IIC T6 ... T1 ⁵⁾⁷⁾¹⁶⁾	3 E	
INMETRO Ex t IIIC T* IP6X, Da, Da/Db, Da/Dc, Db + Ex d IIC T6 Ga/Gb ²⁾⁵⁾¹⁶⁾	3 F	
INMETRO Ex t IIIC T* IP6X, Da, Da/Db, Da/Dc, Db ⁵⁾⁹⁾¹⁰⁾	3 G	
KOSHA Ex d IIC T6 ... T1 – KE ²⁾³⁾⁵⁾¹⁶⁾	4 A	
Korea KC ex free area	6 A	
GOST-R/EAC 0 Ex ia IIC T1 ... T6 X ³⁾⁷⁾²¹⁾	5 A	
GOST-R/EAC 0 Ex ia IIC T1 ... T6 X + Ex t IIIC T ... IP66 ²⁾³⁾⁹⁾	5 B	
GOST-R/EAC 1 Ex d ia IIC T1 ... T6 X ³⁾⁵⁾¹⁰⁾¹¹⁾	5 C	
GOST-R/EAC 1 Ex d ia IIC T1 ... T6 X + Ex t IIIC T ... IP66 ³⁾⁵⁾¹⁰⁾¹¹⁾	5 D	
GOST-R/EAC 1 Ex d IIC T1 ... T6 X ²⁾³⁾¹⁶⁾	5 E	
GOST-R/EAC 0 Ex d IIC T1 ... T6 X + Ex t IIIC T ... IP66 ²⁾³⁾¹⁶⁾	5 F	
GOST-R/EAC Ex t IIIC T ... IP66 ³⁾¹⁰⁾²²⁾	5 G	
Note: Version/Material, Process fitting/ Material, and Length options are available only with options of corresponding type.		
Version/Material		
Probe exchangeable cable ø 2 mm (0.08 inch) with gravity weight/316 ²³⁾²⁴⁾²⁵⁾	A	
Probe exchangeable cable ø 2 mm (0.08 inch) center weight/316L ²³⁾²⁵⁾²⁶⁾	B	
Probe exchangeable cable ø 4 mm (0.16 inch) with gravity weight/316L ²³⁾²⁴⁾²⁵⁾	C	
Probe exchangeable cable ø 4 mm (0.16 inch) with center weight/316L ²³⁾²⁵⁾²⁶⁾	D	
Probe exchangeable rod ø 16 mm (0.63 inch)/316L ²⁴⁾²⁷⁾²⁸⁾	E	
Probe coax version ø 42.2 mm (1.66 inch) with multiple hole/316L ²⁴⁾²⁵⁾²⁸⁾	F	
Probe coax version ø 42.2 mm (1.66 inch); multiple hole; reference distances/316L ²⁴⁾²⁵⁾²⁸⁾²⁹⁾³⁴⁾	G	
Probe exchangeable cable ø 4 mm (0.16 inch) with gravity weight/ Alloy C22 (2.4602) ³⁰⁾	H	
Probe exchangeable rod ø 16 mm (0.63 inch)/Alloy C22 (2.4602) ³⁰⁾	J	
Coax version ø 42.2 mm (1.66 inch) with multiple hole/Alloy C22 (2.4602) ³⁰⁾	K	

Level Measurement

Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

Selection and Ordering data	Article No.	Ord. Code	Selection and Ordering data	Article No.	Ord. Code
SITRANS LG270	7ML5883-		SITRANS LG270	7ML5883-	
A guided wave radar sensor for continuous level and interface measurement of liquids in aggressive applications			A guided wave radar sensor for continuous level and interface measurement of liquids in aggressive applications		
Exchangeable rod, diameter 8 mm (0.32 inch)/316L ²⁷⁾ 31)	L		Flange DN 80 PN 63, EN 1092-1 Form B2/316L	6 7	
Coax ø 21.3 mm (0.838 inch) with multiple hole/316L ³¹⁾	M		Flange 4" 600 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	6 8	
Process fitting/Material			Flange 2" 150 lb RF, ASME B16.5/316L	3 0	
Thread G 1 1/2" (DIN 3852-A) PN 400/316L ²⁸⁾	0 0		Flange 2" 300 lb RF, ASME B16.5/316L	3 1	
Thread 1 1/2" NPT (ASME B1.20.1) PN 400/316L ²⁸⁾	0 1		Flange 2" 600 lb RF, ASME B16.5/316L	3 2	
Thread G1 1/2" PN 400, DIN 3852-A/Alloy C22 (2.4602)	0 2		Flange 2" 1 500 lb RF, ASME B16.5/316L	3 3	
Thread 1 1/2" NPT PN 400, ASME B1.20.1/Alloy C22 (2.4602)	0 3		Flange 3" 150 lb RF, ASME B16.5/316L	3 4	
Flange DN 50 PN 40 Form C, DIN 2501/316L with Alloy C22 (2.4602) coating	0 4		Flange 3" 300 lb RF, ASME B16.5/316L	3 5	
Flange DN 80 PN 40 Form C, DIN 2501/316L with Alloy C22 (2.4602) coating	0 5		Flange 3" 600 lb RF, ASME B16.5/316L	3 6	
Flange DN 100 PN 16 Form C, DIN 2501/316L with Alloy C22 (2.4602) coating	0 6		Flange 3" 900 lb RF, ASME B16.5/316L	3 7	
Flange DN 50 PN 40 Form B1, EN 1092-1/316L with Alloy C22 (2.4602) coating	0 7		Flange 3" 2 500 lb RF, ASME B16.5/316L	3 8	
Flange DN 50 PN 63 Form B1, EN 1092-1/316L with Alloy C22	0 8		Flange 3 1/2" 600 lb RF, ASME B16.5/316L	4 0	
Flange DN 50 PN 40 Form C, DIN 2501/316L	1 0		Flange 4" 150 lb RF, ASME B16.5/316L	4 1	
Flange DN 50 PN 40 form V13, DIN 2513/316L	1 1		Flange 4" 300 lb RF, ASME B16.5/316L	4 2	
Flange DN 65 PN 64 Form V13, DIN 2501/316L	1 2		Flange 4" 600 lb RF, ASME B16.5/316L	4 3	
Flange DN 80 PN 40 Form C, DIN 2501/316L	1 3		Flange 6" 150 lb RF, ASME B16.5/316L	4 4	
Flange DN 80 PN 40 Form V13, DIN 2501/316L	1 4		Flange 6" 300 lb RF, ASME B16.5/316L	4 5	
Flange DN 80 PN 100 Form L, DIN 2501/316L ²⁸⁾	1 5		Flange 6" 600 lb RF, ASME B16.5/316L	4 6	
Flange DN 100 PN 16 Form C, DIN 2501/316L	1 6		Flange 2" 150 lb Fisher special return/316L	4 7	
Flange DN 100 PN 16 Form V13, DIN 2501/316L	1 7		Flange 3" 900 lb RJF, ASME B16.5/Alloy C22 (2.4602)	4 8	
Flange DN 100 PN 40 Form C, DIN 2501/316L	1 8		Flange 2" 900 lb RF, ASME B16.5/316L	5 0	
Flange DN 100 PN 40 Form V13, DIN 2513/316L	2 0		Flange 3" 1 500 lb RF, ASME B16.5/316L	5 1	
Flange DN 150 PN 16 Form C, DIN 2501/316L	2 1		Flange 4" 900 lb RF, ASME B16.5/316L	5 2	
Flange DN 50 PN 40 EN 1092-1 Form B1/316L	2 2		Flange 4" 1 500 lb RF, ASME B16.5/316L	5 3	
Flange DN 100 PN 160 GOST 12815-80.7/316L ²⁸⁾	2 3		Flange 4" 2 500 lb RJF, ASME B16.5/316L ²⁸⁾	5 4	
Flange 2" 150 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	2 4		Flange 4" 1500 lb RJF, ASME B16.5/316L ²⁸⁾	5 5	
Flange 2" 300 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	2 5		Flange 3" 600 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	5 6	
Flange 2" 600 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	2 6		Flange 4" 150 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	5 7	
Flange 3" 150 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	2 7		Flange 4" 300 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	5 8	
Flange 3" 300 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	2 8		Flange 6" 150 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	7 0	
Flange DN 80 PN 160 Form C, DIN 2501/316L ²⁸⁾	6 0		Flange DN 50 PN 40 Form C, DIN 2501/Alloy C22 (2.4602) solid	7 1	
Flange DN 80 PN 250 Form L, DIN 2501/316L ²⁸⁾	6 1		Flange DN 100 PN 16 Form C, DIN 2501/C22 solid	7 2	
Flange DN 50 PN 160, EN 1092-1 Form B1/316L ²⁸⁾	6 2		Flange DN 100 PN 40 Form N, DIN 2501/Alloy C22 (2.4602) solid	7 3	
Flange DN 50 PN 160, EN 1092-1 Form B2/316L ²⁸⁾	6 3		Flange DN 50 PN 40 Form B1, EN 1092-1/Alloy C22 (2.4602) solid	7 4	
Flange DN 50 PN 32, EN 1092-1 Form B1/316L ²⁸⁾	6 4		Flange 2" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	7 5	
Flange DN 65 PN 250, EN 1092-1 Form B1/316L ²⁸⁾	6 5		Flange 2" 300 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	7 6	
Flange DN 100 PN 160, EN 1092-1 Form B2/316L ²⁸⁾	6 6		Flange 2" 600 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	7 7	
			Flange 2" 900 lb RJF, ASME B16.5/Alloy C22 (2.4602) solid	7 8	
			Flange 2" 1 500 lb RJF, ASME B16.5/Alloy C22 (2.4602) solid	8 0	
			Flange 3" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	8 1	
			Flange 3" 300 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	8 2	
			Flange 3" 600 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	8 3	

Level Measurement

Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

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SITRANS LG270	7ML5883-	
A guided wave radar sensor for continuous level and interface measurement of liquids in aggressive applications		
Flange 4" 150 lb RF, ASME B16.5/ Alloy C22 (2.4602) solid	8 4	
Flange 4" 300 lb RF, ASME B16.5/ Alloy C22 (2.4602) solid	8 5	
Flange 3" 600 lb RJF for R31, ASME B16.5/ Alloy C22 (2.4602) solid	8 6	
Flange 2" 2 500 lb RJF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 A
Flange 3" 1 500 lb RJF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 B
Flange 3" 2 500 lb RJF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 C
Flange 4" 600 lb RF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 D
Flange 4" 600 lb RJF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 E
Flange 4" 900 lb RF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 F
Flange 4" 900 lb RJF, ASME B16.5/ Alloy C22 (2.4602) massiv	9 0	L 1 G
Flange 4" 1 500 lb RJF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 H
Flange 4" 2 500 lb RJF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 J
Flange 8" 300 lb RF, ASME B16.5/ Alloy C22 (2.4602) solid	9 0	L 1 K
Flange 3½" 600 lb Fisher type 249B and 259B/ Alloy C22 (2.4602) solid	9 0	L 1 L
Flange 2½" 300 lb RF, ASME B16.5/316/316L	9 0	L 2 A
Flange 2½" 600 lb RF, ASME B16.5/316/316L	9 0	L 2 B
Flange DN 50 PN 40 Form D, EN 1092-1/316/316L ³²⁾	9 0	L 2 C
Flange 2½" 1 500 lb RF, ASME B16.5/316/316L	9 0	L 2 D
Thread G 1" (DIN 3852-A) PN 100/316L	9 0	L 3 C
Thread 1" NPT, ASME B1.20.1/PN 100/316L	9 0	L 3 D
Thread G 1½" (DIN 3852-A) PN 100/316L	9 0	L 3 E
Thread 1½" NPT, ASME B1.20.1/PN100/316L	9 0	L 3 F
Thread 2" NPT, ASME B1.20.1/PN 100/316L	9 0	L 3 G
Electronics		
Two-wire 4 ... 20 mA/HART	0	
Four-wire Modbus ⁵⁾⁸⁾¹¹⁾	1	
Two-wire 4 ... 20 mA/HART with SIL qualification ⁵⁾	2	
Four-wire 4 ... 20 mA/HART; 90 ... 253 V AC; 50/60 Hz ⁵⁾⁸⁾¹¹⁾	3	
Four-wire 4 ... 20 mA/HART; 9.6 ... 48 V DC; 20 ... 42 V AC ⁵⁾⁸⁾¹¹⁾	4	
PROFIBUS PA ⁵⁾	5	
FOUNDATION Fieldbus ⁵⁾	6	
Seal/Second line of defense/ Process temperature		
Ceramic-graphite/with glass seal/ -196 ... +280 °C (-321 ... +536 °F)	A	
Ceramic-graphite/with glass seal/ -196 ... +450 °C (-321 ... +842 °F)	B	
Ceramic-graphite/with glass seal/ -196 ... +400 °C (-321 ... +752 °F) ²⁹⁾	C	
PEEK-FFKM (Kalrez 6375) /with glass seal/ -20...+250 °C (-4 ... +482 °F) ²⁹⁾	D	
Housing/Protection/Cable		
Note: for installation of remote display, 7ML5840, with LG two chamber housing options, contact PVC		
Plastic IP66/IP67 M20 x 1.5/blind stopper	A	
Plastic IP66/IP67 1/2" NPT/blind stopper	B	
Aluminum/IP66/IP68 (0.2 bar) M20 x 1.5/ blind stopper	C	

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SITRANS LG270	7ML5883-	
A guided wave radar sensor for continuous level and interface measurement of liquids in aggressive applications		
Aluminum/IP66/IP68 (0.2 bar) 1/2" NPT/blind stopper		D
Aluminum double chamber/IP66/IP68 (0.2 bar) M20 x 1.5/blind stopper		E
Aluminum double chamber/IP66/IP68 (0.2 bar) 1/2" NPT/blind stopper		F
Stainless steel (precision casting) 316L/IP66/IP68 (0.2 bar) M20 x 1.5/blind stopper		L
Stainless steel (precision casting) 316L/IP66/IP68 (0.2 bar) 1/2" NPT/blind stopper		M
Stainless steel (electropolished) 316L/IP66/IP68 (0.2 bar) M20 x 1.5/blind stopper		N
Stainless steel (electropolished) 316L/IP66/IP68 (0.2 bar) 1/2" NPT/blind stopper		P
Stainless steel double chamber/IP66/IP68 (0.2 bar) M20 x 1.5/blind stopper		Q
Stainless steel double chamber/IP66/IP68 (0.2 bar) 1/2" NPT/blind stopper		R
Aluminum/IP66/IP68 (0.2 bar) M20 x 1.5/ cable gland stainless steel		S
Aluminum double chamber/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland stainless steel		T
Stainless steel (precision casting) 316L/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland stainless steel		U
Stainless steel (electropolished) 316L/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland stainless steel		V
Aluminum single chamber/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland brass nickel-plated		W
Aluminum double chamber/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland brass nickel-plated		X
Stainless steel single chamber (precision casting)/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland brass nickel-plated		Y
Stainless steel double chamber/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland brass nickel-plated		J
Remote stainless steel single chamber housing, electropolished/IP66/IP67 with cable outlet IP68 (electronics separated by cable); M20 x 1.5/blind plug ⁸⁾	Z	Q 2 A
Remote plastic single chamber housing / IP66/IP67 with cable outlet IP68 (electronics separated by cable); M20 x 1.5/blind plug ⁸⁾	Z	Q 2 B
Lengths		
<u>Rod ø 16 mm/316L</u>		
300 mm (11.81 inch) ³³⁾		0
500 mm (19.69 inch) ³³⁾		1
501 ... 1 000 mm (19.72 ... 39.37 inch) ³³⁾		2
1 001 ... 2 000 mm (39.41 ... 78.74 inch) ³³⁾		3
2 001 ... 3 000 mm (78.78 ... 118.11 inch) ³³⁾		4
3 001 ... 4 000 mm (118.15 ... 157.48 inch) ³³⁾		5
4 001 ... 5 000 mm (157.52 ... 196.85 inch) ³³⁾		6
5 001 ... 6 000 mm (196.89 ... 236.22 inch) ³³⁾		7

Level Measurement

Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

Selection and Ordering data	Article No.	Ord. Code	Selection and Ordering data	Article No.	Ord. Code
SITRANS LG270	7ML5883-		SITRANS LG270	7ML5883-	
A guided wave radar sensor for continuous level and interface measurement of liquids in aggressive applications			A guided wave radar sensor for continuous level and interface measurement of liquids in aggressive applications		
<u>Rod ø 16 mm/C22</u>			<u>Coax ø 42.2 mm/316L</u>		
501 ... 1 000 mm (19.72 ... 39.37 inch) ³³⁾	9	R 1 A	45 001 ... 50 000 mm (1 771.69 ... 1 968.50 inch)	9	R 4 L
1 001 ... 2 000 mm (39.41 ... 78.74 inch) ³³⁾	9	R 1 B	50 001 ... 55 000 mm (1 968.54 ... 2 165.35 inch)	9	R 4 M
2 001 ... 3 000 mm (78.78 ... 118.11 inch) ³³⁾	9	R 1 C	55 001 ... 60 000 mm (2 165.39 ... 2 362.20 inch)	9	R 4 N
3 001 ... 4 000 mm (118.15 ... 157.48 inch) ³³⁾	9	R 1 D			
4 001 ... 5 000 mm (157.52 ... 196.85 inch) ³³⁾	9	R 1 E			
5 001 ... 6 000 mm (196.89 ... 236.22 inch) ³³⁾	9	R 1 F			
<u>Rod ø 8 mm/316L</u>					
300 ... 1 000 mm (11.81 ... 39.37 inch)	9	R 1 H	300 ... 1 000 mm (11.81 ... 39.37 inch) ³³⁾	9	R 3 G
1 001 ... 2 000 mm (39.41 ... 78.74 inch)	9	R 1 J	1 001 ... 2 000 mm (39.41 ... 78.74 inch) ³³⁾³⁴⁾	9	R 3 H
2 001 ... 3 000 mm (78.78 ... 118.11 inch)	9	R 1 K	2 001 ... 3 000 mm (78.78 ... 118.11 inch) ³³⁾	9	R 3 J
3 001 ... 4 000 mm (118.15 ... 157.48 inch)	9	R 1 L	3 001 ... 4 000 mm (118.15 ... 157.48 inch) ³³⁾	9	R 3 K
4 001 ... 5 000 mm (157.52 ... 196.85 inch)	9	R 1 M	4 001 ... 5 000 mm (157.52 ... 196.85 inch) ³³⁾	9	R 3 L
5 001 ... 6 000 mm (196.89 ... 236.22 inch)	9	R 1 N	5 001 ... 6 000 mm (196.89 ... 236.22 inch) ³³⁾	9	R 3 M
<u>Cable lengths ø 2 or 4 mm/316L</u>			<u>Coax ø 21.3 mm/316L</u>		
501 ... 1 000 mm (19.72 ... 39.37 inch)	9	R 2 E	300 ... 1 000 mm (11.81 ... 39.37 inch) ³³⁾	9	R 3 Q
1 000 ... 5 000 mm (39.37 ... 196.85 inch)	9	R 2 F	1 001 ... 2 000 mm (39.41 ... 78.74 inch) ³³⁾³⁴⁾	9	R 3 R
5 001 ... 10 000 mm (196.89 ... 393.70 inch)	9	R 2 G	2 001 ... 3 000 mm (78.78 ... 118.11 inch) ³³⁾	9	R 3 S
10 001 ... 15 000 mm (393.74 ... 590.55 inch)	9	R 2 H	3 001 ... 4 000 mm (118.15 ... 157.48 inch) ³³⁾	9	R 3 T
15 001 ... 20 000 mm (590.59 ... 787.40 inch)	9	R 2 J	4 001 ... 5 000 mm (157.52 ... 196.85 inch) ³³⁾	9	R 3 U
20 001 ... 25 000 mm (787.44 ... 984.25 inch)	9	R 2 K	5 001 ... 6 000 mm (196.89 ... 236.22 inch) ³³⁾	9	R 3 V
25 001 ... 30 000 mm (984.29 ... 1 181.10 inch)	9	R 2 L			
30 001 ... 35 000 mm (1 181.14 ... 1 377.95 inch)	9	R 2 M			
35 001 ... 40 000 mm (1 377.99 ... 1 574.80 inch)	9	R 2 N			
40 001 ... 45 000 mm (1 574.84 ... 1 771.65 inch)	9	R 2 P			
45 001 ... 50 000 mm (1 771.69 ... 1 968.50 inch)	9	R 2 Q			
50 001 ... 55 000 mm (1 968.54 ... 2 165.35 inch)	9	R 2 R			
55 001 ... 60 000 mm (2 165.39 ... 2 362.20 inch)	9	R 2 S			
<u>Cable lengths ø 4 mm/ C22</u>					
501 ... 1 000 m (19.72 ... 39.37 inch)	9	R 4 A			
1 000 ... 5 000 mm (39.37 ... 196.85 inch)	9	R 4 B			
5 001 ... 10 000 mm (196.89 ... 393.70 inch)	9	R 4 C			
10 001 ... 15 000 mm (393.74 ... 590.55 inch)	9	R 4 D			
15 001 ... 20 000 mm (590.59 ... 787.40 inch)	9	R 4 E			
20 001 ... 25 000 mm (787.44 ... 984.25 inch)	9	R 4 F			
25 001 ... 30 000 mm (984.29 ... 1 181.10 inch)	9	R 4 G			
30 001 ... 35 000 mm (1 181.14 ... 1 377.95 inch)	9	R 4 H			
35 001 ... 40 000 mm (1 377.99 ... 1 574.80 inch)	9	R 4 J			
40 001 ... 45 000 mm (1 574.84 ... 1 771.65 inch)	9	R 4 K			

Level Measurement

Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs (mandatory)		Further designs (optional)	
Please add "-Z" to Article No. and specify Order code(s).		Please add "-Z" to Article No. and specify Order code(s).	
Supplementary electronics		Enter the total insertion length in plain text description	Y01
Without	A00	Y02 rigid part is 100 mm, only applicable for cable versions	Y02
Additional current output 4 ... 20 mA ⁸⁾	A01	Reference probe G length of reference distance = 260 mm/10.24 inches (note blanking 450 mm required with min. probe 1 000 mm)	Y05
Dimensions centering weight (diameter/height)		Reference probe G length of reference distance = 500 mm/19.69 inches (note blanking 690 mm required with min. probe 1 250 mm)	Y06
Without	B00	Reference probe G length of reference distance = 750 mm/29.53 inches (note blanking 940 mm required with min. probe 1 500 mm)	Y07
ø 40/30 mm	B01	Remote electronic cable lengths: 2 m (6.6 ft). Only available with Housing options Q2A and Q2B	Y10
ø 45/30 mm (for 2 inch tubes)	B02	Remote electronic cable lengths: 5 m (16.4 ft). Only available with Housing options Q2A and Q2B	Y11
ø 75/30 mm (for 3 inch tubes)	B03	Remote electronic cable lengths: 10 m (32.8 ft). Only available with Housing options Q2A and Q2B	Y12
ø 95/30 mm (for 4 inch tubes)	B04	Customer specific adjustment (unit value, 100 % distance from seal, 0 % distance from seal)	Y20
ø 40 mm/30 mm	B05	Cleaning included certificate: oil, grease and silicone free	W01
ø 1.57 inch/1.18 inch (for 2 inch Schedule 160)		Identification Label (measurement loop) stainless steel, 40 characters max, add in plain text. To add more than one line use a coma "," for line break.	Y17
ø 45 mm/30 mm (for 2 inch tubes)	B06	Identification Label (measurement loop) foil, 40 characters max, add in plain text. To add more than one line use a coma "," for line break.	Y18
ø 1.77 inch/1.18 inch (for 2 inch Schedule 40/80)	B07	3.1-Inspection Certificate for instrument (EN 10204) ³⁵⁾	C12
ø 75 mm/30 mm (for 3 inch tubes)	B08	NACE0175 to 3.1 Material Certificate for material (EN10204 NACE MR 0175) (NACE not in scope for Hygienic process connections) ³⁵⁾	D07
ø 2.95 inch/1.18 inch (for 3 inch Schedule 10/40)		3.1-Inspection Certificate for instrument with test data (EN 10204) ³⁵⁾	C25
ø 95 mm/30 mm (for 4 inch tubes)		2.2-Factory certificate for material (EN 10204) ³⁵⁾	C15
ø 3.74 inch/1.18 inch (for 4 inch Schedule 80)		Quality and test plan ³⁵⁾	C26
Rod mounted		Dye penetration test, results confirmed via a 3.1 certificate/instrument (EN10204) ³⁵⁾	C13
Without Rod, applicable for coax or cable probe types only	C00	X-ray test + 3.1 certificate/instrument ³⁵⁾	C14
Mounted	C01	Positive material identification test + 3.1 certificate/ instrument ³⁵⁾	C16
Not mounted	C02	Roughness test + 3.1 certificate/instrument ³⁵⁾	C18
Indicating/adjustment module		Pressure test + 3.1 certificate/instrument ³⁵⁾	C31
Without	E00	Helium leak test + 3.1 certificate/instrument ³⁵⁾	C32
Mounted	E01	Pressure test according to Norsok + 3.1 certificate/ instrument ³⁵⁾	C61
Laterally mounted	E02	5 point calibration certificate (min. length 1 000 mm) ³⁵⁾	C62
Language of display		Pressure test (acc. to ASME B31.1), incl. 3.1 Inspection certificate ³⁶⁾	C63
German	L00	Certificate: Approval for steam boiler according to EN 12952-11, EN 12953-9 ³⁷⁾	C70
English	L01		
French	L02		
Dutch	L03		
Italian	L04		
Spanish	L05		
Portuguese	L06		
Russian	L07		
Chinese	L08		
Japanese	L09		
Operating instructions			
German	M00		
English	M01		
French	M02		
Spanish	M03		

Selection and Ordering data	Article No.
Operating Instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories	
SITRANS LG, GWR sensor Display Module	A5E34143449
SITRANS LG, two-wire 4 ... 20 mA/HART electronic	A5E35637821
SITRANS LG, USB communicator	A5E35192015
SITRANS LG, Mounting eye M12 x 20	PBD:51041448
SITRANS LG, Mounting spring	PBD:51041449
Siemens Intrinsically Safe Barrier (DC powered), ATEX II 1 G EEx ia	7NG4124-0AA00
SITRANS RD100, loop powered display - see Chapter 7	7ML5741-...
SITRANS RD200, universal input display with Modbus conversion - see Chapter 7	7ML5740-...
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7	7ML5744-...
SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7	7ML5750-...
For applicable back up point level switch - see point level measurement section	

Note: some configuration options are not available.
For restriction information see the online PIA configuration tool.

- 1) Not available with Version/Material options E, F, G, J, and K.
- 2) Available only with Electronic options 0 and 2.
- 3) Not available with Seal/Process temperature option D.
- 4) Not available with Stainless Steel (electropolished) Housing/Protection/Cable options and certain glands.
- 5) Available only with Supplementary electronic option A00.
- 6) Available only with Electronic options 0, 2, and 5.
- 7) Available only with Electronic options 0, 2, 5, and 6.
- 8) Not available with Indicating/adjusting module E02.
- 9) Not available with Plastic and Stainless Steel (electropolished) Housing/Protection/Cable options and certain glands.
- 10) Available only with Electronic options 0 ... 4.
- 11) Available only with Double chamber, Metallic Housing/Protection/Cable options and certain glands.
- 12) Available only with Electronic options 0, 1, and 2.
- 13) Available only with Electronic options 0, 2, 3, and 4.
- 14) Available only with Version/Material options A, B, C, D, and H.
- 15) Not available with Remote and Stainless Steel (electropolished) Housing/Protection/Cable options and certain glands.
- 16) Available only with Single chamber, Aluminum and Stainless steel (precision casting) Housing/Protection/Cable options.
- 17) Not available with Modbus and FOUNDATION Fieldbus Electronic options.
- 18) Available only with Electronic options 0, 2, and 6.
- 19) Not available with Modbus Electronic options.
- 20) Available only with Housing/Protection/Cable options N, P, V, and Q2A.
- 21) Not available with Housing/Protection/Cable options W, X, Y, and J.
- 22) Available only with Housing/Protection/Cable options C, E, L, Q.
- 23) Not available with Seal/Process temperature option C.
- 24) Available only with Dimensions centering weight option B00.
- 25) Available only with Rod mounted option C00.
- 26) Not available with Dimensions centering weight option B00.
- 27) Not available with Rod mounted option C00.
- 28) Not available with Seal/Process temperature options C and D.
- 29) Not available with Remote Housing/Protection/Cable options.
- 30) Not available with Seal/Process temperature options B and D.
- 31) Available only with Seal/Process temperature option D.
- 32) Available only with Seal/Process temperature options A, B, and C.
- 33) Not available with Order code Y02.


34) Accuracy is application dependent, please consult factory.

35) Listed Certificates are not available with all configurations, please contact factory for more information.

36) Available only with ASME Process fitting/Material options.

37) Available with Version/Material options G, L, M and Electronic options 2 and 6.

Note: Please consult manual for further details.

Selection and Ordering data		Article No.	
SITRANS LG Replacement Probes		7ML5841-  0	
<u>Cable Lengths ø 6 mm/316</u>			
501 ... 1 000 mm (19.72 ... 39.37 inch)			BM
1 001 ... 5 000 mm (39.41 ... 196.85 inch)			BN
5 000 ... 10 000 mm (196.89 ... 393.70 inch)			BP
10 001 ... 15 000 mm (393.74 ... 590.55 inch)			BQ
15 001 ... 20 000 mm (590.59 ... 787.40 inch)			BR
20 001 ... 25 000 mm (787.44 ... 984.25 inch)			BS
25 001 ... 30 000 mm (984.29 ... 1 181.10 inch)			BT
30 001 ... 35 000 mm (1 181.14 ... 1 377.95 inch)			BU
35 001 ... 40 000 mm (1 377.99 ... 1 574.80 inch)			BV
40 001 ... 45 000 mm (1 574.84 ... 1 771.65 inch)			BW
45 001 ... 50 000 mm (1 771.69 ... 1 968.50 inch)			BX
50 001 ... 55 000 mm (1 968.54 ... 2 165.35 inch)			BY
55 001 ... 60 000 mm (2 165.39 ... 2 362.20 inch)			CA
60 001 ... 65 000 mm (2 362.24 ... 2 559.06 inch)			CB
65 001 ... 70 000 mm (2 559.09 ... 2 755.91 inch)			CC
70 001 ... 75 000 mm (2 755.94 ... 2 952.76 inch)			CD
Selection and Ordering data		Order code	
Further designs			
Please add "-Z" to Article No. and specify Order code(s).			
Enter the total insertion length in plain text description		Y01	
Total length: Enter the total length of rigid part (range 100 ... 1 000 mm LG270 limited to 100 mm) (cable versions only)		Y02	
1) Available only with Dimension centering weight option 0.			
2) Available only with Dimension centering weight options 1 ... 8.			
3) All Probe types are only available with corresponding Probe lengths.			
4) Available only with Probe type option AQ.			
5) Available only with Process fitting options 2 and 3.			
6) Not available with Probe type options AQ and AW.			
7) Available only with Probe type options AE, AH, and AW.			
8) Not available with Process fitting option 2.			
9) Available only with Probe type options AA, AC, AE, AG, and AW.			
10) Available only with Process fitting options 0 and 3.			
11) Not available with certificate options 1 and 2.			

Level Measurement

Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

Selection and Ordering data	Article No.	
SITRANS LG Spacers	7ML5842-	
	- 0 0 A A 0	
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Instrument		
LG240 ¹⁾	0	
LG250 ²⁾	1	
LG260 ³⁾	2	
LG270 ³⁾	3	
Version/Material		
Cable ø 4 mm/ PFA ⁴⁾	AA	
Rod ø 8 mm including fastening/ PEEK can be shortened ⁵⁾	AB	
Rod ø 10 mm/ PFA ⁴⁾	AC	
Rod ø 12 mm including fastening/ PEEK can be shortened ⁵⁾	AD	
Rod ø 16 mm, cable with gravity weight, including fastening/ PEEK can be shortened ⁵⁾⁷⁾	AE	
Cable ø 2 mm including fastening/ PEEK and 316L	AF	
Rod ø 16 mm including fastening/ 1.4568 (AISI 631) flexible ⁸⁾	AG	
Rod ø 8 mm including fastening/ PTFE can be shortened ⁵⁾	AH	
Rod ø 12 mm including fastening/ 1.4568 (AISI 631) flexible ⁶⁾	AG	
Tube diameter		
50 mm (2 inch) up to 100 mm (4 inch)	1	
49.2 mm (1.9 inch) up to 56.3 mm (2.2 inch)	2	
66.6 mm (2.6 inch) up to 84.9 mm (3.3 inch)	3	

¹⁾ Available only with Version/Material options AA and AC.

²⁾ Available only with Version/Material options AB, AD, AE, AH and AJ.

³⁾ Available only with Version/Material options AE and AG.

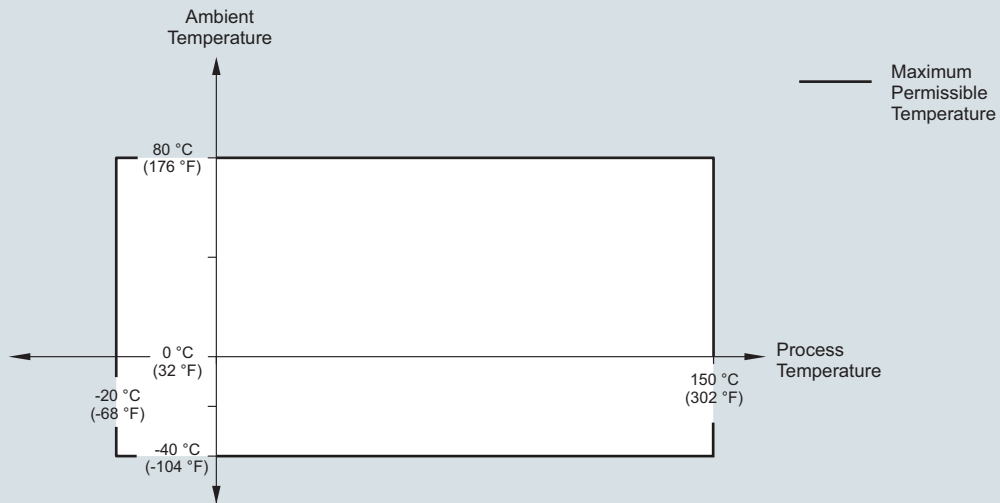
⁴⁾ Available only with Tube Diameter option 1 and LG240.

⁵⁾ Available only with Tube Diameter options 2 and 3 and LG250.

⁶⁾ Available only with Tube Diameter option 1 and LG250.

⁷⁾ Available only with Tube diameter option 1 and LG260 or LG270.

⁸⁾ Available only with Tube Diameter options 2 and 3 and LG260 or LG270.

Characteristic curves**SITRANS LG240, Ambient temperature/process temperature, standard version**

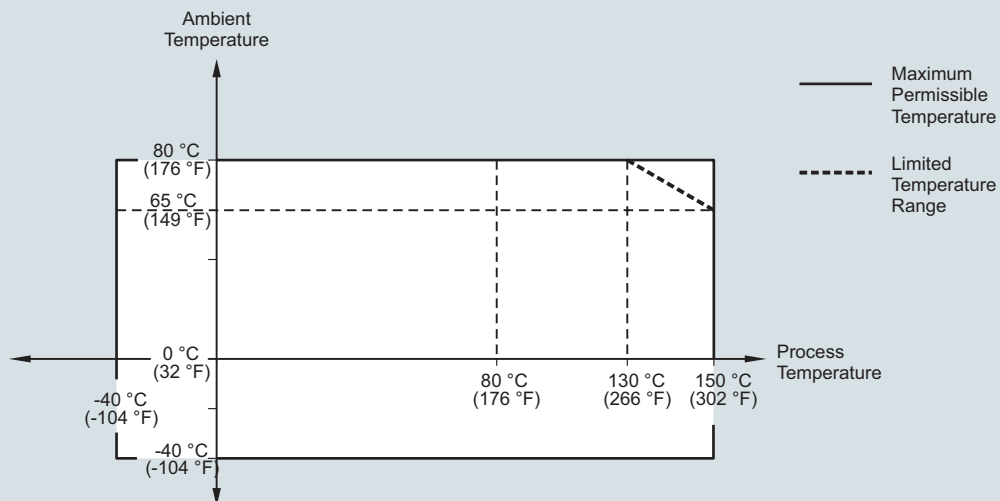
SITRANS LG240, ambient temperature/process temperature curve

Level Measurement

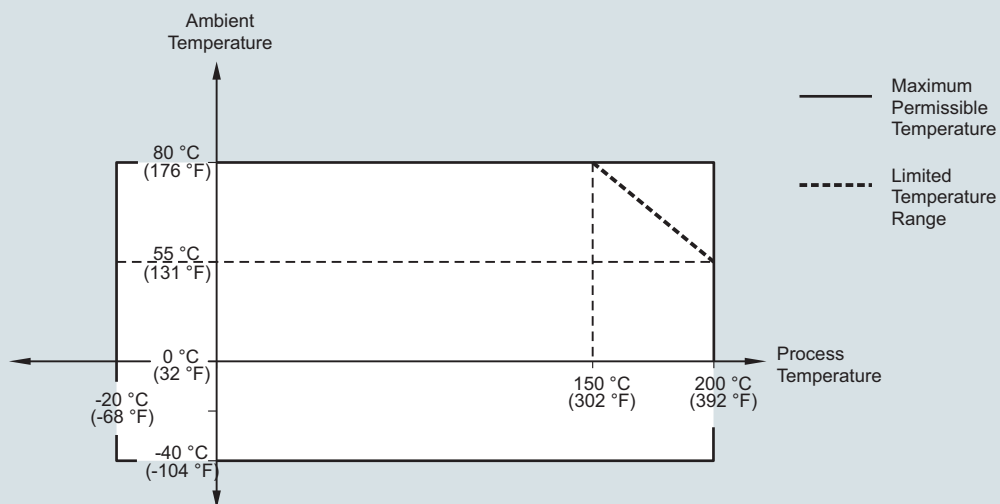
Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

SITRANS LG250, Ambient temperature/process temperature, standard version

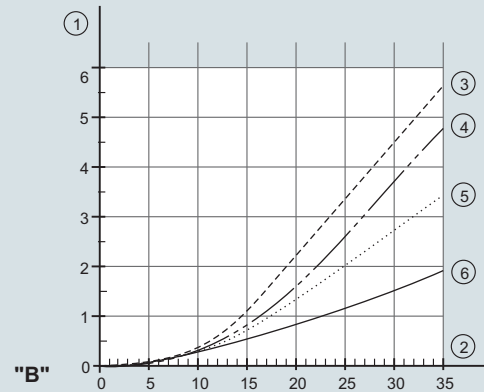
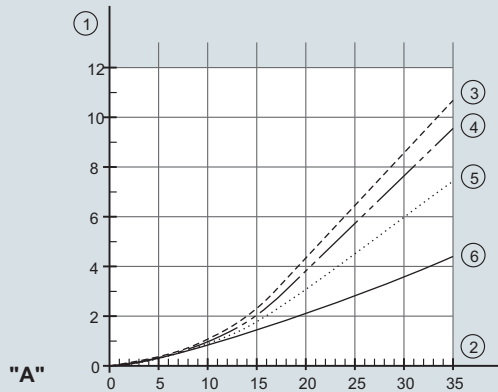


SITRANS LG250, Ambient temperature/process temperature, temperature adapter version



SITRANS LG250, ambient temperature/process temperature curve

SITRANS LG260, Maximum tensile load with cereals and plastic granules - cable: \varnothing 4 mm (0.157 inch)



A. Cereals

B. Plastic granules

1. Tensile force in kN (the determined value must be multiplied with safety factor 2)

2. Cable length in m

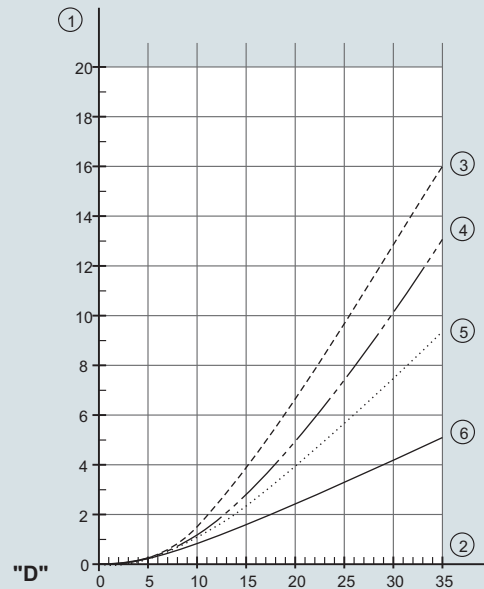
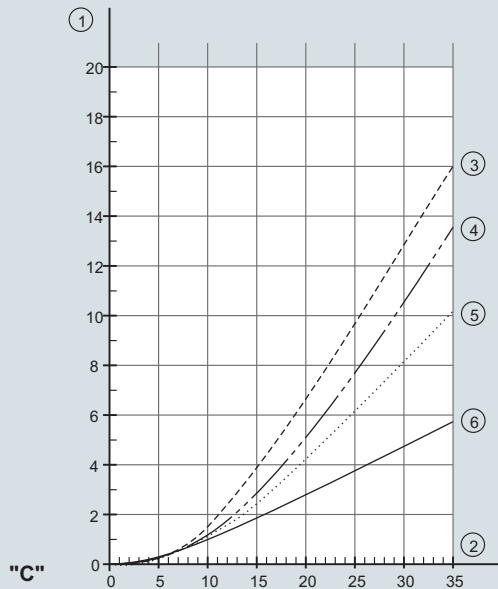
3. Vessel diameter 12 m (39.37 ft)

4. Vessel diameter 9 m (29.53 ft)

5. Vessel diameter 6 m (19.69 ft)

6. Vessel diameter 3 m (9.843 ft)

SITRANS LG260, Maximum tensile load with sand and cement - cable: \varnothing 4 mm (0.157 inch)



C. Sand

D. Cement

1. Tensile force in kN (the determined value must be multiplied with safety factor 2)

2. Cable length in m

3. Vessel diameter 12 m (39.37 ft)

4. Vessel diameter 9 m (29.53 ft)

5. Vessel diameter 6 m (19.69 ft)

6. Vessel diameter 3 m (9.843 ft)

SITRANS LG260, maximum tensile load curves

Level Measurement

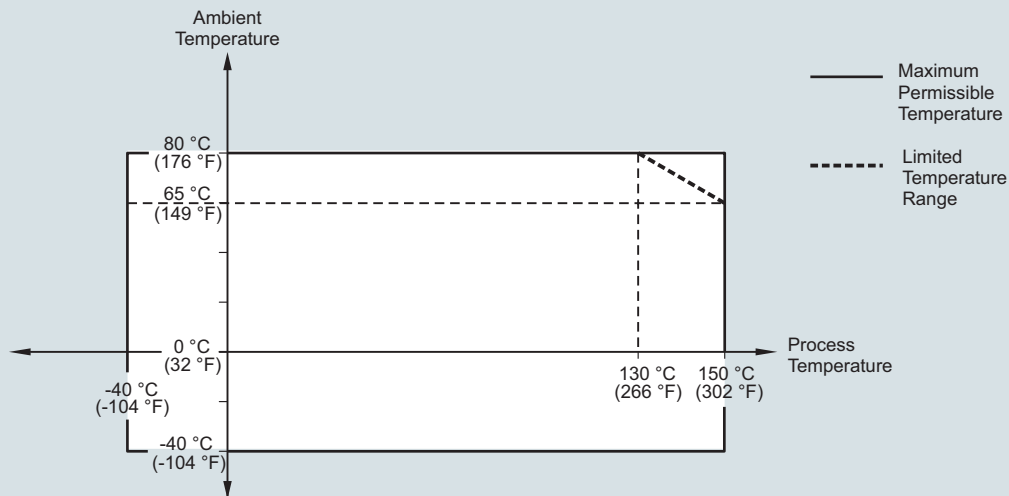
Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

SITRANS LG260, Ambient temperature/process temperature, standard version

Cable version with \varnothing 4 mm (0.157 inch)

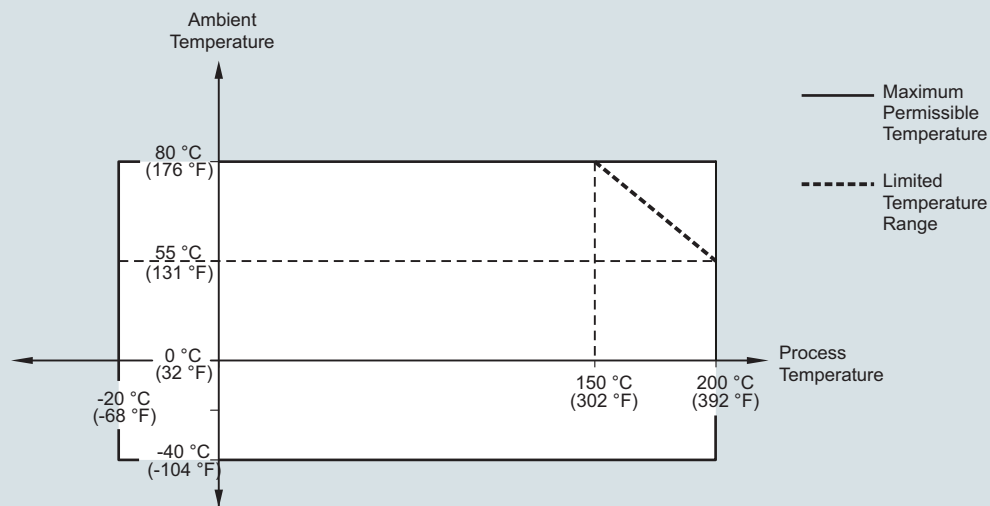
Cable version, PA coated with \varnothing 6 mm (0.236 inch)



SITRANS LG260, Ambient temperature/process temperature, temperature adapter version

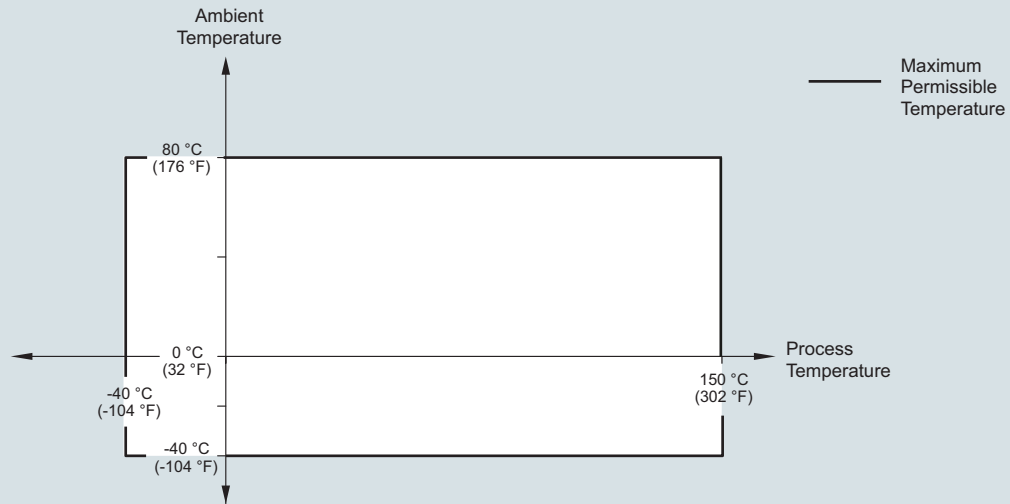
Cable version with \varnothing 4 mm (0.157 inch)

Cable version, PA coated with \varnothing 6 mm (0.236 inch)

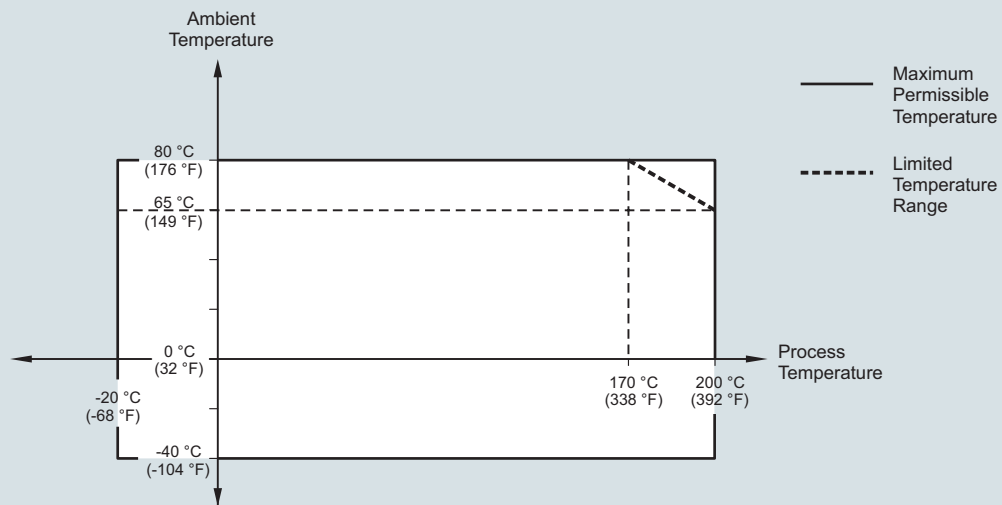


SITRANS LG260, ambient temperature/process temperature curves

SITRANS LG260, Ambient temperature/process temperature, standard version
Cable version with \varnothing 6 mm (0.236 inch)
Cable version, PA coated with \varnothing 11 mm (0.433 inch)



SITRANS LG260, Ambient temperature/process temperature, temperature adapter version
Cable version with \varnothing 6 mm (0.236 inch)
Cable version, PA coated with \varnothing 11 mm (0.433 inch)



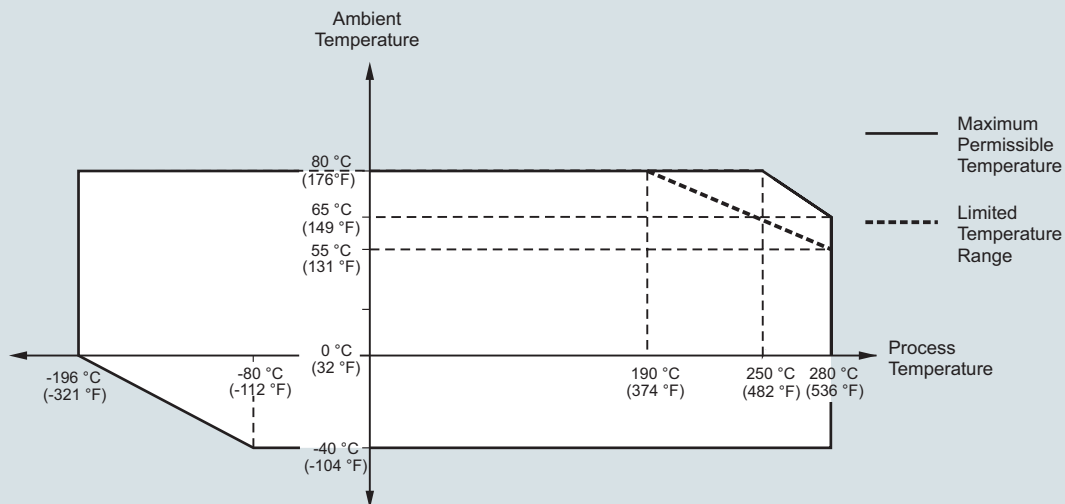
SITRANS LG260, ambient temperature/process temperature curves

Level Measurement

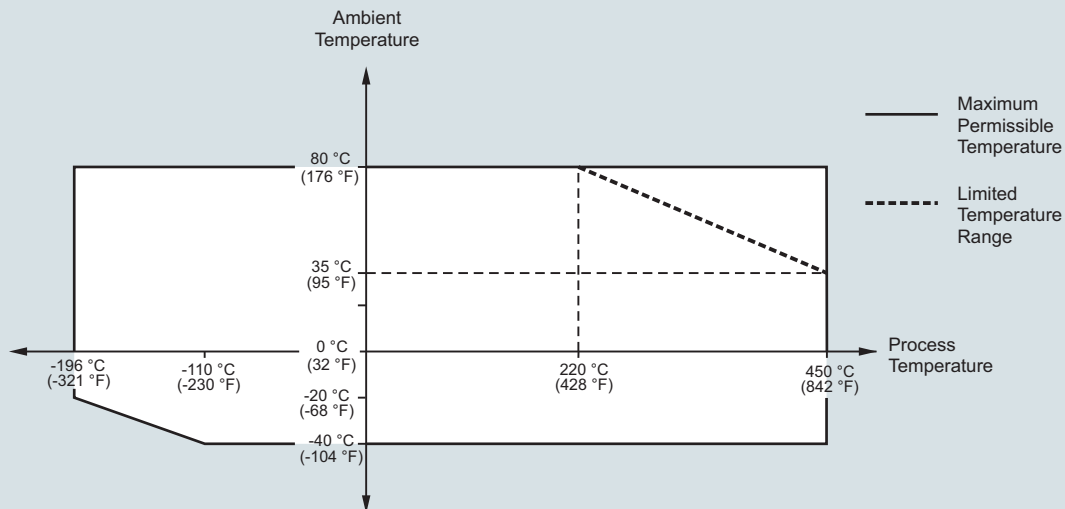
Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

SITRANS LG270, Ambient temperature/process temperature (-196 ... +280 °C/-321 ... +536 °F version)

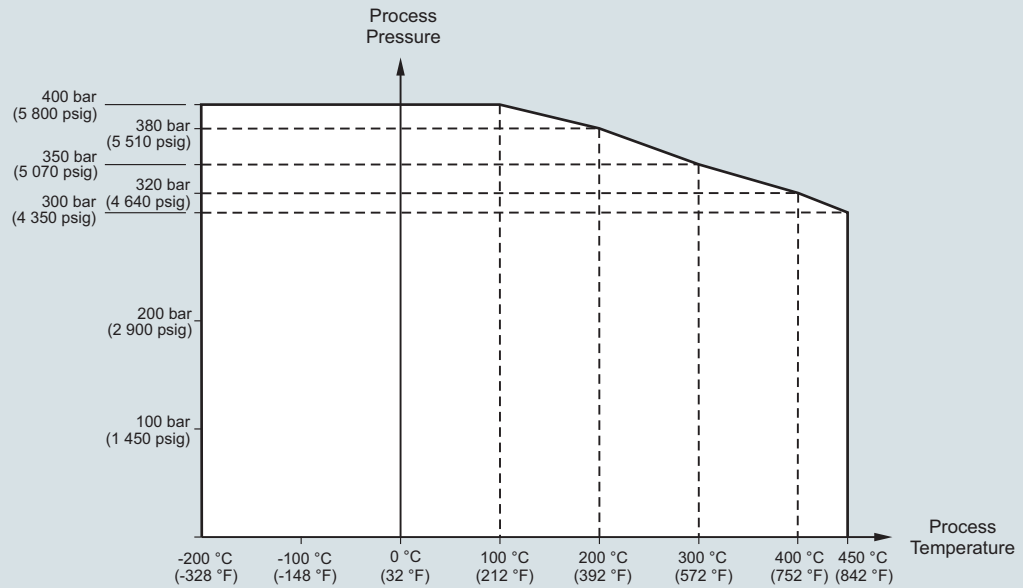


SITRANS LG270, Ambient temperature/process temperature (-196 ... +450 °C/-321 ... +842 °F version)



SITRANS LG270, ambient temperature/process temperature curves

SITRANS LG270, Process pressure/process temperature (-196 ... +450 °C/-321 ... +842 °F version)



SITRANS LG270, process pressure/process temperature curve

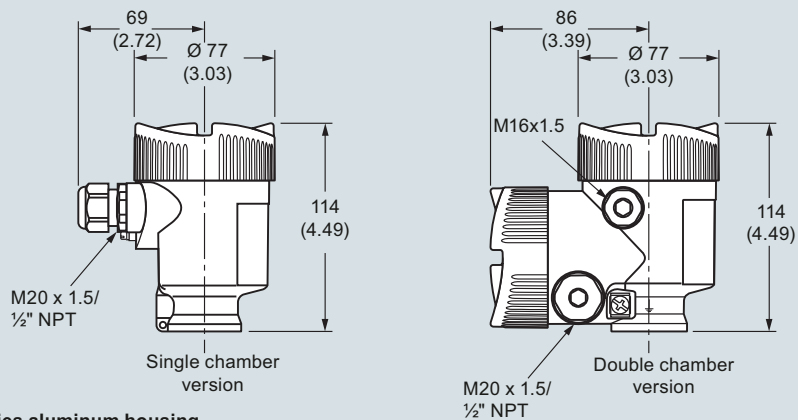
Level Measurement

Continuous level measurement
Guided wave radar transmitters

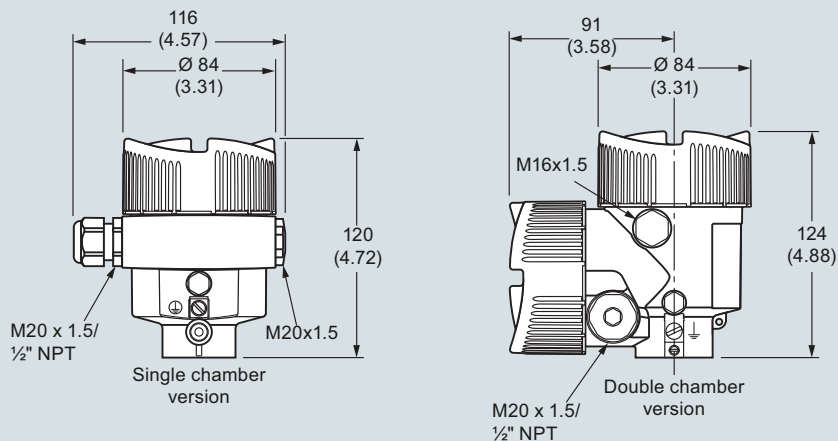
SITRANS LG series

Dimensional drawings

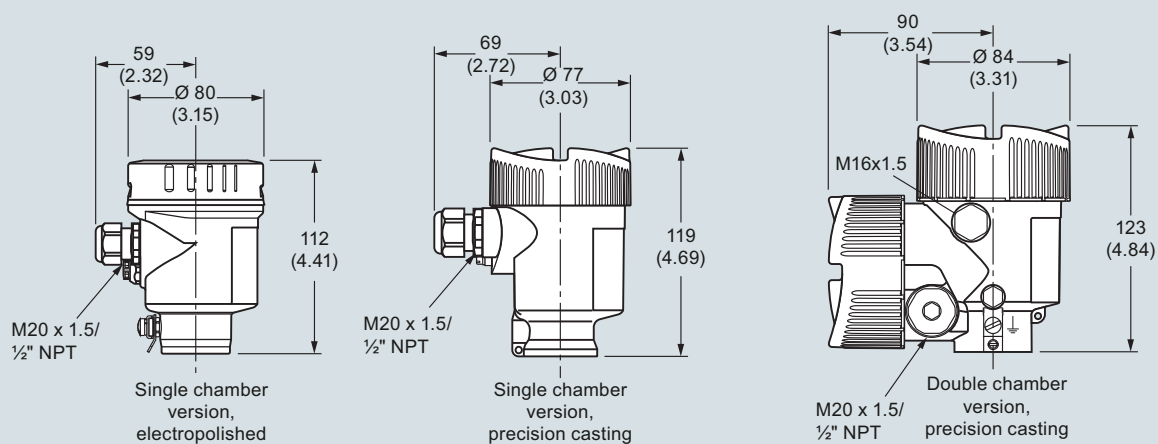
SITRANS LG Series plastic housing



SITRANS LG Series aluminum housing



SITRANS LG Series stainless steel housing



Note: For integrated display and adjustment module the housing is 9 (0.35) higher for all housing options

SITRANS LG series, dimensions in mm (inch)

Level Measurement

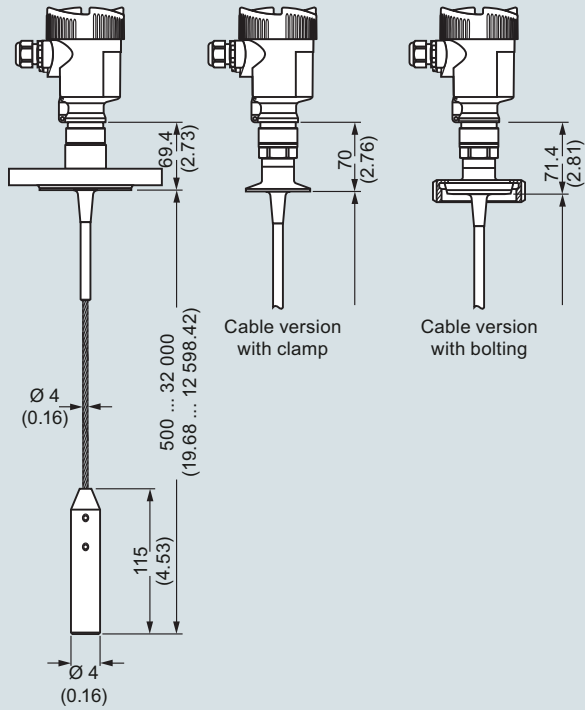
Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

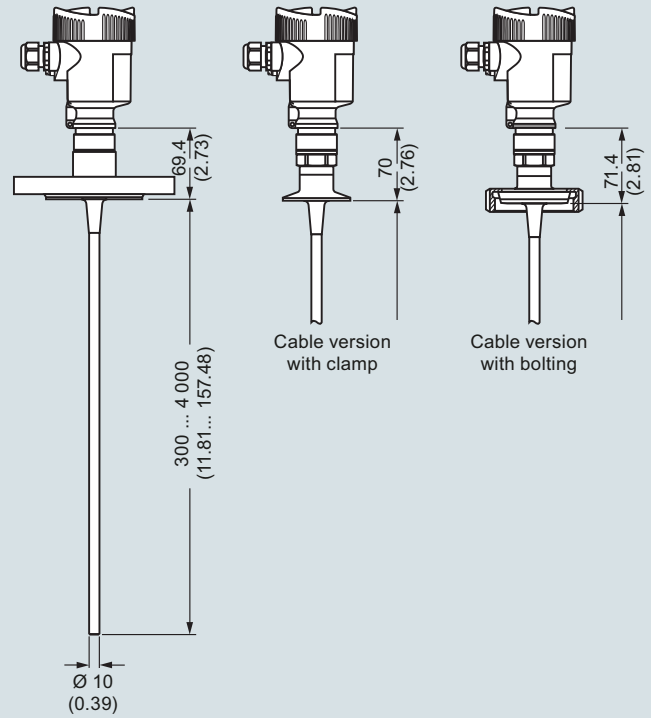
4

SITRANS LG240

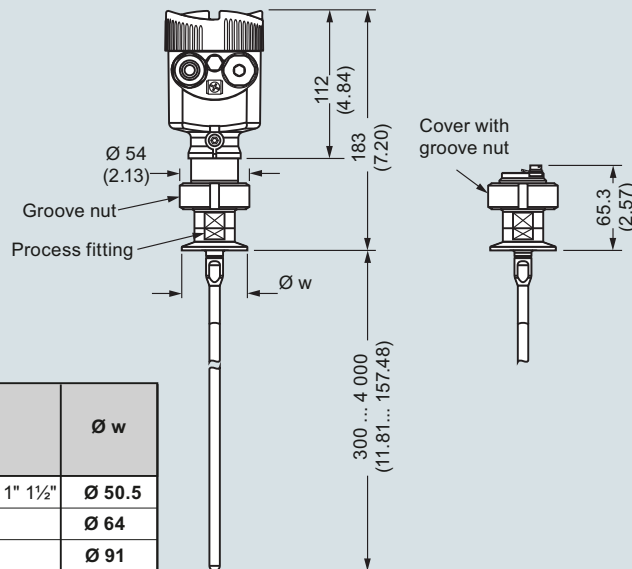
Cable version Ø 4 (0.157), PFA coated

Cable version
with clampCable version
with bolting

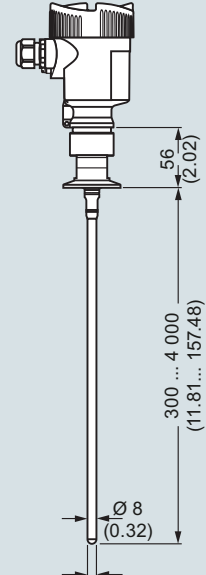
Rod version Ø 10 (0.394), PFA coated

Cable version
with clampCable version
with bolting

Autoclaved version

Groove nut
Process fittingCover with
groove nut

Rod version Ø 8 (0.315), polished



	Ø w
DIN DN 25 DN 32 DN 40/ 1" 1½"	Ø 50.5
DIN DN 50/ 2"	Ø 64
DIN DN 65/ 3"	Ø 91

SITRANS LG240, dimensions in mm (inch)

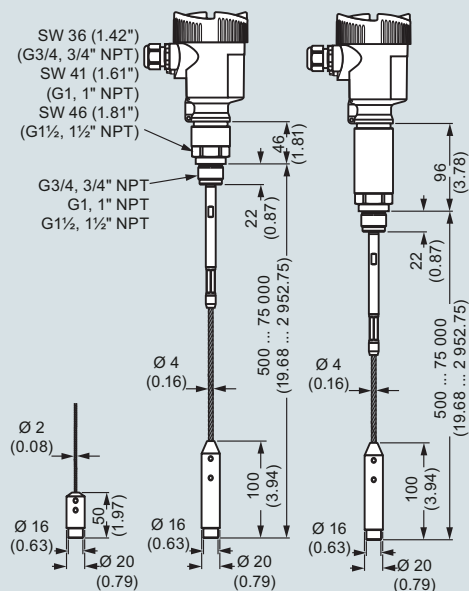
Level Measurement

Continuous level measurement
Guided wave radar transmitters

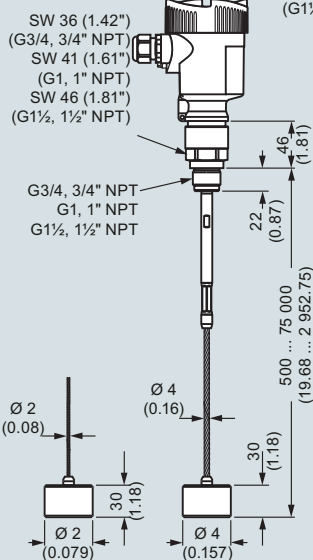
SITRANS LG series

SITRANS LG250

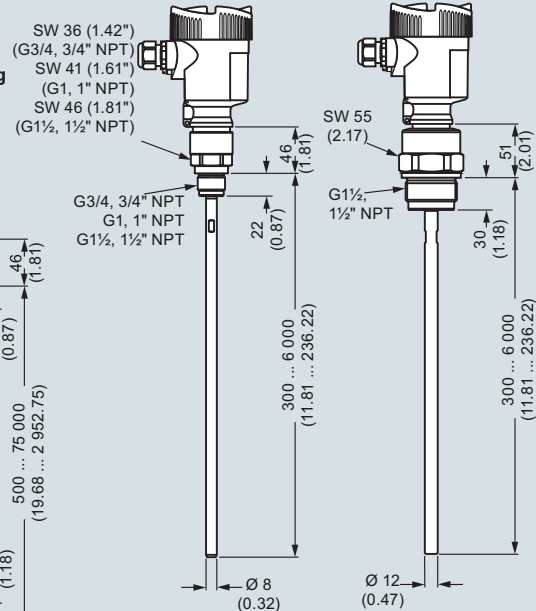
Cable version with gravity weight



Cable version with centering weight



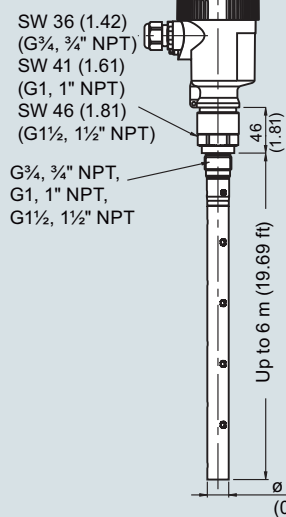
Rod version



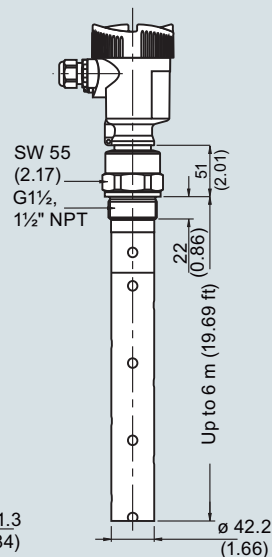
SITRANS LG250, dimensions in mm (inch)

SITRANS LG250, coax version

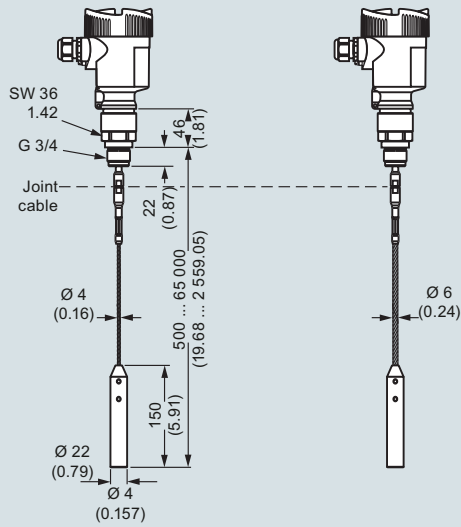
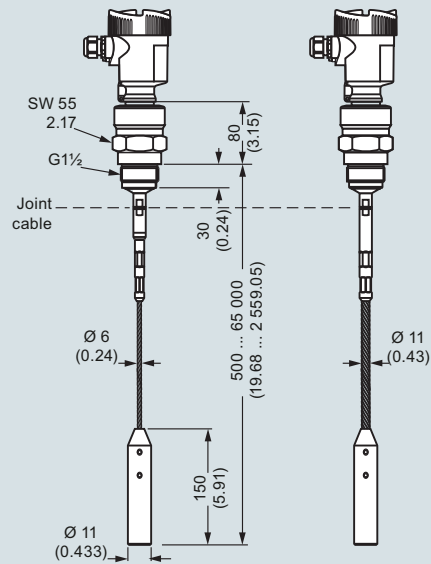
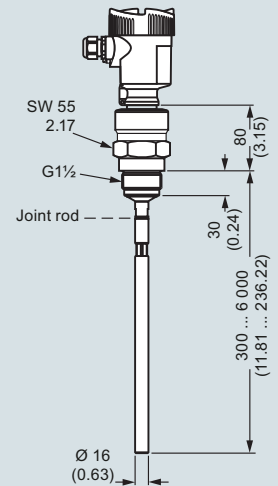
Coaxial version ø 21.3 (0.839)



Coaxial version ø 42.2 (1.661)



SITRANS LG250, dimensions in mm (inch)

SITRANS LG260**Cable version Ø 4 (0.157)/ Ø 6 (0.236)- PA coated****Cable version Ø 6 (0.236)/ Ø 11 (0.433)- PA coated****Rod version Ø 16 (0.63)**

SITRANS LG260, dimensions in mm (inch)

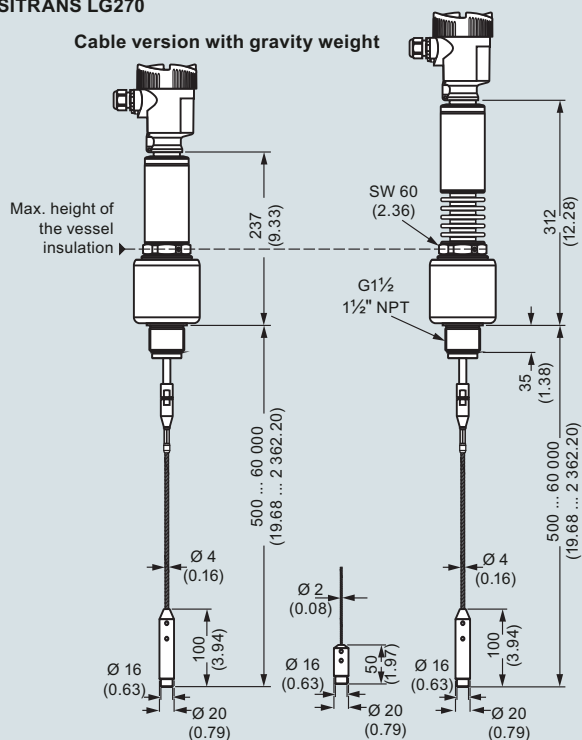
Level Measurement

Continuous level measurement
Guided wave radar transmitters

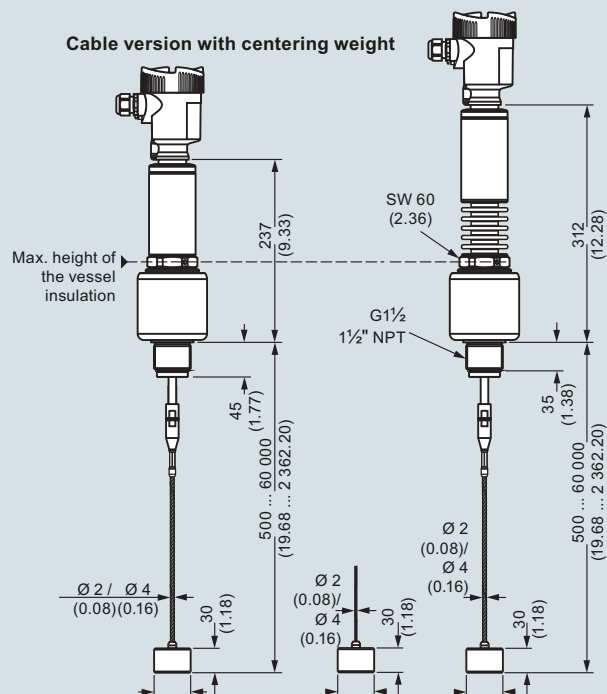
SITRANS LG series

SITRANS LG270

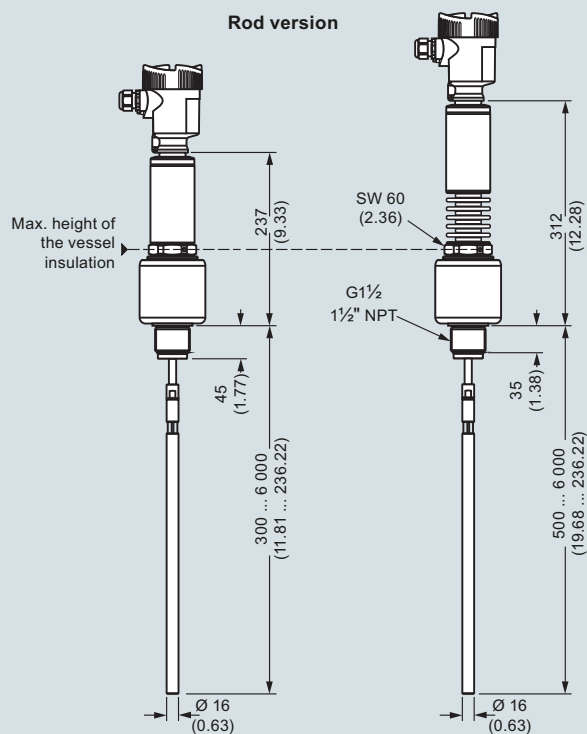
Cable version with gravity weight



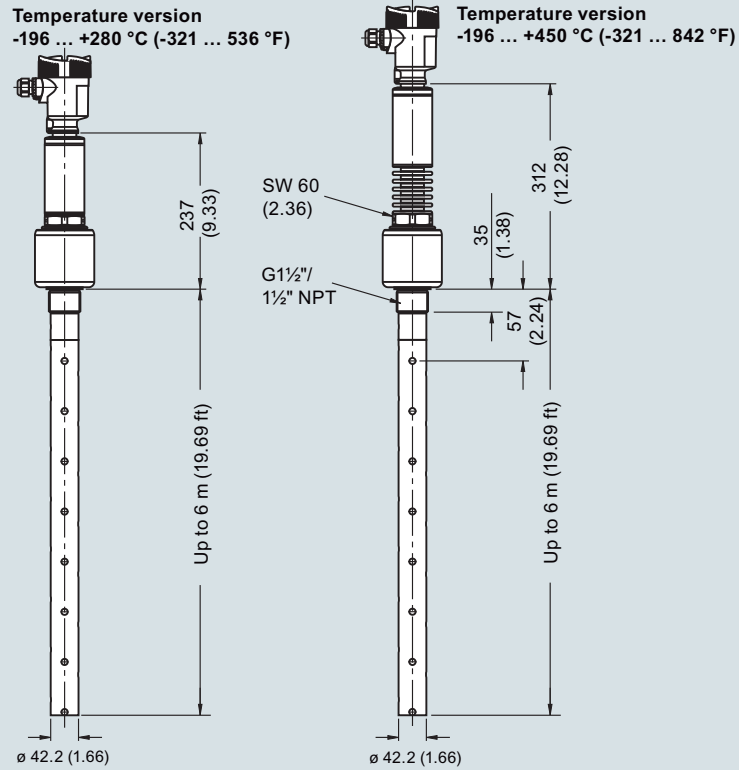
Cable version with centering weight



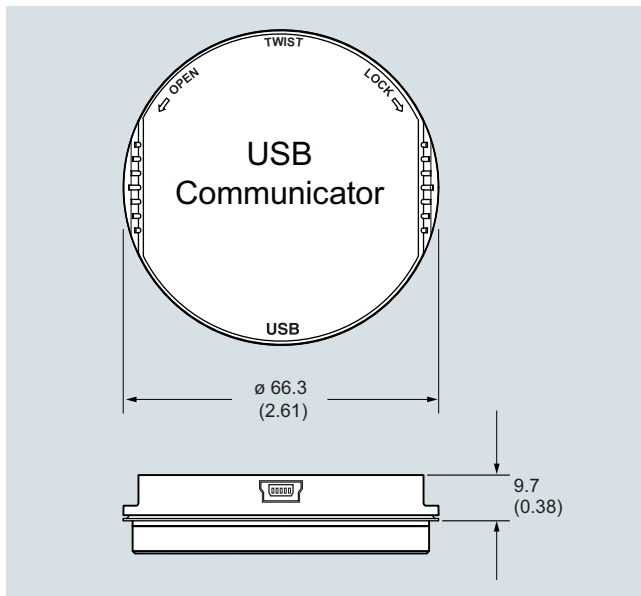
Rod version



SITRANS LG270, dimensions in mm (inch)

SITRANS LG270, coax version

SITRANS LG270, dimensions in mm (inch)



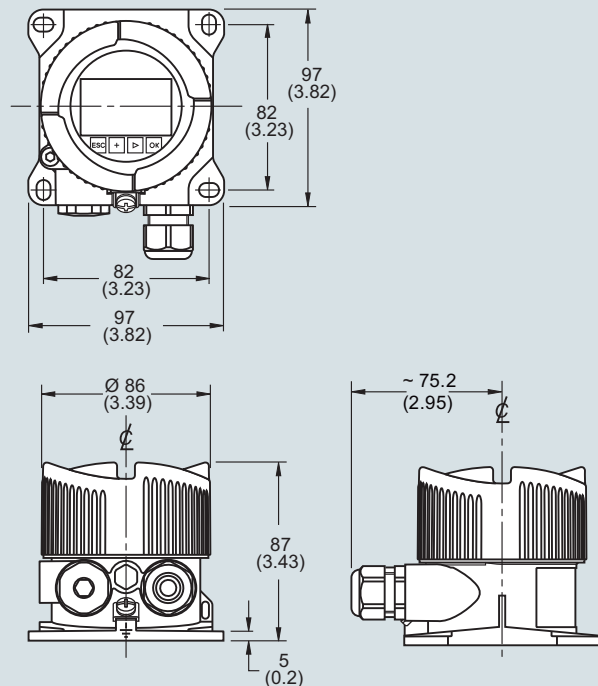
SITRANS LG USB Communicator, dimensions in mm (inch)

Level Measurement

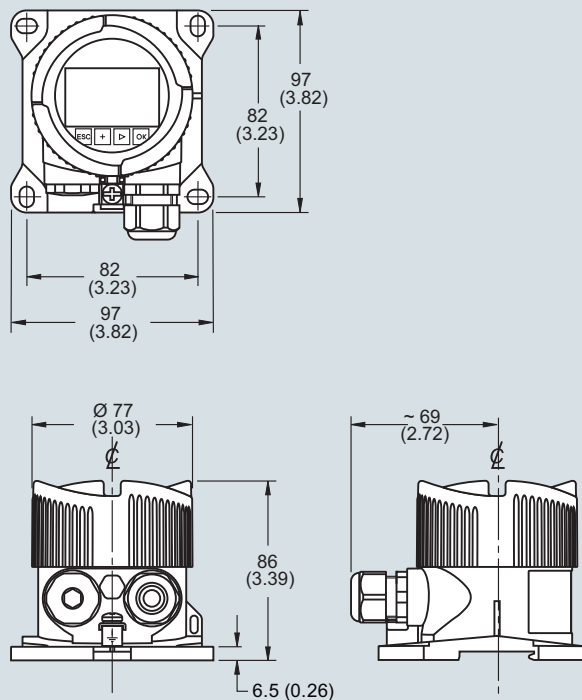
Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

SITRANS LG remote interface, aluminum housing



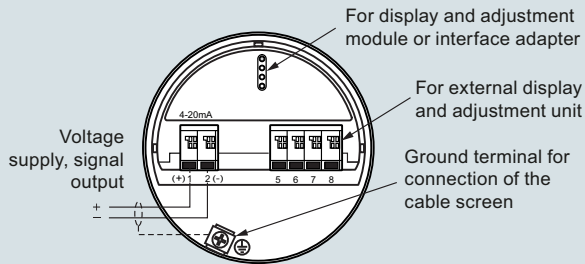
SITRANS LG remote interface, plastic housing



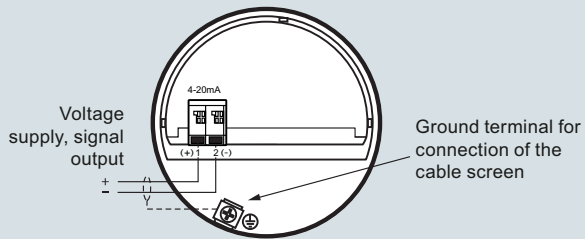
SITRANS LG remote interface, dimensions in mm (inch)

Circuit diagrams

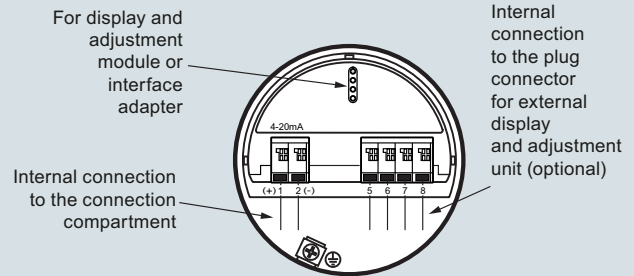
2-wire HART electronic option, electronics and connection compartment, single chamber housing



2-wire HART electronic option, connection compartment, Ex-d-ia double chamber housing



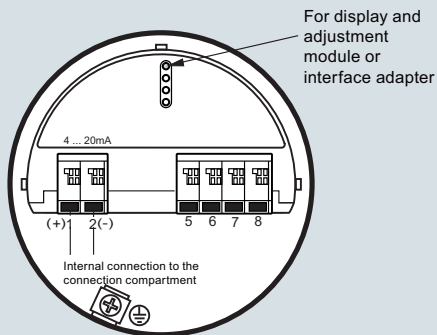
2-wire HART electronic option, electronics compartment, double chamber housing



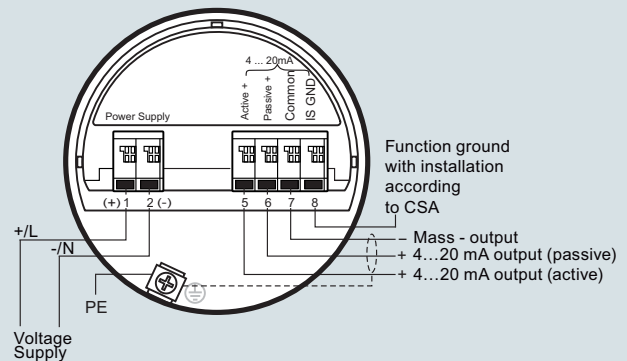
Note: All 2-wire HART connections and electronics are also available with SIL qualification.

SITRANS LG series connections

4-wire HART electronic option, electronics compartment, double chamber housing



4-wire electronic option, connection compartment, double chamber housing with mains voltage



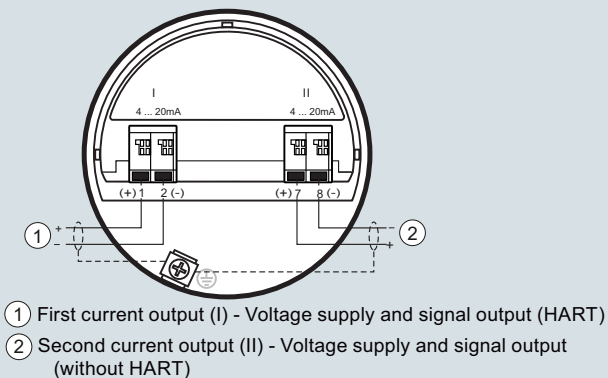
SITRANS LG series connections

Level Measurement

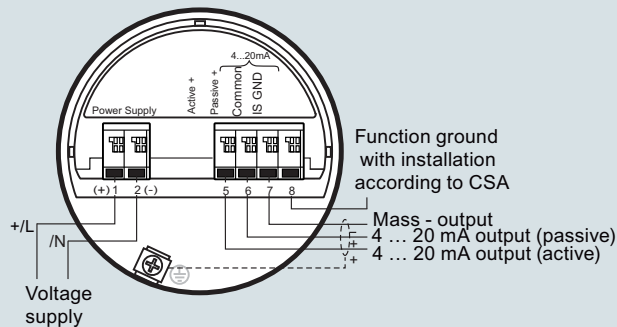
Continuous level measurement
Guided wave radar transmitters

SITRANS LG series

Supplementary electronics

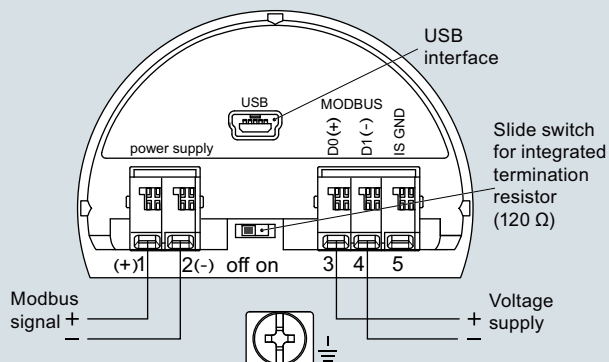


Connection compartment with low voltage

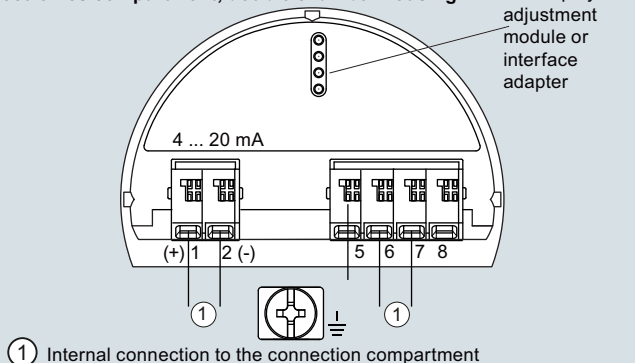


SITRANS LG series connections

Modbus electronic option, connection compartment

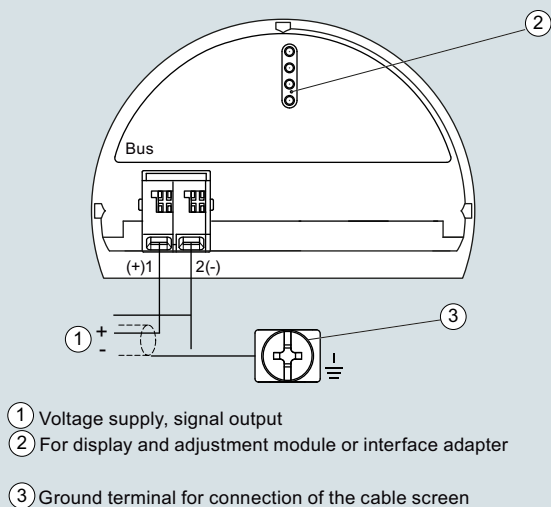


Modbus electronic option, electronics compartment, double chamber housing

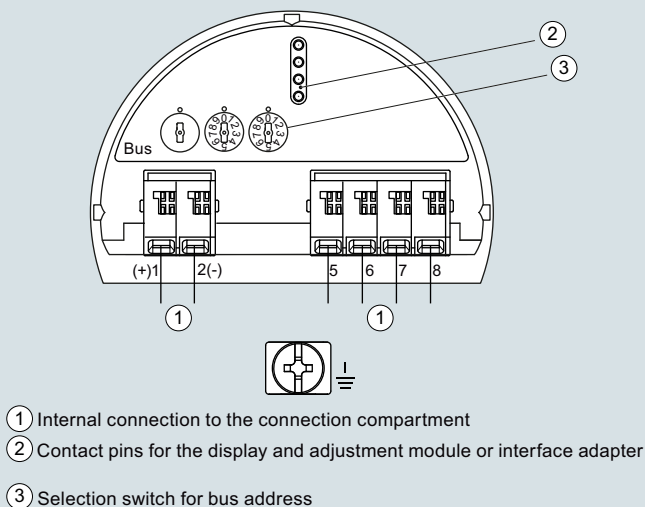


SITRANS LG series connections

PROFIBUS electronic option, connection compartment, double chamber housing

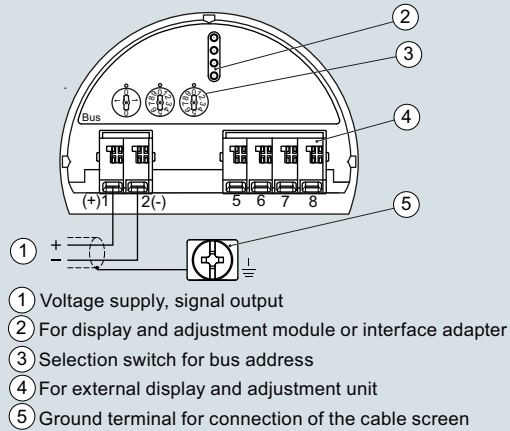


PROFIBUS electronic option, electronics compartment, double chamber housing



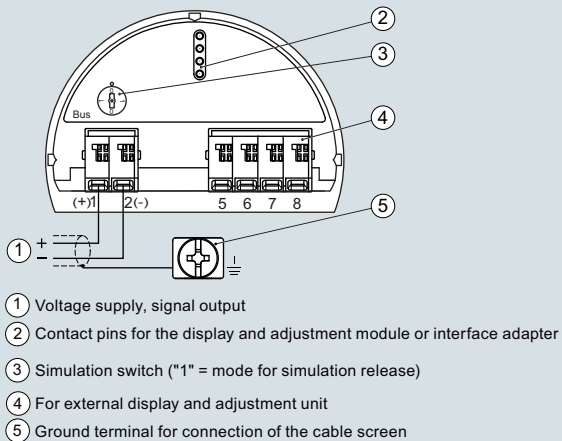
LG series connections

PROFIBUS electronic option, electronics and connection compartment, single chamber housing



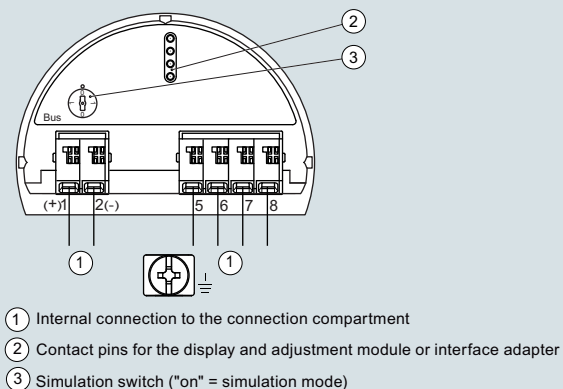
LG series connections

LG series, FOUNDATION Fieldbus electronic option, electronic and terminal compartment, single chamber housing



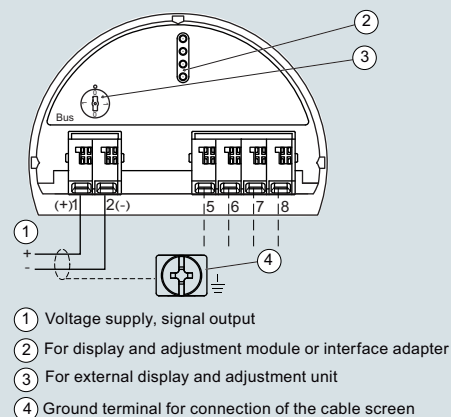
LG series connections

LG series, FOUNDATION Fieldbus electronic option, electronic compartment, double chamber housing



LG series connections

LG series, FOUNDATION Fieldbus electronic option, terminal compartment, double chamber housing



Level Measurement

Continuous level measurement
Capacitance transmitters

SITRANS LC300

Overview



SITRANS LC300 is an inverse frequency shift capacitance continuous level transmitter for liquid, interface, and solid applications. It is ideal for standard industrial applications in chemical, hydrocarbon processing, food and beverage, water, wastewater, mining, aggregate, and cement industries.

Benefits

- Active-Shield technology so measurement is unaffected by material buildup in active shield section
- Highly accurate and reliable PFA-lined probes
- Integrated local LCD display
- 2-wire (4 to 20 mA) current loop design
- Current signaling according to NAMUR NE 43
- Push-button calibration and programming
- Stilling well (ground tube) version for low dielectric media, agitated materials, and non-metallic vessels

Application

SITRANS LC300 is a 2-wire level measurement instrument combining a sophisticated, yet easy-to-adjust microprocessor with field-proven probes. It is available in four versions: rod, rod with stilling well, cable with PFA insulation, and cable without PFA insulation.

Materials with low or high dielectric properties are accurately measured and Active-Shield technology helps in ignoring the effects of buildup or condensation near vessel nozzle.

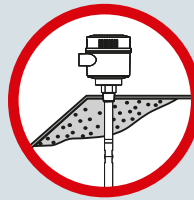
- Key Applications: conductive ($dK \geq 20$) and non-conductive ($dK < 20$) media including: liquids and solids in standard industrial processes, bulk solids applications involving dust, and chemical processes involving vapor

Probe Applications

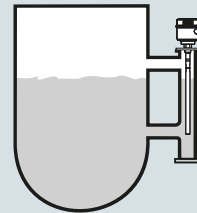
Rod version	Conductive liquids, slurries or solids
Rod version with stilling well	<ul style="list-style-type: none"> • Conductive liquids or slurries in non-conductive tanks • Non-conductive liquids in non-conductive tanks • Tanks with agitation or turbulent liquids • Liquids with a dielectric constant below 2 • Non-linear tanks, such as parabolic or spherical tanks • Interface measurements
Cable version	Non-conductive solids or liquids
PFA coated cable version	Conductive or sticky liquids, slurries or solids

Configuration

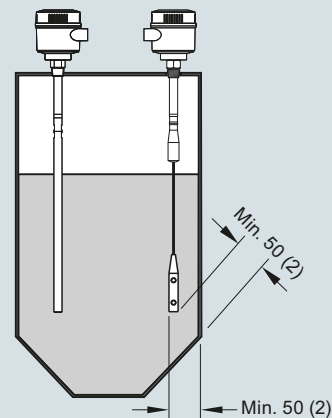
Installation



Build up of material in active shield area does not affect switch operation.



Mounting on a bypass



Install probe at least 50 (2) from tank wall.
Note angle of repose and adjust accordingly.

SITRANS LC300 installation, dimensions in mm (inch)

Technical specifications

Input	
Measuring range	1.66 ... 3 300 pF
Span	Min. 3.3 pF
Output	
Loop current	Continuous signal 4 ... 20 mA/20 ... 4 mA according to NAMUR 43
Accuracy (transmitter)	
Temperature stability	0.25 % of actual capacitance value
Non-linearity and repeatability	< 0.4 % of full scale and actual measurement value
Accuracy	Deviation < 0.5 % of actual measurement value
Rated operating conditions¹⁾	
Ambient conditions	
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) ²⁾³⁾
• Installation category	I
• Pollution degree	4
• Ingress protection	Type 4/NEMA 4/IP65 (optional IP68)
Installation conditions	
• Location	Indoor/outdoor
• Process pressure	-1 ... +35 bar g (-14.6 ... +511 psi g)
• Process temperature	-40 ... +200 °C (-40 ... +392 °F) ⁴⁾
• Min. dielectric constant ϵ_r	1.5
• Min. difference in dielectric constant for interface measurement	5
Design	
Material	
• Enclosure	Aluminum, epoxy-coated
Probe diameter	
• Rod version	19 mm (0.75 inch) with PFA jacket
• Cable version	9 mm (0.35 inch) with PFA jacket, 6 mm (0.24 inch) without PFA jacket
Active shield length	
• Rod version	Threaded: 120 mm (4.72 inch) Flanged: 100 mm (3.94 inch)
• Cable version	Threaded: 125 mm (4.92 inch) Flanged: 105 mm (4.13 inch)
Process connection of probe	
• Threaded rod mounting	$\frac{3}{4}$ ", 1", 1 $\frac{1}{4}$ ", 1 $\frac{1}{2}$ " NPT [(Taper), ANSI/ASME B1.20.1] R $\frac{3}{4}$ ", 1", 1 $\frac{1}{2}$ " [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] G $\frac{3}{4}$ ", 1", 1 $\frac{1}{2}$ " [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 1 $\frac{1}{2}$ " NPT [(Taper), ANSI/ASME B1.20.1] R 1 $\frac{1}{2}$ " [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] G 1 $\frac{1}{2}$ " [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]
• Threaded cable mounting	1 ... 4" ASME, DN 25 ... 100
• Flange mounting	
Enclosure cable inlet	2 x $\frac{1}{2}$ " NPT or 2 x M20 x 1.5

Power supply	12 ... 30 V DC any polarity, 2-wire current loop circuit
User Interface	
Display	Local LCD, 4 digit, each 0 ... 9 and limited alpha characters
Safety	
Measurement current signaling	According to NAMUR NE 43, signal 3.8 ... 20.5 mA, fault ≤ 3.6 or ≥ 21 mA (22 mA)
Certificates and approvals	
General	CE, CSA _{US/C} , FM, RCM, KCC, EAC
Dust Ignition Proof (Intrinsically Safe probe circuit)	FM/CSA: Class II, Div. 1, Groups E, F, G Class III T4 ATEX 1/2 D T100 °C
• Canada/USA	
• Europe	ATEX II 1/2 G EEx d [ia] IIC T6 ... T1 ATEX II 1/2 D T100 °C
Flame Proof (Intrinsically Safe probe circuit)	Ex d [ia Ga] IIC T6 ... T4 Gb Ex tb IIIC T85 °C ... T100 °C Db IP65/IP68 EAC Ex
• Europe	
• Brazil	Class I, Div. 1, Groups A, B, C, D Class II, Div. 1, Groups E, F, G Class III T4
• Russia/Kazakhstan	Bureau Veritas Type Approval ABS Type Approval, Lloyds Register, BV
Explosion Proof (Intrinsically Safe probe circuit)	AIB-Vincotte
• Canada/USA	Pattern Approval (AQSIQ, China), CRN, PED
Marine	
Overfill Protection	
Other	

- ¹⁾ When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves on page 4/341
- ²⁾ Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F)
- ³⁾ Minimum voltage of 15 V DC is required for use at -40 °C (-40 °F)
- ⁴⁾ Not suitable for steam environments

Design: Probe			
	Rod version	Stilling well version	Cable version
Length	Min. 300 mm (12 inch), max. 5 000 mm (197 inch)	Min. 300 mm (12 inch), max. 5 000 mm (197 inch)	Min. 1 000 mm (40 inch), max. 25 000 mm (984 inch)
Sensor wetted parts	PFA, 316L stainless steel	PFA, 316L stainless steel	316L stainless steel or 316L stainless steel with PFA insulation
O-ring seal material	FKM or FFKM	FKM or FFKM	FKM or FFKM
Thermal isolator	Optional	Optional	Optional
Options	N/A	N/A	Mounting eye for PFA insulated cable version

Level Measurement

Continuous level measurement
Capacitance transmitters

SITRANS LC300

Selection and Ordering data

Article No.

SITRANS LC300, rod version

7ML5670-

An inverse frequency shift capacitance continuous level transmitter for liquids and solids applications.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Process connection

Threaded, 316L stainless steel

¾" NPT [(Taper), ANSI/ASME B1.20.1]

1" NPT [(Taper), ANSI/ASME B1.20.1]

1¼" NPT [(Taper), ANSI/ASME B1.20.1]

1½" NPT [(Taper), ANSI/ASME B1.20.1]

R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]

R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]

R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]

G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]

G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]

G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]

Welded flange, 316L stainless steel, raised face¹⁾

1" ASME, 150 lb

1" ASME, 300 lb

1" ASME, 600 lb

1½" ASME, 150 lb

1½" ASME, 300 lb

1½" ASME, 600 lb

2" ASME, 150 lb

2" ASME, 300 lb

2" ASME, 600 lb

3" ASME, 150 lb

3" ASME, 300 lb

3" ASME, 600 lb

4" ASME, 150 lb

4" ASME, 300 lb

4" ASME, 600 lb

Welded flange, 316L stainless steel,

Type A flat faced¹⁾

DN 25, PN 16

DN 25, PN 40

DN 40, PN 16

DN 40, PN 40

DN 50, PN 16

DN 50, PN 40

DN 80, PN 16

DN 80, PN 40

DN 100, PN 16

DN 100, PN 40

Sanitary, hastelloy, duplex or other custom process connections available. Please contact a local sales person for details.

For more information, please visit

http://www.automation.siemens.com/aspa_app.

Selection and Ordering data

Article No.

SITRANS LC300, rod version

7ML5670-

An inverse frequency shift capacitance continuous level transmitter for liquids and solids applications.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Probe Length

(from flange face or including process thread)

Add Order code Y01 and plain text:

"Insertion length ... mm"

300 ... 1 000 mm (11.81 ... 39.37 inch)

1 001 ... 2 000 mm (39.41 ... 78.74 inch)

2 001 ... 3 000 mm (78.78 ... 118.11 inch)

3 001 ... 4 000 mm (118.15 ... 157.48 inch)

4 001 ... 5 000 mm (157.52 ... 196.85 inch)

Bent probes also available. Please contact a local sales person for details.

For more information, please visit

http://www.automation.siemens.com/aspa_app.

Thermal isolator

Without thermal isolator

With thermal isolator [for process connection temperatures over 85 °C (185 °F)]

Wetted seals

FKM

FFKM [for process temperatures above -20 °C (-4 °F)]

Probe material

19 mm (0.75 inch) diameter 316L stainless steel, PFA lined rod

Approvals

General Safety (CSA, FM, CE, RCM)

Dust Ignition Proof With IS Probe

CE, RCM, ATEX II 1/2 D T100 °C

Flame Proof Enclosure With IS Probe

CE, RCM, ATEX II 1/2 G EEx d [ia] IIC T6 ... T1, ATEX II 1/2 D T100 °C

Dust Ignition Proof With IS Probe

CSA/FM Class II, Div. 1, Groups E, F, G

CSA/FM Class III T4

Explosion Proof Enclosure With IS Probe

CSA/FM Class I, Div. 1, Groups A, B, C, D

CSA/FM Class II, Div. 1, Groups E, F, G

CSA/FM Class III T4

Enclosure

Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP65

Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP65

Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP68

Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP68

Stainless steel, contact local sales person for details.

For more information, please visit

http://www.automation.siemens.com/aspa_app.


¹⁾ Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.


Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Article No. and specify Order code(s).	
Insertion length, specify in plain text: Y01: ... mm	Y01
Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y15
Manufacturer's Test Certificate: M to DIN 55350, Part 18 and to ISO 9000	C11
Material inspection Certificate Type 3.1 per EN 10204	C12
Operating Instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/ processinstrumentation/documentation	
Accessories	Article No.
Electronic transmitter kit (includes transmitter and driver)	7ML1830-1KN
SITRANS RD100, loop powered display - see Chapter 7	7ML5741-...
SITRANS RD200, universal input display with Modbus conversion - see Chapter 7	7ML5740-...
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7	7ML5744-...
SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7	7ML5750-...
For applicable back up point level switch - see point level measurement section	

Level Measurement

Continuous level measurement
Capacitance transmitters

SITRANS LC300

Selection and Ordering data	Article No.
SITRANS LC300, stilling well version	7ML5671-
An inverse frequency shift capacitance continuous level transmitter for liquid applications.	 0
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Process connection	
Threaded, 316L stainless steel	
1½" NPT [(Taper), ANSI/ASME B1.20.1]	0 D
R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 D
G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 D
<u>Welded flange, 316L stainless steel, raised face¹⁾</u>	
1½" ASME, 150 lb	5 D
1½" ASME, 300 lb	5 E
1½" ASME, 600 lb	5 F
2" ASME, 150 lb	5 G
2" ASME, 300 lb	5 H
2" ASME, 600 lb	5 J
3" ASME, 150 lb	5 K
3" ASME, 300 lb	5 L
3" ASME, 600 lb	5 M
4" ASME, 150 lb	5 N
4" ASME, 300 lb	5 P
4" ASME, 600 lb	5 Q
<u>Welded flange, 316L stainless steel, Type A flat faced¹⁾</u>	
DN 40, PN 16	6 C
DN 40, PN 40	6 D
DN 50, PN 16	6 E
DN 50, PN 40	6 F
DN 80, PN 16	6 G
DN 80, PN 40	6 H
DN 100, PN 16	6 J
DN 100, PN 40	6 K
Sanitary, hastelloy, duplex or other custom process connections available. Please contact a local sales person for details. For more information, please visit http://www.automation.siemens.com/aspa_app .	
Probe Length (from flange face or including process thread)	
Add Order code Y01 and plain text: <u>"Insertion length ... mm"</u>	
300 ... 1 000 mm (11.81 ... 39.37 inch)	A
1 001 ... 2 000 mm (39.41 ... 78.74 inch)	B
2 001 ... 3 000 mm (78.78 ... 118.11 inch)	C
3 001 ... 4 000 mm (118.15 ... 157.48 inch)	D
4 001 ... 5 000 mm (157.52 ... 196.85 inch)	E
Thermal isolator	
Without thermal isolator	0
With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	1
Wetted seals	
FKM	0
FFKM [for process temperatures above -20 °C (-4 °F)]	1
Probe material	
35 mm (1.38 inch) diameter stilling well, with 19 mm (0.75 inch) diameter 316L stainless steel, PFA lined rod with PTFE spacers	1
Approvals	
General Safety (CSA, FM, CE, RCM)	A
Dust Ignition Proof With IS Probe CE, RCM, ATEX II 1/2 D T100 °C	B
Flame Proof Enclosure With IS Probe CE, RCM, ATEX II 1/2 G EEx d [ia] IIC T6 ... T1, ATEX II 1/2 D T100 °C	C

Selection and Ordering data	Article No.
SITRANS LC300, stilling well version	7ML5671-
An inverse frequency shift capacitance continuous level transmitter for liquid applications.	 0
Dust Ignition Proof With IS Probe CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4	D
Explosion Proof Enclosure With IS Probe CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4	E
Enclosure	
Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP65	A
Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP65	B
Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP68	C
Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP68	D
Stainless steel, please contact a local sales person for details. For more information, please visit http://www.automation.siemens.com/aspa_app .	
¹⁾ Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.	



Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Article No. and specify Order code(s).	
Insertion length, specify in plain text: Y01: ... mm	Y01
Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y15
Manufacturer's Test Certificate: M to DIN 55350, Part 18 and to ISO 9000	C11
Material inspection Certificate Type 3.1 per EN 10204	C12
Operating Instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories	Article No.
Electronic transmitter kit (includes transmitter and driver)	7ML1830-1KN
SITRANS RD100, loop powered display - see Chapter 7	7ML5741-...
SITRANS RD200, universal input display with Modbus conversion - see Chapter 7	7ML5740-...
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7	7ML5744-...
SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7	7ML5750-...
For applicable back up point level switch - see point level measurement section	

Level Measurement

Continuous level measurement

Capacitance transmitters

SITRANS LC300

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
SITRANS LC300, cable version	7ML5672-	SITRANS LC300, cable version	7ML5672-
An inverse frequency shift capacitance continuous level transmitter for non-conductive liquids and solids applications.		An inverse frequency shift capacitance continuous level transmitter for non-conductive liquids and solids applications.	
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			
Process connection		Probe material	
Threaded, 316L stainless steel		Bare 316L stainless steel cable and 316L stainless steel cable weight, tinned copper crimp, PTFE backing ring, PEEK isolator and PFA lined active shield	0
1½" NPT [(Taper), ANSI/ASME B1.20.1]	0 D		
R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 D		
G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 D		
Welded flange, 316L stainless steel, raised face ¹⁾			
1½" ASME, 150 lb	5 D		
1½" ASME, 300 lb	5 E		
1½" ASME, 600 lb	5 F		
2" ASME, 150 lb	5 G		
2" ASME, 300 lb	5 H		
2" ASME, 600 lb	5 J		
3" ASME, 150 lb	5 K		
3" ASME, 300 lb	5 L		
3" ASME, 600 lb	5 M		
4" ASME, 150 lb	5 N		
4" ASME, 300 lb	5 P		
4" ASME, 600 lb	5 Q		
Welded flange, 316L stainless steel, Type A flat faced ¹⁾			
DN 40, PN 16	6 C		
DN 40, PN 40	6 D		
DN 50, PN 16	6 E		
DN 50, PN 40	6 F		
DN 80, PN 16	6 G		
DN 80, PN 40	6 H		
DN 100, PN 16	6 J		
DN 100, PN 40	6 K		
Sanitary, hastelloy, duplex or other custom process connections available.			
Please contact a local sales person for details.			
For more information, please visit http://www.automation.siemens.com/aspa_app .			
Probe Length (from flange face or including process thread)		Approvals	
Add Order code Y01 and plain text: "Insertion length ... mm"		General Safety (CSA, FM, CE, RCM)	A
1 000 ... 2 000 mm (39.37 ... 78.74 inch)	A	Dust Ignition Proof With IS Probe	B
2 001 ... 4 000 mm (78.78 ... 157.48 inch)	B	CE, RCM, ATEX II 1/2 D T100 °C	
4 001 ... 6 000 mm (157.52 ... 236.22 inch)	C	Flame Proof Enclosure With IS Probe	C
6 001 ... 8 000 mm (236.26 ... 314.96 inch)	D	CE, RCM, ATEX II 1/2 G EEx d [ia] IIC T6 ... T1, ATEX II 1/2 D T100 °C	
8 001 ... 10 000 mm (315.00 ... 393.70 inch)	E		
10 001 ... 12 000 mm (393.74 ... 472.44 inch)	F		
12 001 ... 14 000 mm (472.48 ... 551.18 inch)	G		
14 001 ... 16 000 mm (551.22 ... 629.92 inch) ²⁾	H		
16 001 ... 18 000 mm (629.96 ... 708.66 inch) ²⁾	J		
18 001 ... 20 000 mm (708.70 ... 787.40 inch) ²⁾	K		
20 001 ... 22 000 mm (787.44 ... 866.14 inch) ²⁾	L		
22 001 ... 24 000 mm (866.18 ... 944.88 inch) ²⁾	M		
24 001 ... 25 000 mm (944.92 ... 984.25 inch) ²⁾	N		
Thermal isolator		Enclosure	
Without thermal isolator	0	Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP65	A
With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	1	Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP65	B
		Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP68	C
		Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP68	D
		Stainless steel, please contact a local sales person for details.	
		For more information, please visit http://www.automation.siemens.com/aspa_app .	
Wetted seals			
FKM	0		
FFKM [for process temperatures above -20 °C (-4 °F)]	1		

Level Measurement

Continuous level measurement

Capacitance transmitters

SITRANS LC300

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Article No. and specify Order code(s).	
Insertion length, specify in plain text: Y01: ... mm	Y01
Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y15
Manufacturer's Test Certificate: M to DIN 55350, Part 18 and to ISO 9000	C11
Material inspection Certificate Type 3.1 per EN 10204	C12
Operating Instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/ processinstrumentation/documentation	
Accessories	
Electronic transmitter kit (includes transmitter and driver)	Article No. 7ML1830-1KN
SITRANS RD100, loop powered display - see Chapter 7	7ML5741-...
SITRANS RD200, universal input display with Modbus conversion - see Chapter 7	7ML5740-...
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7	7ML5744-...
SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7	7ML5750-...
For applicable back up point level switch - see point level measurement section	

Level Measurement

Continuous level measurement

Capacitance transmitters

SITRANS LC300

Selection and Ordering data		Article No.	Selection and Ordering data		Article No.
SITRANS LC300, PFA coated cable version		7ML5673-	SITRANS LC300, PFA coated cable version		7ML5673-
An inverse frequency shift capacitance continuous level transmitter for liquids and solids applications.			An inverse frequency shift capacitance continuous level transmitter for liquids and solids applications.		
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			Probe material		
Process connection			PFA coated cable and 316L stainless steel cable weight, PEEK isolator and PFA lined active shield		1
Threaded, 316L stainless steel			Approvals		
1½" NPT [(Taper), ANSI/ASME B1.20.1]		0 D	General Safety (CSA, FM, CE, RCM)		A
R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]		1 D	Dust Ignition Proof With IS Probe		B
G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]		3 D	CE, RCM, ATEX II 1/2 D T100 °C		
<u>Welded flange, 316L stainless steel, raised face¹⁾</u>			Flame Proof Enclosure With IS Probe		C
1½" ASME, 150 lb		5 D	CE, RCM, ATEX II 1/2 G EEx d [ia] IIC T6 ... T1, ATEX II 1/2 D T100 °C		
1½" ASME, 300 lb		5 E	Dust Ignition Proof With IS Probe		D
1½" ASME, 600 lb		5 F	CSA/FM Class II, Div. 1, Groups E, F, G		
2" ASME, 150 lb		5 G	CSA/FM Class III T4		E
2" ASME, 300 lb		5 H	Explosion Proof Enclosure With IS Probe		
2" ASME, 600 lb		5 J	CSA/FM Class I, Div. 1, Groups A, B, C, D		
3" ASME, 150 lb		5 K	CSA/FM Class II, Div. 1, Groups E, F, G		
3" ASME, 300 lb		5 L	CSA/FM Class III T4		
3" ASME, 600 lb		5 M	Enclosure		
4" ASME, 150 lb		5 N	Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP65		A
4" ASME, 300 lb		5 P	Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP65		B
4" ASME, 600 lb		5 Q	Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP68		C
<u>Welded flange, 316L stainless steel, Type A flat faced¹⁾</u>			Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP68		D
DN 40, PN 16		6 C	Stainless steel, please contact a local sales person for details.		
DN 40, PN 40		6 D	For more information, please visit		
DN 50, PN 16		6 E	http://www.automation.siemens.com/aspa_app .		
DN 50, PN 40		6 F	Mounting eye		
DN 80, PN 16		6 G	Without Mounting eye		0
DN 80, PN 40		6 H	With mounting eye		1
DN 100, PN 16		6 J			
DN 100, PN 40		6 K			
Sanitary, hastelloy, duplex or other custom process connections available. Please contact a local sales person for details.			¹⁾ Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard. ²⁾ Cable lengths from 15 000 mm (590.55 inch) to 25 000 mm (984.25 inch) can be used in non-conductive media. Contact Factory for assistance.		
For more information, please visit					
http://www.automation.siemens.com/aspa_app .					
Probe Length					
(from flange face or including process thread)					
Add Order code Y01 and plain text:					
<u>"Insertion length ... mm"</u>					
1 000 ... 2 000 mm (39.37 ... 78.74 inch)		A			
2 001 ... 4 000 mm (78.78 ... 157.48 inch)		B			
4 001 ... 6 000 mm (157.52 ... 236.22 inch)		C			
6 001 ... 8 000 mm (236.26 ... 314.96 inch)		D			
8 001 ... 10 000 mm (315.00 ... 393.70 inch)		E			
10 001 ... 12 000 mm (393.74 ... 472.44 inch)		F			
12 001 ... 14 000 mm (472.48 ... 551.18 inch)		G			
14 001 ... 16 000 mm (551.22 ... 629.92 inch) ²⁾		H			
16 001 ... 18 000 mm (629.96 ... 708.66 inch) ²⁾		J			
18 001 ... 20 000 mm (708.70 ... 787.40 inch) ²⁾		K			
20 001 ... 22 000 mm (787.44 ... 866.14 inch) ²⁾		L			
22 001 ... 24 000 mm (866.18 ... 944.88 inch) ²⁾		M			
24 001 ... 25 000 mm (944.92 ... 984.25 inch) ²⁾		N			
Thermal isolator					
Without thermal isolator		0			
With thermal isolator [for process connection temperatures over 85 °C (185 °F)]		1			
Wetted seals					
FKM		0			
FFKM [for process temperatures above -20 °C (-4 °F)]		1			

Level Measurement

Continuous level measurement

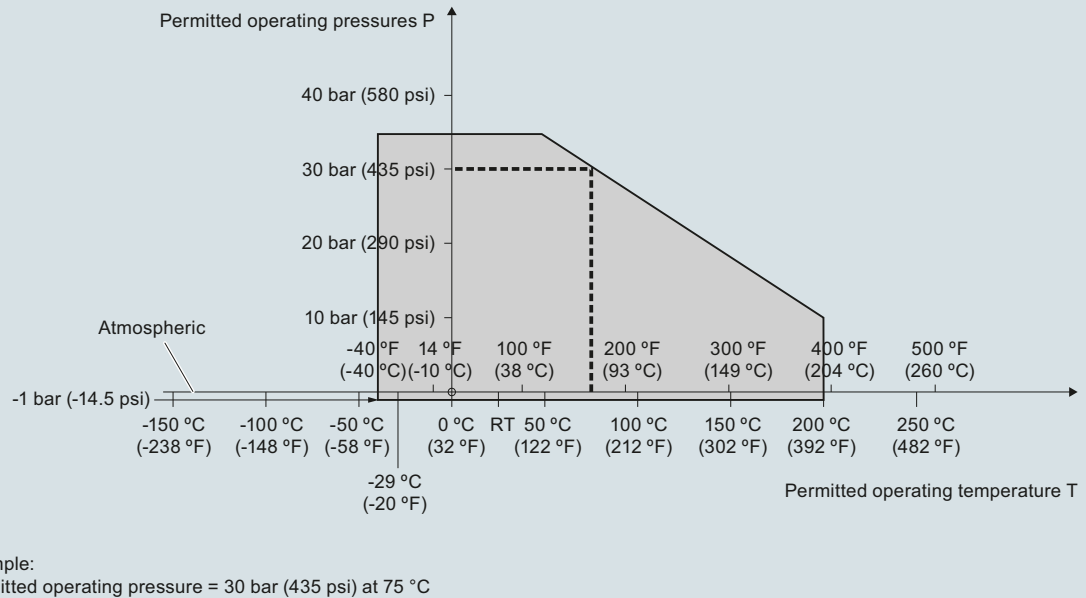
Capacitance transmitters

SITRANS LC300

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Article No. and specify Order code(s).	
Insertion length, specify in plain text: Y01: ... mm	Y01
Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y15
Manufacturer's Test Certificate: M to DIN 55350, Part 18 and to ISO 9000	C11
Material inspection Certificate Type 3.1 per EN 10204	C12
Operating Instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/ processinstrumentation/documentation	
Accessories	
Electronic transmitter kit (includes transmitter and driver)	Article No. 7ML1830-1KN
SITRANS RD100, loop powered display - see Chapter 7	7ML5741-...
SITRANS RD200, universal input display with Modbus conversion - see Chapter 7	7ML5740-...
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7	7ML5744-...
SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7	7ML5750-...
For applicable back up point level switch - see point level measurement section	

Characteristic curves

Pressure/temperature curve
LC300 standard, extended rod and cable probes
Threaded process connections
(7ML5670, 7ML5671, 7ML5672 and 7ML5673)



SITRANS LC300 process pressure/temperature derating curves (7ML5670, 7ML5671, 7ML5672, and 7ML5673)

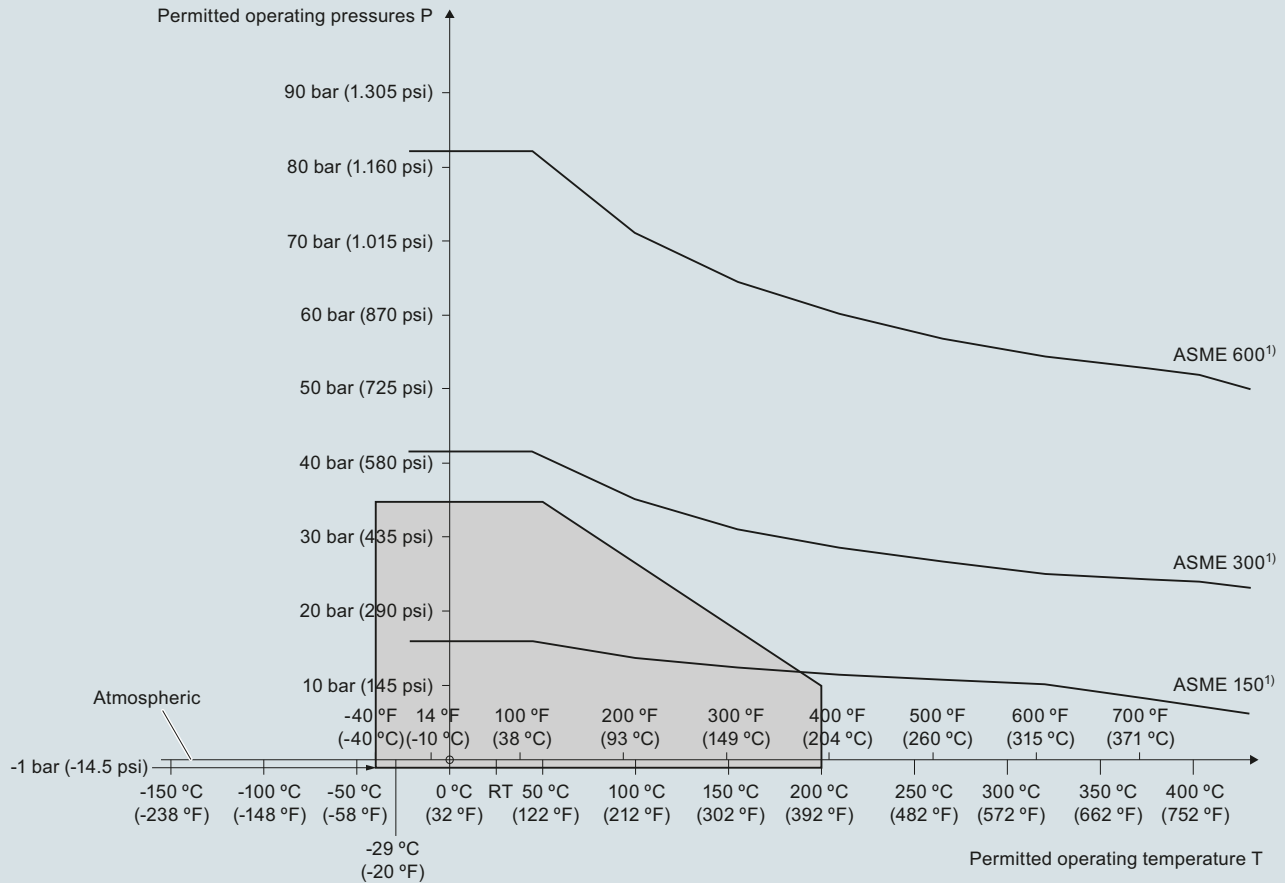
Level Measurement

Continuous level measurement

Capacitance transmitters

SITRANS LC300

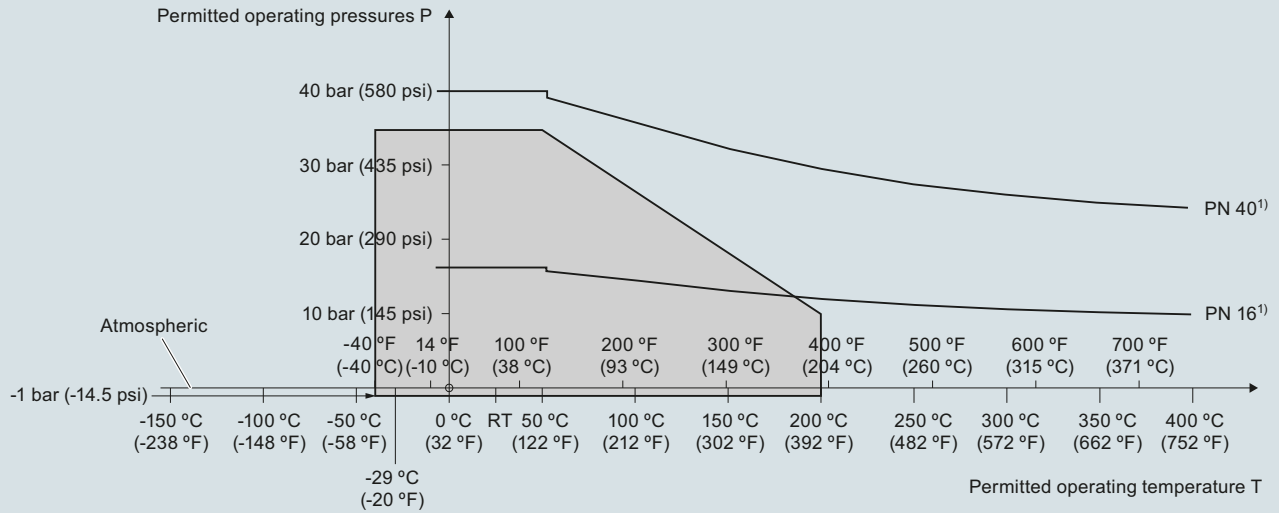
Pressure/temperature curve
LC300 standard, extended rod and cable probes
ASME flanged process connections
(7ML5670, 7ML5671, 7ML5672 and 7ML5673)



¹⁾ The curve denotes the minimum allowable flange class for the shaded area below.

SITRANS LC300 process pressure/temperature derating curves (7ML5670, 7ML5671, 7ML5672, and 7ML5673)

Pressure/temperature curve
LC300 standard, extended rod and cable probes
EN flanged process connections
(7ML5670, 7ML5671, 7ML5672 and 7ML5673)



¹⁾ The curve denotes the minimum allowable flange class for the shaded area below.

SITRANS LC300 process pressure/temperature derating curves (7ML5670, 7ML5671, 7ML5672, and 7ML5673)

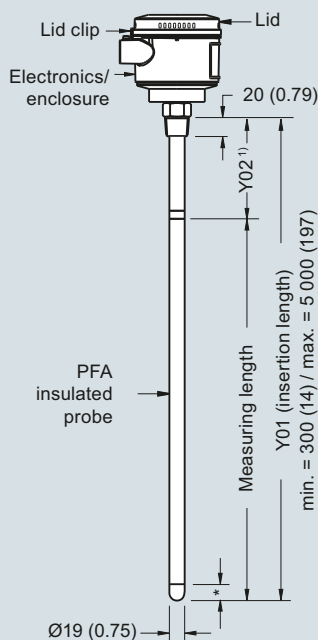
Level Measurement

Continuous level measurement
Capacitance transmitters

SITRANS LC300

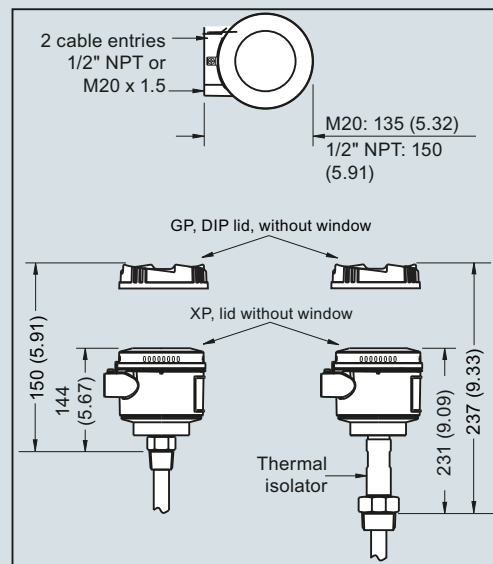
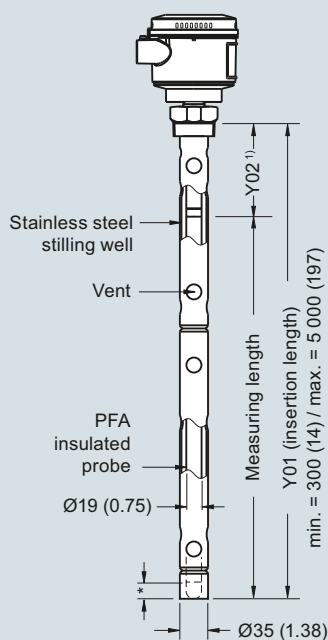
Dimensional drawings

Threaded (7ML5670)



* = 30 (1.18) Inactive tip

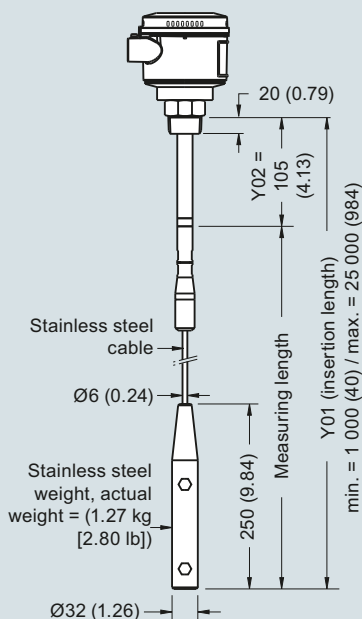
Threaded (7ML5671)



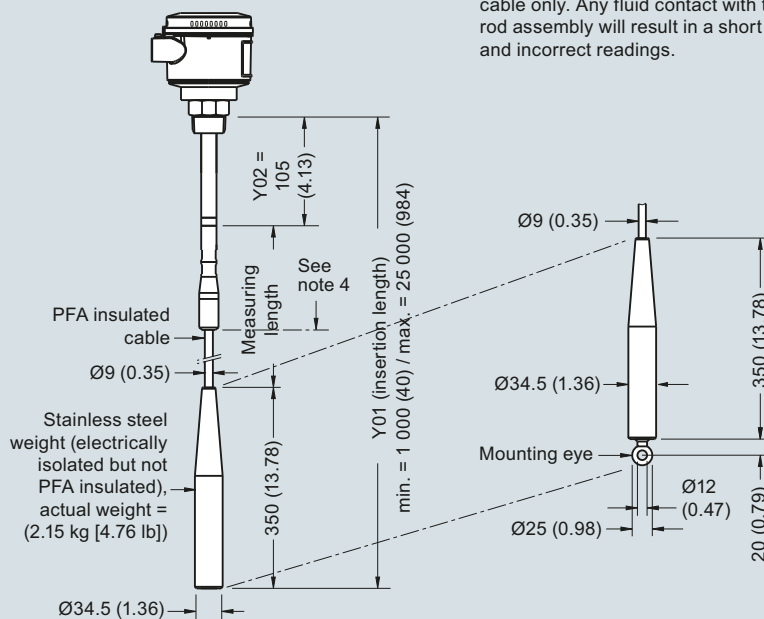
Note:

- 1) Rod version, threaded Y02 (including process connection): shield length = 120 (4.7).
- 2) For non-conductive applications only. Non-insulated cable can be shortened on site. Weight is included in measuring length.
- 3) For liquid and solid applications. Insulated cable cannot be shortened. Weight is **not** included in measuring length.
- 4) For conductive materials, the measuring length includes the exposed PFA insulated cable only. Any fluid contact with the upper rod assembly will result in a short circuit and incorrect readings.

Cable version, non-insulated²⁾
Threaded (7ML5672)



Cable version, insulated³⁾
Threaded (7ML5673)



SITRANS LC300 threaded process connections, dimensions in mm (inch)

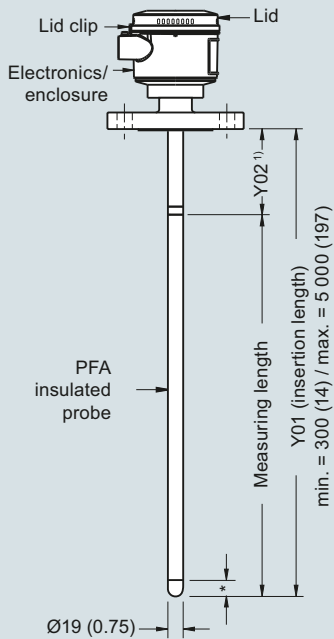
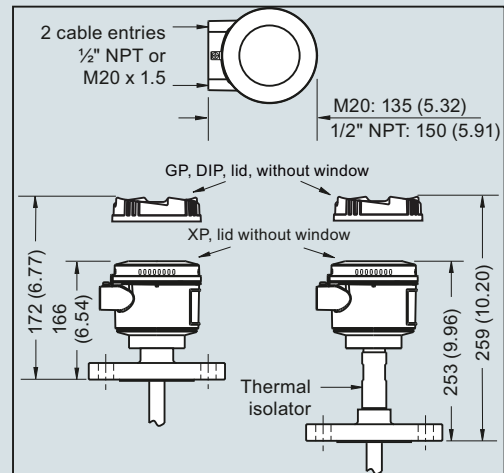
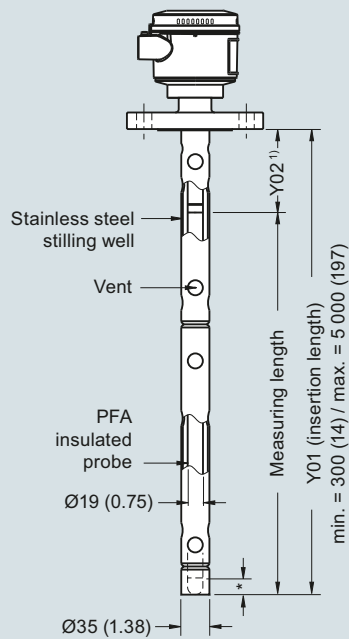
Level Measurement

Continuous level measurement

Capacitance transmitters

SITRANS LC300

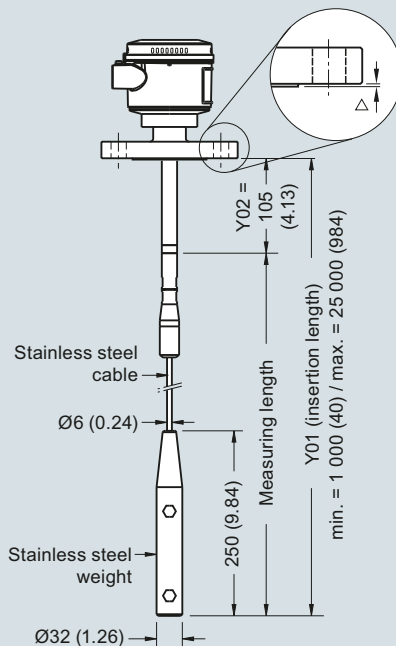
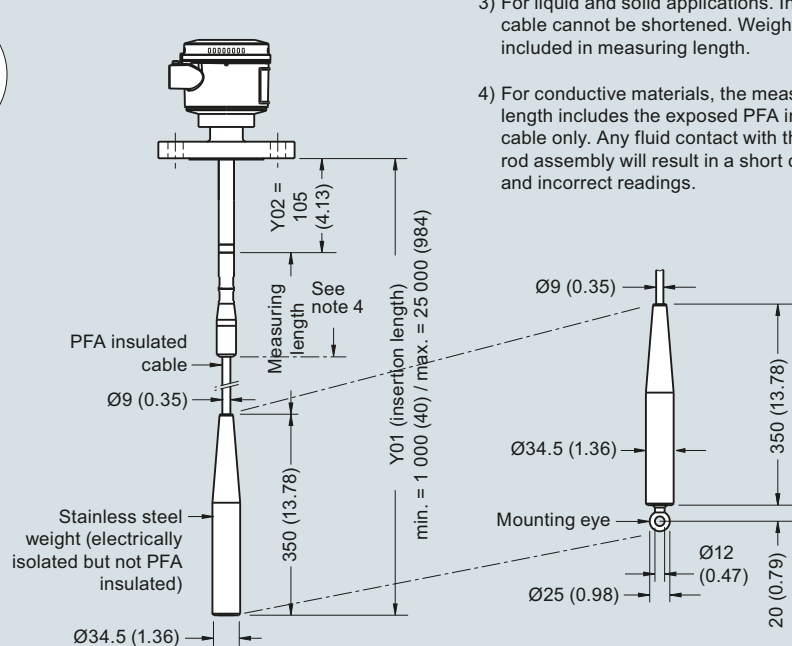
4

Welded Flange (7ML5670)**Welded Flange (7ML5671)****Flange Facing (raised face)**

Flange Class	Facing thickness
△ ASME 150/300	2 (0.08)
△ ASME 600/900	7 (0.28)
△ PN16/40	2 (0.08)

Notes:

- 1) Rod version, welded flange Y02: shield length = 100 (3.9).
- 2) For non-conductive applications only. Non-insulated cable can be shortened on site. Weight is included in measuring length.
- 3) For liquid and solid applications. Insulated cable cannot be shortened. Weight is **not** included in measuring length.
- 4) For conductive materials, the measuring length includes the exposed PFA insulated cable only. Any fluid contact with the upper rod assembly will result in a short circuit and incorrect readings.

Cable version, non-insulated ²⁾
Welded Flange (7ML5672)**Cable version, insulated ³⁾**
Welded Flange (7ML5673)

SITRANS LC300 flanged process connections, dimensions in mm (inch)

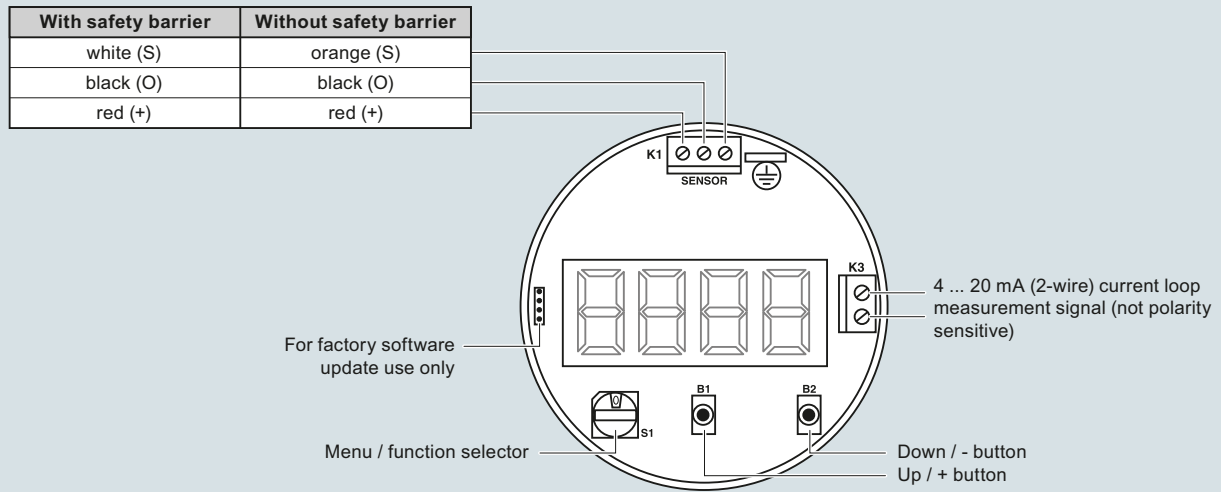
Level Measurement

Continuous level measurement

Capacitance transmitters

SITRANS LC300



Circuit diagrams





SITRANS LC300 connections

Selection and ordering data

LC300 Specials¹⁾

	Article No.
LC300 Cable Extensions, 316L stainless steel	
	
Kit, stainless steel cable extension, 1 m, adjustable by customer	A5E01163688
Kit, stainless steel cable extension, 3 m, adjustable by customer	A5E01163689
Kit, stainless steel cable extension, 5 m, adjustable by customer	A5E01163690
Kit, stainless steel cable extension, 10 m, adjustable by customer	A5E01163691
Kit, stainless steel cable extension, 15 m, adjustable by customer	A5E01163693
Kit, stainless steel cable extension, 20 m, adjustable by customer	A5E01163695
LC300 Cable Extensions, 316 stainless steel with PFA coating	
	
Kit, PFA cable extension, 1 m	A5E01163709
Kit, PFA cable extension, 3 m	A5E01163710
Kit, PFA cable extension, 5 m	A5E01163711
Kit, PFA cable extension, 10 m	A5E01163712
Kit, PFA cable extension, 15 m	A5E01163713
Kit, PFA cable extension, 20 m	A5E01163714

LC300 Specials¹⁾

	Article No.
LC300 Mounting Eye	
	
Spare mounting eye (LC300 PFA versions only)	A5E01163717
LC300 Weight Kit, 316L stainless steel	
	
Kit, Spare stainless steel weight. To be used in any cable version of CLS300, or stainless steel cable version of LC300.	A5E01163727

¹⁾ Special flange sizes and facings are available. Please contact a local sales person for details.

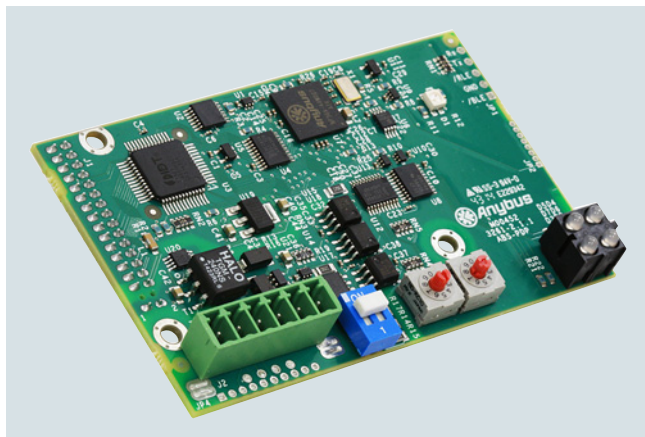
Customers interested in a custom designed device should consult a local sales person. For more information, please visit http://www.automation.siemens.com/aspa_app.

Level Measurement

Communication

SmartLinx module

Overview



SmartLinx modules provide direct digital connection to popular industrial communications buses with true plug-and-play compatibility with products manufactured by Siemens.

Benefits

- Fast, easy installation
- Direct connection: no additional installation required
- Scalable application layer allows for optimized network bandwidth and memory requirements (for PROFIBUS DPV0 and DeviceNet only)
- Modules available for PROFIBUS DPV0, PROFIBUS DPV1, ProfiNet, DeviceNET, Modbus TCP/IP, and Ethernet/IP

Application

With the addition of a SmartLinx module, Siemens instruments can be connected to a variety of industrial communications networks.

They're fast and easy to install, and can be added at any time. The module simply plugs into the socket on any SmartLinx enabled product. They require no secondary private buses or gateways and no separate wiring. There are no extra boxes to connect to your network so there's a minimum load on engineering and maintenance staff.

SmartLinx provides all data from the instrument, including measurement and status, and allows changes to operation parameters to be done over the bus or telemetry link. The user can select which data in the application layer to transfer over the bus. This selection saves bandwidth and memory and optimizes data throughput and speeds up the network, enabling you to connect more instruments to your network.

Selecting a communications module: PROFIBUS DPV0 versus PROFIBUS DPV1

The PROFIBUS DPV1 card was added to MultiRanger 200 HMI and HydroRanger 200 HMI to provide acyclic communication and SIMATIC PDM support over PROFIBUS. For backward compatibility, the PROFIBUS DPV0 card can also be used with MultiRanger 200 HMI and HydroRanger 200 HMI.

MultiRanger 100/200 and HydroRanger 200 are compatible only with the PROFIBUS DPV0 module.

Technical specifications

Module type	PROFIBUS DPV0
Interface	RS 485 (PROFIBUS standard)
Transmission rate	All valid PROFIBUS DP rates from 9 600 Kbps ... 12 Mbps
Slave address	0 ... 99
Connection	Slave
SmartLinx module compatibility	<ul style="list-style-type: none"> • MultiRanger 200 HMI • MultiRanger 100/200 • HydroRanger 200 HMI • HydroRanger 200

Module type	PROFIBUS DPV1
Interface	RS 485 (PROFIBUS standard)
Transmission rate	All valid PROFIBUS DP rates from 9 600 Kbps ... 12 Mbps
Slave address	0 ... 99
Connection	Slave
SmartLinx module compatibility	<ul style="list-style-type: none"> • MultiRanger 200 HMI • HydroRanger 200 HMI

Module type	DeviceNet
Interface	DeviceNet physical layer
Transmission rate in kbps	125, 250, 500
MAC address	0 ... 63
Connection	Slave (group 2)
SmartLinx module compatibility	<ul style="list-style-type: none"> • MultiRanger 200 HMI • MultiRanger 100/200 • HydroRanger 200 HMI • HydroRanger 200

Selection and Ordering data	Article No.
SmartLinx module for: MultiRanger 200 HMI, MultiRanger 100/200, HydroRanger 200 HMI, and HydroRanger 200	
PROFIBUS DPV0 module	7ML1830-1HR
PROFIBUS DPV1 module	A5E35778741
DeviceNet module	7ML1830-1HT
ProfiNet IO module	7ML1830-1PM
Modbus TCP/IP, Ethernet/IP	7ML1830-1PN
Operating Instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	

Overview


Dolphin Plus is instrument configuration software that allows you to quickly and easily configure, monitor, tune and diagnose several Siemens level devices remotely (see list below). Remote access is available using your desktop PC or connected directly in the field using a laptop.

Benefits

- Real-time monitoring and adjustment of parameters
- On-screen visualization of process values
- Saving and visualization of echo profiles for a wide range of Siemens level meters
- Copying of data for programming several devices
- Quick setup and commissioning of device
- Generation of configuration reports within seconds

Note:

The Dolphin Plus software is only available in English.

Application

Dolphin Plus is easy to install and use. Just load the software from the CD. In minutes, you're ready to set up or modify complete parameter configurations for one or more devices.

Following configuration, you can alter parameters, upload and download parameter sets to and from disk, and use parameter sets saved from other instruments. Reading of echo profiles permits fine tuning without the need for special instruments. Built-in quick start wizards and help functions guide you through the entire process.

Compatibility

Dolphin Plus is compatible with Microsoft Windows 95/98/NT4/Me/2000/XP and works with a wide range of Siemens products, including:

- SITRANS LU10
- SITRANS LU02
- SITRANS LU01

Connection to a Siemens instrument may be a direct RS 232 serial connection or via an RS 485 converter or Siemens infrared ComVerter, depending on the instrument being configured.

Meets VDE 2187 user interface requirements.

Most other Siemens level devices use Simatic PDM configuration software.

Selection and Ordering data

Article No.

Dolphin Plus
7ML1841-

Instrument configuration software to quickly and easily configure, monitor, tune and diagnose most Siemens devices remotely, from your desktop PC or connected directly in the field using a laptop.

Dolphin Plus Software includes a software DVD, and a nine pin adapter with a 2.1 m (82.7 inch) cable for connection to a PC serial port.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

RS 485 to RS 232 converter

No
Yes

0
1

ComVerter

No
Yes

0
1

Selection and Ordering data

Article No.

Operating Instructions

Connection manual, English:
Included on Dolphin Plus DVD and available at
www.siemens.com/processautomation

Spare parts

Converter, RS 485 to RS 232 (D-Sub)

7ML1830-1HA

Kit containing one 9-pin D-Sub to RJ11 Adapter and one 2.1 meter telephone cable with two male jacks

7ML1830-1MC

ComVerter, Infrared link

7ML1830-1MM

Level Measurement

Notes