

## Level Measurement


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[www.usa.siemens.com/level](http://www.usa.siemens.com/level)

## Level measurement





### Product overview

#### Level Measurement Selector

#### Overview




Application	Device description	Page	Programming Software
<b>Point level measurement - RF Capacitance switches</b>			
 <p>Powerful range of level switches suitable for a variety of industries.</p>	<p><b>Pointek CLS100/CLS200/CLS300</b></p> <ul style="list-style-type: none"> <li>• CLS100: compact 2-wire inverse frequency shift capacitance switch for level detection in constricted spaces, interfaces, solids, liquids, slurries, and foam.</li> <li>• 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.</li> <li>• 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.</li> </ul>	<p><b>4/11</b></p> <p><b>4/17</b></p> <p><b>4/49</b></p>	<p>-</p> <p>SIMATIC PDM</p> <p>SIMATIC PDM</p>
<b>Point level measurement - Vibrating switches</b>			
 <p>Reliable vibrating point level switches for liquid and slurry applications across all industries.</p>	<p><b>SITRANS LVL100/LVL200</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> </ul>	<p><b>4/78</b></p> <p><b>4/85</b></p>	<p>-</p> <p>-</p>
 <p>Reliable vibrating point level switches for bulk solids in a wide variety of applications.</p>	<p><b>SITRANS LVS100/LVS200/LVS300</b></p> <ul style="list-style-type: none"> <li>• LVS100: vibrating point level switch designed to be impervious to external vibrations and to provide reliable performance in demanding bulk solids applications.</li> <li>• LVS200: vibrating point level switch designed to be impervious to external vibrations and to provide reliable performance in demanding bulk solids applications.</li> <li>• LVS300: vibrating rod point level switch for high, low, or demand level detection of bulk solids. Durable probe, ideal for larger granule sizes.</li> </ul>	<p><b>4/111</b></p> <p><b>4/115</b></p> <p><b>4/125</b></p>	<p>-</p> <p>-</p> <p>-</p>
<b>Point level measurement - Rotating paddle switches</b>			
 <p>Reliable rotating point level switches for bulk solids in a wide variety of applications.</p>	<p><b>SITRANS LPS200</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511.</li> </ul>	<p><b>4/133</b></p>	<p>-</p>
<b>Point level measurement - Ultrasonic switch</b>			
 <p>Ultrasonic non-contacting switch with two switch points for level detection of bulk solids, liquids and slurries in a wide variety of industries.</p>	<p><b>Pointek ULS200</b></p> <ul style="list-style-type: none"> <li>• Rugged design, no moving parts, and virtually maintenance-free.</li> <li>• Transducer available in ETFE or PVDF copolymer and therefore inert to most chemicals.</li> </ul>	<p><b>4/145</b></p>	<p>-</p>

**Overview**

Application	Device description	Page	Programming Software
<b>Continuous level measurement - Controllers</b>			
	<p>SITRANS LT500 is a versatile, single and multi-vessel level monitor/controller for virtually any application in a wide range of industries.</p> <p><b>SITRANS LT500</b></p> <ul style="list-style-type: none"> <li>• Level, volume, and flow measurements in open channels, differential control, extended pump control, and alarm functions.</li> <li>• Easy to use HMI display with local four-button programming, menu-driven parameters, and wizard support for key applications.</li> </ul>	4/150	-
	<p>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.</p> <p><b>SITRANS LUT420/430/440</b></p> <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"> <li>• 1 mm accuracy.</li> <li>• HART communications.</li> <li>• Next Generation Sonic Intelligence.</li> </ul>	4/155	SIMATIC PDM
	<p>Versatile short- to medium-range ultrasonic single- and dual-vessel level controller for virtually any application in a wide range of industries.</p> <p><b>MultiRanger 100/200</b></p> <ul style="list-style-type: none"> <li>• 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</li> <li>• Auto False-Echo Suppression of false echoes</li> </ul>	4/168	SIMATIC PDM
	<p>Ultrasonic level controller for up to six pumps - control, differential control, and open channel flow monitoring.</p> <p><b>HydroRanger 200</b></p> <ul style="list-style-type: none"> <li>• An economical, low-maintenance solution delivering control efficiency and productivity needed to meet today's exacting standards</li> <li>• Auto False-Echo Suppression of false echoes</li> </ul>	4/172	SIMATIC PDM



### Overview

Application	Device description	Page	Programming Software
<b>Continuous level measurement - Radar transmitters</b>			
	<p>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).</p>	<p><b>SITRANS Probe LR</b></p> <ul style="list-style-type: none"> <li>• Uni-Construction polypropylene rod antenna standard</li> <li>• Process Intelligence signal processing</li> <li>• Auto False-Echo Suppression of false echoes</li> </ul>	<p>4/232</p> <p>SIMATIC PDM</p>
	<p>SITRANS LR100: a compact radar transmitter for continuous level measurement of liquids and slurries to a range of 8 m (26 ft).</p> <p>SITRANS LR110: a compact radar transmitter for continuous level measurement of liquids, slurries, or solids to a range of 15 m (49.2 ft).</p>	<p><b>SITRANS LR100</b></p> <ul style="list-style-type: none"> <li>• Bluetooth connectivity for easy setup with SITRANS mobile IQ</li> <li>• Chemically resistant PVDF enclosure</li> <li>• W band FMCW radar yields narrow beam with small antenna for superior performance in short range applications</li> <li>• 5 mm accuracy</li> </ul> <p><b>SITRANS LR110</b></p> <ul style="list-style-type: none"> <li>• Bluetooth connectivity for easy setup with SITRANS mobile IQ</li> <li>• Chemically resistant PVDF enclosure</li> <li>• W band FMCW radar yields narrow beam with small antenna for superior performance in short range applications</li> <li>• HART 7.0 or Modbus RTU communication for intelligent integration into your application</li> <li>• 2 mm accuracy and zero near range distance yields optimum inventory management capability</li> </ul>	<p>4/236</p> <p>4/238</p>
	<p>Compact radar transmitter for continuous level measurement of liquids and solids to a range of 30 m (98.4 ft).</p>	<p><b>SITRANS LR120</b></p> <ul style="list-style-type: none"> <li>• Bluetooth connectivity for easy setup with SITRANS mobile IQ</li> <li>• Chemically resistant PVDF enclosure</li> <li>• W band FMCW radar yields narrow beam with small antenna for superior performance in short range applications</li> <li>• HART 7.0 or Modbus RTU (in preparation) communication for intelligent integration into your application</li> <li>• Submergence shield accessory prevents build up on sensor during flooding conditions</li> <li>• 2 mm accuracy and zero near range distance yields optimum inventory management capability</li> </ul>	<p>4/241</p>
	<p>SITRANS LR140: a 2 wire loop powered radar transmitter for continuous level measurement of liquids and slurries to a range of 8 m (26 ft).</p> <p>SITRANS LR150: a compact radar transmitter for continuous level measurement of liquids, slurries, and solids to a range of 15 m (49.2 ft), with optional HMI.</p>	<p><b>SITRANS LR140</b></p> <ul style="list-style-type: none"> <li>• Bluetooth connectivity for easy setup with SITRANS mobile IQ.</li> <li>• Chemically resistant PVDF sensor.</li> <li>• W band FMCW radar yields narrow beam with small antenna for superior performance in short range applications.</li> </ul> <p><b>SITRANS LR150</b></p> <ul style="list-style-type: none"> <li>• Bluetooth connectivity for easy setup with SITRANS mobile IQ.</li> <li>• Optional HMI with pushbutton programming and local diagnostic data.</li> <li>• Chemically resistant PVDF sensor.</li> <li>• W band FMCW radar yields narrow beam with small antenna for superior performance in short range applications.</li> </ul>	<p>4/244</p> <p>4/246</p>
	<p>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).</p>	<p><b>SITRANS LR200</b></p> <ul style="list-style-type: none"> <li>• Program without opening the lid, even in hazardous areas, using patented infrared IS handheld programmer</li> <li>• Special Uni-Construction hermetically sealed polypropylene rod antenna has integrated threaded connection</li> <li>• Built-in alphanumeric display with support in four languages</li> </ul>	<p>4/249</p> <p>SIMATIC PDM AMS SITRANS DTM</p>

## Level measurement

### Product overview

#### Level Measurement Selector

#### Overview

	Application	Device description	Page	Programming Software
	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.	<b>SITRANS LR250</b> <ul style="list-style-type: none"> <li>• Simple operation using the graphical local user interface (LUI)</li> <li>• Plug-and-play setup using the intuitive Quick Start Wizard</li> <li>• 25 GHz high frequency allows for small horn antennas and easy mounting in nozzles</li> <li>• Process Intelligence signal processing for improved measurement reliability and Auto False-Echo Suppression of fixed obstructions</li> </ul>	4/263	SIMATIC PDM AMS SITRANS DTM
	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	<b>SITRANS LR460</b> <ul style="list-style-type: none"> <li>• Process Intelligence for advanced signal processing and quick and easy adjustment</li> <li>• Self-guided Quick Start Wizard for plug and play startup</li> <li>• 100 m (328 ft) range for long-range and difficult applications</li> </ul>	4/319	SIMATIC PDM
	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	<b>SITRANS LR560</b> <ul style="list-style-type: none"> <li>• Rugged stainless steel design</li> <li>• 78 GHz high frequency provides very narrow beam, virtually no mounting nozzle noise, and optimal reflection from sloped solids</li> <li>• Aimer option to direct beam to area of interest, such as draw point of cone</li> <li>• Air purge connection is included for self-cleaning of extremely sticky solids</li> <li>• Lens antenna is highly resistant to product buildup</li> <li>• Local display interface (LDI) allows local programming and diagnostics</li> </ul>	4/325	SIMATIC PDM AMS SITRANS DTM
<b>Continuous level measurement - Guided wave radar transmitters</b>				
	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.	<b>SITRANS LG240/250/260/270</b> <ul style="list-style-type: none"> <li>• Measures accurately on materials with dielectric (dK) as low as 1.4</li> <li>• Guided wave radar measurement for up to 2 mm (0.08 inch) accuracy</li> <li>• Measures level, level/interface, and volume of solids, slurries, and liquids</li> <li>• 4 button programming for quick setup</li> <li>• 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)</li> </ul>	4/332	SIMATIC PDM SITRANS DTM
<b>Continuous level measurement - Capacitance transmitters</b>				
	For liquids and solids applications, ideal for standard industrial applications in chemical, hydrocarbon processing, food and beverage, and mining, aggregate and cement industries.	<b>SITRANS LC300</b> <ul style="list-style-type: none"> <li>• Sophisticated, but easy-to-adjust microprocessor combined with field-proven probes</li> <li>• Active shield technology ensures measurements are unaffected by vapors, product deposits, dust, and condensation</li> </ul>	4/375	-
<b>Communications</b>				
		<b>SmartLinx Module</b> <ul style="list-style-type: none"> <li>• Optional communication modules, SmartLinx, provide direct digital connection to popular industrial fieldbus systems</li> </ul>	4/390	-

**Overview**
**Continuous Level**

Conditions	Ultrasonic	Radar	Guided Wave Radar	Capacitance	Gravimetric	Hydrostatic pressure
<b>Measurement</b>						
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

#### Overview

Point Level				
Conditions	Vibration	Capacitance	Paddle	Ultrasonic
<b>Measurement</b>				
Level	■	■	■	■
Interface (liquid/liquid)		■		
Interface (liquid/solid)	◆			
Volume				
Mass				
Flow (open channel)				
<b>Level Applications</b>				
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



## Overview

### Introduction

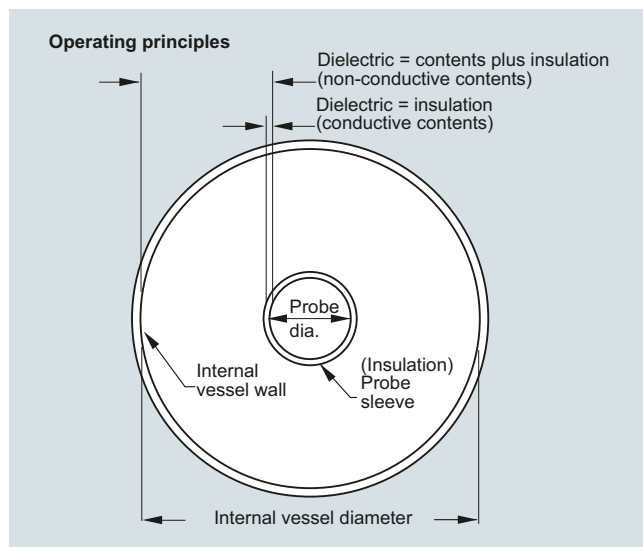
Inverse frequency shift capacitance point level and material detection switches are designed to withstand the harsh environments of high pressure and high temperature applications.

### 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.



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.

## Level measurement

Point level measurement  
RF Capacitance switches

### Introduction

### 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"> <li>Stainless steel process connection: -30 ... +100 °C (22 ... +212 °F)</li> <li>Fully Synthetic (PPS process connection): -10 ... +100 °C (14 ... 212 °F)</li> </ul>	<ul style="list-style-type: none"> <li>-40 ... +85 °C (-40 ... +185 °F)</li> <li>With thermal isolator: -40 ... +125 °C (-40 ... +257 °F)</li> </ul>	<ul style="list-style-type: none"> <li>-40 ... +200 °C (-40 ... +392 °F)</li> <li>HT version: -40 ... +400 °C (-40 ... +752 °F)</li> </ul>
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"> <li>Rod versions: Up to 25 bar g (365 psi g)</li> <li>Cable version: Up to 10 bar g (146 psi g)</li> </ul>	Up to 35 bar g (511 psi g)
Output	Stainless steel cable or enclosure version: <ul style="list-style-type: none"> <li>4 ... 20/20 ... 4 mA, 2-wire current loop</li> <li>Solid-state output</li> </ul> Fully-synthetic version (PPS) <ul style="list-style-type: none"> <li>Relay output</li> </ul>	Standard: <ul style="list-style-type: none"> <li>1 SPDT Form C relay, solid-state switch</li> </ul> Digital: <ul style="list-style-type: none"> <li>Solid-state switch included</li> </ul>	Standard: <ul style="list-style-type: none"> <li>1 SPDT Form C relay, solid-state switch</li> </ul> Digital: <ul style="list-style-type: none"> <li>Solid-state switch included</li> </ul>
Communications		Standard: <ul style="list-style-type: none"> <li>3 LED indicators</li> </ul> Digital: <ul style="list-style-type: none"> <li>PROFIBUS PA; SIMATIC PDM compatible</li> </ul>	Standard: <ul style="list-style-type: none"> <li>3 LED indicators</li> </ul> Digital: <ul style="list-style-type: none"> <li>PROFIBUS PA; SIMATIC PDM compatible</li> </ul>
Power Specifications	Standard: <ul style="list-style-type: none"> <li>12 ... 33 V DC</li> </ul> Intrinsically Safe (Stainless steel version only): <ul style="list-style-type: none"> <li>10 ... 30 V DC</li> </ul>	Standard: <ul style="list-style-type: none"> <li>12 ... 250 V AC/DC, 0 ... 60 Hz, 2 W max.</li> </ul> Digital: <ul style="list-style-type: none"> <li>Bus voltage: 12 ... 30 V DC, IS version: 12 ... 24 V DC</li> <li>Current consumption: 12.5 mA</li> </ul>	Standard: <ul style="list-style-type: none"> <li>12 ... 250 V AC/DC, 0 ... 60 Hz, 2 W max.</li> </ul> Digital: <ul style="list-style-type: none"> <li>Bus voltage: 12 ... 30 V DC, IS version: 12 ... 24 V DC</li> <li>Current consumption: 12.5 mA</li> </ul>
Approvals	Stainless steel cable or enclosure version: CE, CSA, FM, ATEX, RCM, Lloyds Register, WHG Fully-synthetic version (PPS): CSA, FM	CSA, FM, CE, ATEX, RCM, Lloyds Register, WHG, Vlare II	CSA, FM, CE, ATEX, RCM, Lloyds Register, WHG, Vlare II

#### 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.

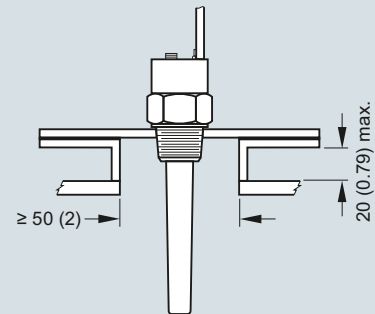
The Pointek CLS100 is available in three versions. The integral cable version has a stainless steel process connection and probe options of PPS or PVDF. The fully synthetic version has a thermoplastic polyester enclosure with a PPS process connection combined with a PPS probe. The standard enclosure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

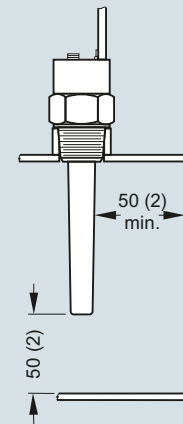
#### Configuration

##### Installation

##### Standpipes



##### Wall restriction



Pointek CLS100 installation, dimensions in mm (inch)

## Level measurement

Point level measurement

RF Capacitance switches

### Pointek CLS100

#### Technical specifications

	Stainless steel process connection (integral cable or enclosure version) (7ML5501)	Fully synthetic process connection (enclosure version only) (7ML5610)
<b>Mode of operation</b>		
Measuring principle	Inverse frequency shift capacitive level detection	Inverse frequency shift capacitive level detection
<b>Input</b>		
Measured variable	Change in picoFarad (pF)	Change in picoFarad (pF)
<b>Output</b>		
Output signal		
• Alarm output	4 ... 20/20 ... 4 mA 2-wire loop	4 ... 20/20 ... 4 mA 2-wire loop
• Switch output <sup>1)</sup>	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.
<b>Accuracy</b>		
Repeatability	2 mm (0.08 inch)	2 mm (0.08 inch)
<b>Rated operating conditions<sup>2)</sup></b>		
Installation conditions		
• Location	Indoor/outdoor	Indoor/outdoor
Ambient conditions		
• Ambient temperature	-30 ... +85 °C (-22 ... +185 °F)	-10 ... +85 °C (14 ... 185 °F)
• Storage temperature	-40 ... +85 °C (-40 ... +185 °F)	-40 ... +85 °C (-40 ... +185 °F)
• Installation category	I	I
• Pollution degree	4	4
Medium conditions		
• Relative dielectric constant $\epsilon_r$	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 <sup>2)</sup>	-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)
<b>Design</b>		
	<u>Enclosure/Integral cable version</u>	<u>Fully synthetic version</u>
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 <sup>3)</sup>	Connection: 316L stainless steel; Process seal: FKM (optional FFKM); Sensor: PPS (optional PVDF) <sup>4)</sup>	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 mm <sup>2</sup> (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]
<b>Power supply</b>		
Standard	12 ... 33 V DC	12 ... 33 V DC
Intrinsically Safe	10 ... 30 V DC (Intrinsically Safe barrier required)	Not applicable
<b>Certificates and approvals</b>		
	<ul style="list-style-type: none"> <li>• General: CE, CSA, FM, RCM</li> <li>• 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</li> <li>• 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</li> <li>• Overfill protection: WHG (Germany)</li> </ul>	<ul style="list-style-type: none"> <li>• General: CSA, FM</li> </ul>

<sup>1)</sup> 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.

<sup>2)</sup> When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves on page 5/13.

<sup>3)</sup> For caustic materials, consult a local sales person for alternative O-rings. For more information, please visit <http://www.usa.siemens.com/level>.

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

Selection and ordering data	Article No.	Article No.
<p><b>Pointek CLS100 RF Capacitance point level switch, stainless steel process connection</b></p> <p>Detects level and interface in liquids, solids, slurries and foam. Compact, with 100 mm (4 inch) insertion, adaptable sensitivity, with the ability to tune out build-up on probe.</p> <p>➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>	<p><b>7ML5501-</b></p>	<p><b>Pointek CLS100 RF Capacitance point level switch, PPS process connection</b></p> <p>Detects level and interface in liquids, solids, slurries, and foam. Compact, with 100 mm (4 inch) insertion, adaptable sensitivity, with the ability to tune out build-up on probe.</p> <p>➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>
<p><b>Process Connection</b></p> <p>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]</p>	<p><b>A</b> <b>E</b> <b>J</b></p>	<p><b>7ML5610-</b></p>
<p><b>Approvals</b></p> <p>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 ½  GD EEx ia IIC T4 ... T6 T107 °C<sup>1)</sup>  CSA/FM Class II and III, Div. 1, Groups E, F, G<sup>1)</sup></p>	<p><b>A</b> <b>C</b></p>	<p><b>Process connection (PPS)</b></p> <p>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)</p>
<p><b>Device version</b></p> <p>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</p>	<p><b>G</b></p> <p><b>1</b> <b>3</b> <b>5</b> <b>6</b> <b>7</b> <b>8</b></p>	<p><b>Approvals</b></p> <p>General Purpose: CSA, FM</p>
<p><b>Overfill protection</b></p> <p>Not required  Required (WHG)</p> <p><sup>1)</sup> Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection.</p>	<p><b>0</b> <b>1</b></p>	<p><b>Version/Options</b></p> <p>Enclosure version, PPS process connection,  ½" NPT cable inlet  Enclosure version, PPS process connection,  M20 x 1.5</p>
<p><b>Further designs</b></p> <p>Please add <b>"-Z"</b> to Article No.  and specify Order code(s).</p>	<p>Order code</p>	<p><b>Overfill protection</b></p> <p>Not required  Required</p>
<p>Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]:  Measuring-point number/identification  (max. 20 characters) specify in plain text  FFKM seal O-ring<sup>1)</sup></p>	<p><b>Y17</b></p>	<p><b>Further designs</b></p> <p>Please add <b>"-Z"</b> to Article No.  and specify Order code(s).</p>
<p>Material inspection Certificate Type 3.1 per  EN 10204  INMETRO<sup>2)</sup></p>	<p><b>A22</b> <b>C12</b> <b>E34</b></p>	<p><b>Order code</b></p>
<p><b>Operating Instructions</b></p> <p>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  <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a></p> <p><sup>1)</sup> See Temperature restriction on page 4/14.  <sup>2)</sup> Available only with Approvals option C.</p>	<p>Order code</p>	<p><b>Operating Instructions</b></p> <p>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  <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a></p>
<p><b>Accessories</b></p> <p>SensGuard, ¾" NPT (PPS).  Only available for CLS100 with ¾" NPT thread.</p> <p>SensGuard, R 1" (BSPT) (PPS).  Only available for CLS100 with ¾" NPT thread.</p> <p>Tag, stainless steel, 12 x 45 mm (0.47 x 1.77 inch),  one text line, suitable for enclosures</p> <p>Siemens Intrinsically Safe Barrier (DC powered),  ATEX II 1 G EEx ia</p> <p>½" NPT General Purpose Cable Entry IP68/IP69K  NEMA 6, -40 ... +80 °C (-40 ... +176 °F),  Dust Ignition Proof, cable size 6 ... 12 mm  (0.236 ... 0.472 inch)</p> <p>M20 x 1.5 General Purpose Cable Entry IP68/IP69K  NEMA 6, -40 ... +80 °C (-40 ... +176 °F),  Dust Ignition Proof, cable size 7 ... 12 mm  (0.275 ... 0.472 inch)</p>	<p>Article No.</p> <p><b>7ML1830-1DL</b></p> <p><b>7ML1830-1DM</b></p> <p><b>7ML1930-1AC</b></p> <p><b>7NG4124-0AA00</b></p> <p><b>7ML1830-1JA</b></p> <p><b>7ML1830-1JC</b></p>	<p><b>Accessories</b></p> <p>SensGuard, ¾" NPT (PPS).  Only available for CLS100 with ¾" NPT thread.</p> <p>SensGuard, R 1" (BSPT) (PPS).  Only available for CLS100 with ¾" NPT thread.</p> <p>Tag, stainless steel, 12 x 45 mm, (0.47 x 1.77 inch)  one text line, suitable for enclosures</p> <p><sup>1)</sup> See Temperature restriction on page 4/14.</p>

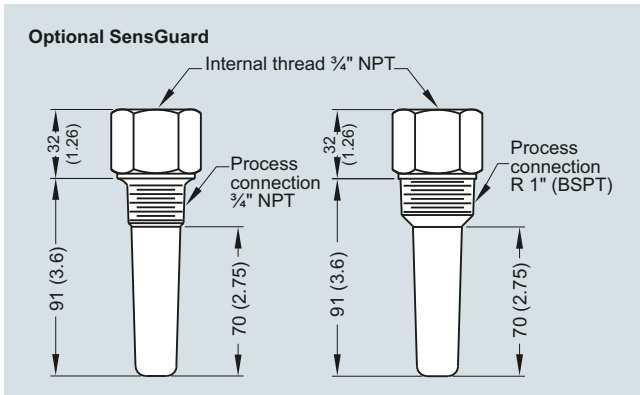
## Level measurement

Point level measurement

RF Capacitance switches

### Pointek CLS100

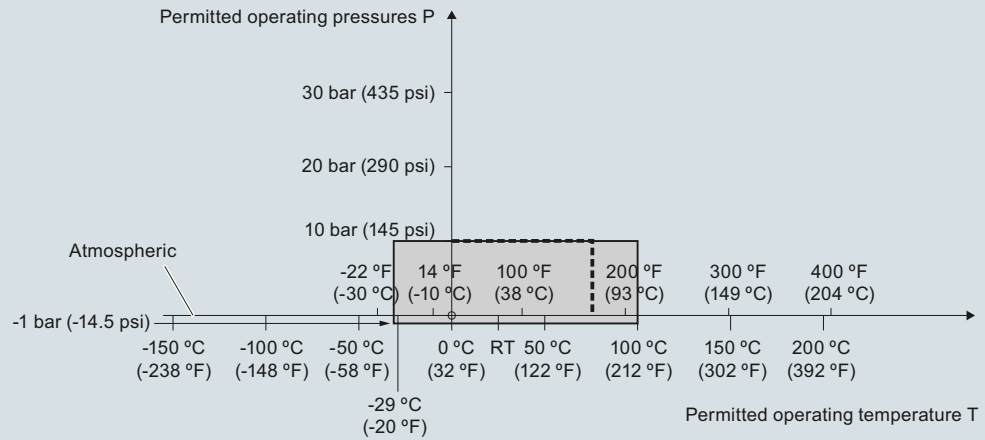
#### Options



Optional SensGuard, dimensions in mm (inch)

**Characteristic curves**

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

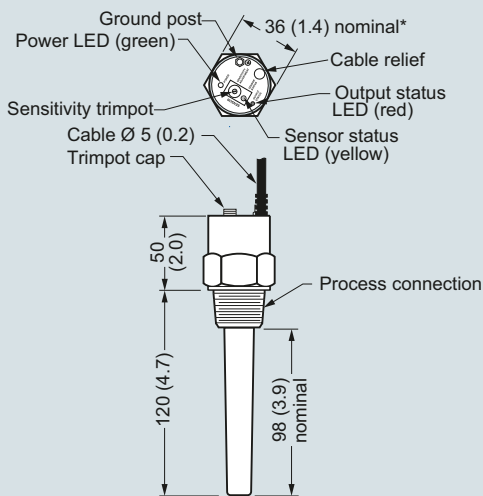


---- Example:  
Permitted operating pressure = 10 bar (145 psi) at 75 °C

Pointek CLS100 process pressure/temperature derating curves

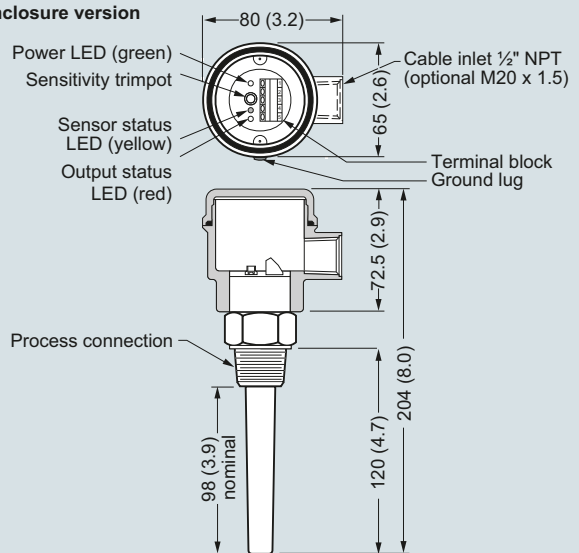
**Dimensional drawings**

**Integral cable version**



\*Some G thread configurations deviate from this size.

**Enclosure version**



Pointek CLS100, dimensions in mm (inch)

## Level measurement

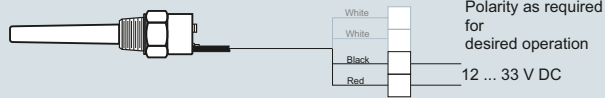
Point level measurement  
RF Capacitance switches

### Pointek CLS100

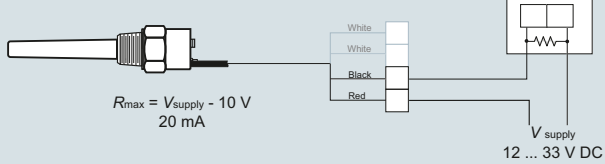
#### Circuit diagrams

##### Integral Cable Version - Non Intrinsically Safe only

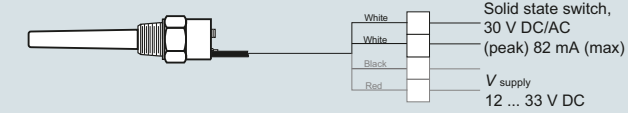
LOW/HIGH Alarm



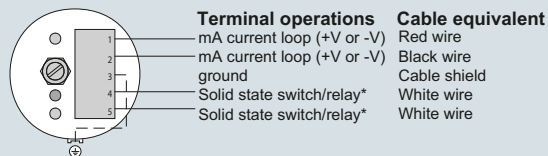
4/20 mA Loop Alarm



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)

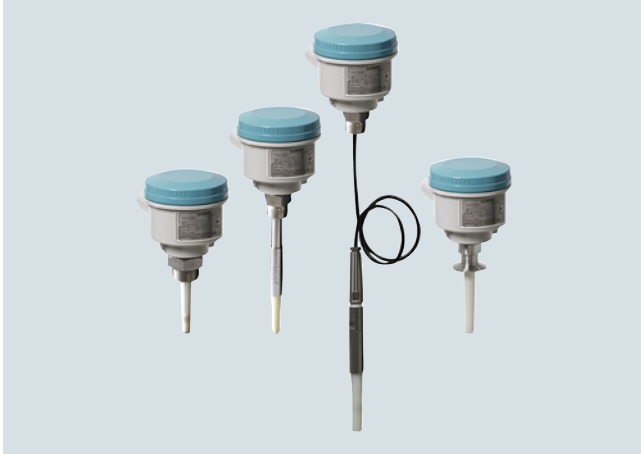
##### Note:

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



## 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

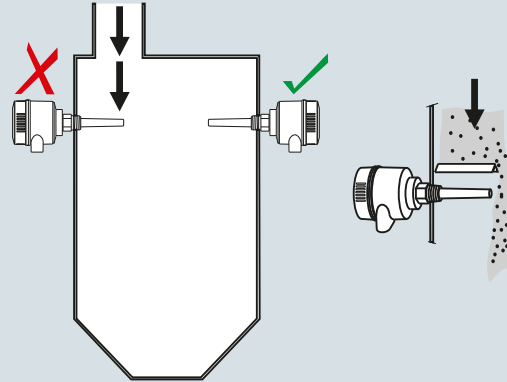
Pointek CLS200 standard version has 3 LED indicators with basic relay and solid-state switch alarms. Universal switch for solids/liquids and interface.

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

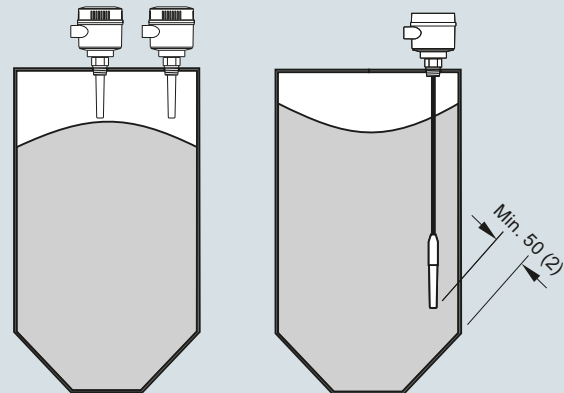
### Installation



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)

## Level measurement

Point level measurement

RF Capacitance switches

### Pointek CLS200 - Standard

#### Technical specifications

<b>Mode of operation</b>	
Measuring principle	Inverse frequency shift capacitive level detection
<b>Input</b>	
Measured variable	Change in piconFarad (pF)
<b>Output</b>	
Output signal	
• Relay output	1 SPDT Form C relay
- Max. contact voltage	<ul style="list-style-type: none"> <li>• 30 V DC</li> <li>• 250 V AC</li> </ul>
- Max. contact current	<ul style="list-style-type: none"> <li>• 5 A DC</li> <li>• 8 A AC</li> </ul>
- Max. switching capacity	150 W DC
- Time delay (ON and/or OFF)	2 000 VA AC
• Solid-state output	1 ... 60 s
- Output	Galvanically isolated
- Protection	Against reversed polarity (bipolar)
- Max. switching voltage	<ul style="list-style-type: none"> <li>• 30 V DC</li> <li>• 30 V peak AC</li> </ul>
- Max. load current	82 mA
- Voltage drop	< 1 V, typical at 50 mA
- Time delay (pre or post switching)	1 ... 60 s
<b>Rated operating conditions<sup>1)</sup></b>	
Installation conditions	
• Location	Indoor/outdoor
Ambient conditions	
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) <sup>2)</sup>
• Storage temperature	-40 ... +85 °C (-40 ... +185 °F)
• Installation category	II
• Pollution degree	4
Medium conditions	Liquids, bulk solids, slurries and interfaces
• Relative dielectric constant $\epsilon_r$	Min. 1.5
• Process temperature	
- Without thermal isolator	-40 ... +85 °C (-40 ... +185 °F) <sup>2)</sup>
- 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) <sup>3)</sup>	-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)
<b>Electromagnetic compatibility</b>	
To comply with CE EMC regulations (where applicable); the CLS200 should be installed per the instruction manual.	

<b>Design</b>	
Material	
• Enclosure	Epoxy-coated aluminum with gasket
• Optional thermal isolator	316L stainless steel
Connection	Removable terminal block, max. 2.5mm <sup>2</sup>
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)
<b>Power supply</b>	
12 ... 250 V AC/DC, 0 ... 60 Hz max. 2 W	
<b>Certificates and approvals</b>	
General Purpose	CSA, FM, CE, RCM
Dust Ignition Proof	ATEX II ½ D T100 °C
Flameproof Enclosure With IS Probe	ATEX II 1 G EEx d[ia] IIC T6 ... T4 ATEX II ½ 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
Marine	Lloyds Register of Shipping, Categories ENV1, ENV2, and ENV5
Overfill Protection	WHG (Germany) VLAREM II
Others	Pattern Approval (China), SIL

<sup>1)</sup> When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves on page 5/34.

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

<sup>3)</sup> Pressure rating of process seal is temperature dependent. See Pressure/Temperature curves on page 5/34.

**Technical specifications** (continued)

<b>Design: Probe</b>				
	<b>Rod version</b>	<b>Sanitary version</b>	<b>Cable version</b>	<b>Sliding Coupling version</b>
Max. length	5 500 mm (216.53 inch)	5 500 mm (216.53 inch)	<ul style="list-style-type: none"> <li>• 30 000 mm (1 181.1 inch) liquids and slurries</li> <li>• 5 000 mm (196.85 inch) solids (under loads)</li> </ul>	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 <sup>1)</sup>	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) <sup>2)</sup>	FKM (optional FFKM) <sup>2)</sup>	FKM (optional FFKM) <sup>2)</sup>	FKM (optional FFKM) <sup>2)</sup>
Thermal isolator <sup>3)</sup>	Optional	Optional	Optional	Optional
Extension	User selected length	User selected length	Cable extension	User selected length

<sup>1)</sup> PFA coating (7ML5634 and 7ML5644) has 120 micron thickness

<sup>2)</sup> For caustic materials, consult a local sales person for alternative O-rings. For more information, please visit <http://www.usa.siemens.com/level>.

<sup>3)</sup> 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.

#### Article No.

##### Pointek CLS200 RF Capacitance point level switch, rod design

Detects level and interface in liquids, solids, slurries, and foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on 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] **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 SO 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**

Welded flange, 316L stainless steel, raised face

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**

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

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)

Note: No Y01 needed in Order code for standard lengths

Compact [threaded 120 mm (4.72 inch), Flanged 98 mm (3.86 inch)] **A**  
 Extended rod, 250 mm (9.84 inch) **B**  
 Extended rod, 350 mm (13.78 inch) **C**  
 Extended rod, 500 mm (19.69 inch) **D**  
 Extended rod, 750 mm (29.53 inch) **E**  
 Extended rod, 1 000 mm (39.37 inch) **F**  
 Extended rod, 1 250 mm (49.21 inch) **G**  
 Extended rod, 1 350 mm (53.15 inch) **H**  
 Extended rod, 1 500 mm (59.06 inch) **J**  
 Extended rod, 1 750 mm (68.90 inch) **K**  
 Extended rod, 2 000 mm (78.74 inch) **L**

##### Pointek CLS200 RF Capacitance point level switch, rod design

Detects level and interface in liquids, solids, slurries, and foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe.

Add Order code Y01 and plain text: "Insertion length ... mm"

Extended rod, 210 ... 1 000 mm (8.27 ... 39.37 inch) **M**  
 Extended rod, 1 001 ... 2 000 mm (39.41 ... 78.74 inch) **N**  
 Extended rod, 2 001 ... 3 000 mm (78.78 ... 118.11 inch) **P**  
 Extended rod, 3 001 ... 4 000 mm (118.15 ... 157.48 inch) **Q**  
 Extended rod, 4 001 ... 5 000 mm (157.52 ... 196.85 inch) **R**  
 Extended rod, 5 001 ... 5 500 mm (196.89 ... 216.53 inch) **S**

##### Thermal isolator

Without thermal isolator **0**  
 With thermal isolator [for process connection temperatures over 85 °C (185 °F)] **1**

##### Remote mount electronics and mounting bracket

With 2 m (79 inch) of cable<sup>1)2)</sup> **2**  
 With 5 m (197 inch) of cable<sup>1)2)</sup> **3**

##### Wetted seals

FKM **0**  
 FFKM [for process temperatures above -20 °C (-4 °F)] **1**

##### Probe material

316L stainless steel with PPS probe body **0**  
 316L stainless steel with PVDF probe body **1**

##### Approvals

Dust Ignition Proof:CE, RCM, ATEX II 1/2 D T100 °C **C**  
 Flameproof Enclosure with IS Probe: **D**  
 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: **E**  
 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: **F**  
 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 **G**  
 General Purpose (CSA, FM) **H**  
 General Purpose (CE, RCM) **J**  
 General Purpose (CSA, FM, CE, RCM) with WHG approval **K**

##### Enclosure and lid

Aluminum epoxy coated  
 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**

<sup>1)</sup> Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection.

<sup>2)</sup> Available with Approval options F, G, and H.

Selection and ordering data	Order code	Article No.
<b>Further designs</b>		
Please add <b>"-Z"</b> to Article No. and specify Order code(s).		
Total insertion length: enter the total insertion length in plain text description	<b>Y01</b>	
Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	<b>Y15</b>	
Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000	<b>C11</b>	
Material inspection Certificate Type 3.1 per EN 10204	<b>C12</b>	
SIL/IEC 61508 Declaration of Conformity [SIL 2 (overspill)]	<b>C20</b>	
INMETRO <sup>1)</sup>	<b>E34</b>	
<b>Operating Instructions</b>		
All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>		
<b>Accessories</b>	See page <b>4/41</b>	
1) Available only with Approvals options C, D, E.		
		<b>7ML5631-</b>
		<b>switch, cable design</b>
		Detects level and interface in liquids, solids, slurries, and foam. Cable extension options to 30 m (98.43 ft), adaptable sensitivity, with the ability to tune out build-up on probe.
		Click on the Article No. for the online configuration in the PIA Life Cycle Portal.
		<b>Process connection</b>
		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.)

## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS200 - Standard

#### Selection and ordering data

#### Article No.

#### Order code

##### Pointek CLS200 RF Capacitance point level switch, cable design

Detects level and interface in liquids, solids, slurries, and foam. Cable extension options to 30 m (98.43 ft), adaptable sensitivity, with the ability to tune out build-up on probe.

##### Probe length

(length from flange face)  
(threaded lengths include process thread)

Note: No Y01 needed in Order code for standard lengths

Extended cable, 3 000 mm (118.11 inch), length can be determined by customer on assembly<sup>1)</sup>

Extended cable, 6 000 mm (236.22 inch), length can be determined by customer on assembly<sup>1)</sup>

Add Order code Y01 and plain text: "Insertion length ... mm"

Extended cable, 500 ... 5 000 mm (19.69 ... 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 ... 787.4 inch)

Extended cable, 20 001 ... 25 000 mm (787.44 ... 984.25 inch)

Extended cable, 25 001 ... 30 000 mm (984.29 ... 1 181.1 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<sup>2)</sup>

With 5 m (197 inch) of cable<sup>2)</sup>

##### Wetted seals

FKM and PTFE

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

##### Probe material

FEP jacketed cable with PPS probe body

FEP jacketed cable 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 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

Article No.	Order code
7ML5631-	
0	
A	
B	
C	
D	
E	
F	
G	
H	
0	
1	
2	
3	
0	
1	
0	
1	
C	
D	
E	
F	
G	
H	
J	
K	
A	
B	
C	
D	

#### 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

INMETRO<sup>1)</sup>

E34

#### 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 4/41

<sup>1)</sup> Available only with Approvals options C, D, E.

Selection and ordering data	Article No.	Article No.
<p><b>Pointek CLS200 RF Capacitance point level switch, sanitary rod design</b></p> <p>Detects level and interface in liquids, solids, slurries, and foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe.</p> <p>↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>	7ML5632- - - - - - 0	<p><b>Pointek CLS200 RF Capacitance point level switch, sanitary rod design</b></p> <p>Detects level and interface in liquids, solids, slurries, and foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe.</p>
<p><b>Process connection</b></p> <p>Sanitary 316L stainless steel</p> <p>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)</p>	8 A 8 B 8 C 8 D 8 E	<p><b>Approvals</b></p> <p>Dust Ignition Proof: CE, RCM, ATEX II ½ D T100 °C</p> <p>Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1 G EEx d[ia] IIC T6 ... T4, ATEX II ½ D T100 °C</p> <p>Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1 G EEx d[ia] IIC T6 ... T4, ATEX II ½ D T100 °C</p> <p>Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II ½ G EEx d[ia] IIC T6 ... T4, ATEX II ½ D T100 °C</p> <p>Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G, CSA/FM Class III T4</p> <p>General Purpose (CSA, FM) General Purpose (CE, RCM) General Purpose (CSA, FM, CE, RCM) with WHG approval</p>
<p><b>Probe length</b></p> <p>(length from process connection face)</p> <p>Note: No Y01 needed in Order code for standard lengths</p> <p>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)</p>	A B C D E F G H J K L	<p><b>Enclosure and lid</b></p> <p><u>Aluminum epoxy coated</u> 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</p>
<p>Add Order code Y01 and plain text: "Insertion length ... mm"</p> <p>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)</p>	M N P Q R S T	<p><b>Further designs</b></p> <p>Please add "-Z" to Article No. and specify Order code(s).</p> <p>Total insertion length: enter the total insertion length in plain text description</p> <p>Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text</p> <p>Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000</p> <p>Material inspection Certificate Type 3.1 per EN 10204</p> <p>SIL/IEC 61508 Declaration of Conformity [SIL 2 (overspill)]</p> <p>INMETRO<sup>1)</sup></p>
<p><b>Thermal isolator</b></p> <p>Thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]</p>	0 1	<p>Order code</p> <p>Y01</p> <p>Y15</p> <p>C11</p> <p>C12</p> <p>C20</p> <p>E34</p>
<p><b>Remote mount electronics and mounting bracket</b></p> <p>Remote mount electronics and mounting bracket Remote mount electronics with 5 m (197 inch) of cable</p>	2 3	<p><b>Operating Instructions</b></p> <p>All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a></p>
<p><b>Wetted seals</b></p> <p>FKM FFKM [for process temperatures above -20 °C (-4 °F)]</p>	0 1	<p><b>Accessories</b></p> <p>See page 4/41</p>
<p><b>Probe material</b></p> <p>316L stainless steel with PPS probe body 316L stainless steel with PVDF probe body</p>	0 1	<p><sup>1)</sup> Available only with Approvals options C, D, E.</p>

## Level measurement

### Point level measurement

### RF Capacitance switches

#### Pointek CLS200 - Standard

#### Selection and ordering data

#### Article No.

##### Pointek CLS200 RF Capacitance point level switch, sliding coupling design

Detects level and interface in liquids, solids, slurries, and foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on 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]

##### 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)

##### 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<sup>1)</sup>

With 5 m (197 inch) of cable<sup>1)</sup>

##### Wetted seals

FKM and PTFE

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

##### Probe material

316L stainless steel with PPS probe body

316L stainless steel with PVDF probe body

7ML5633-

0 A

0 B

0 C

0 D

1 A

1 B

1 D

3 A

3 B

3 D

C

D

E

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#### Article No.

##### Pointek CLS200 RF Capacitance point level switch, sliding coupling design

Detects level and interface in liquids, solids, slurries, and foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe.

##### 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

<sup>1)</sup> Available with Approvals options F ... H.

##### 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)]

INMETRO<sup>1)</sup>

##### Operating Instructions

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/processinstrumentation/documentation>

##### Accessories

<sup>1)</sup> Available only with Approval options C, D, E.

7ML5633-

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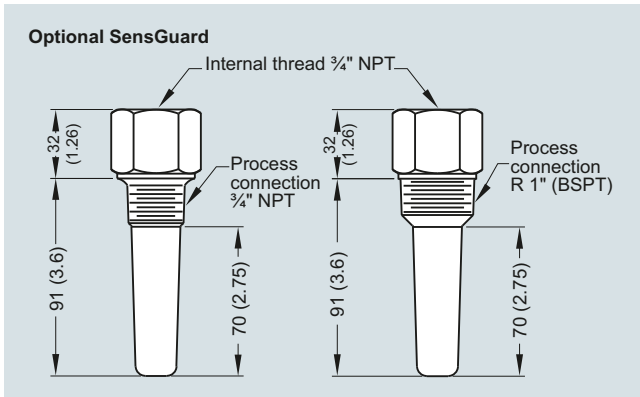
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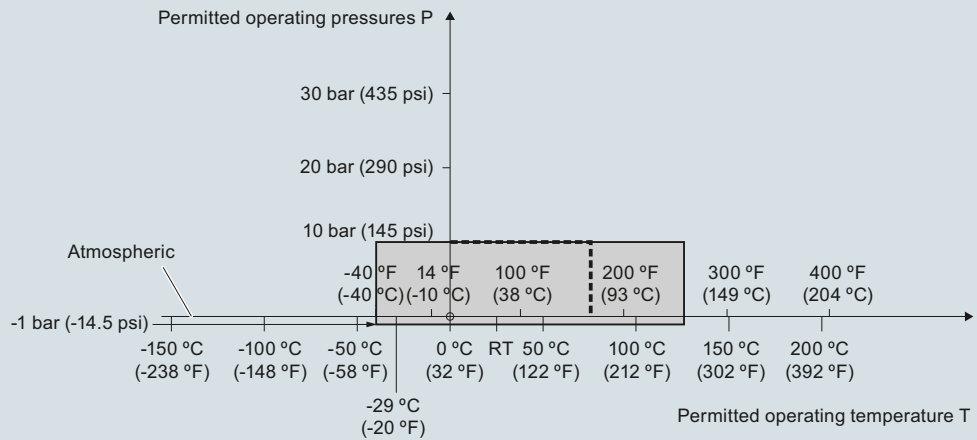
**Options**



Optional SensGuard, dimensions in mm (inch)

**Characteristic curves**

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



----- Example:  
Permitted operating pressure = 10 bar (145 psi) at 75 °C

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

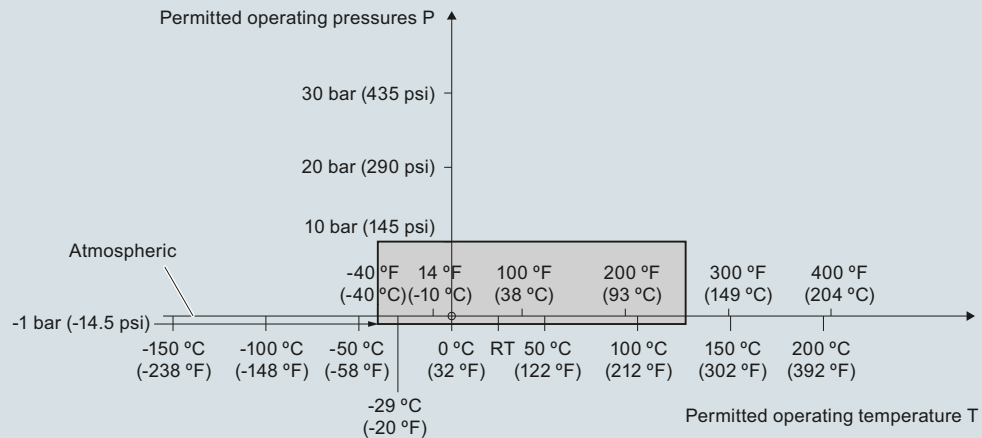
## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS200 - Standard

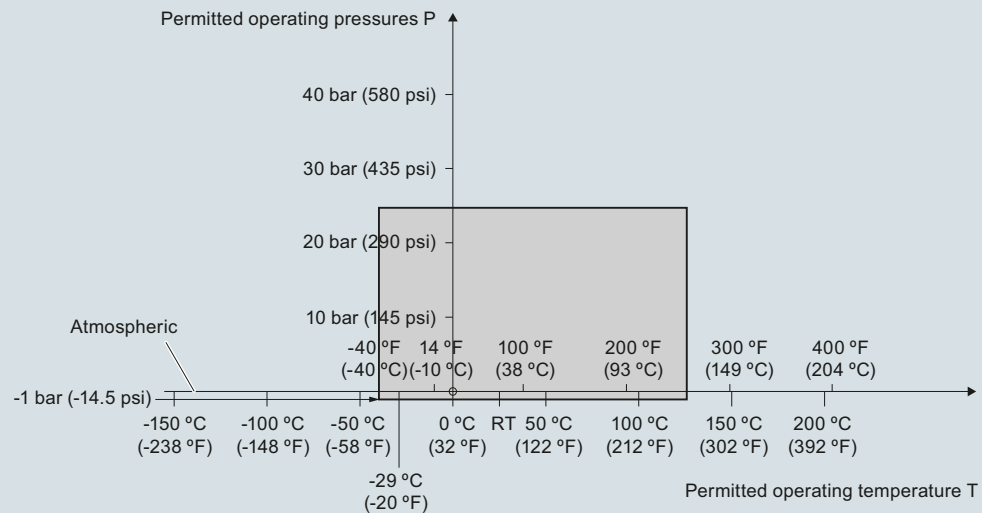
#### Characteristic curves (continued)

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



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

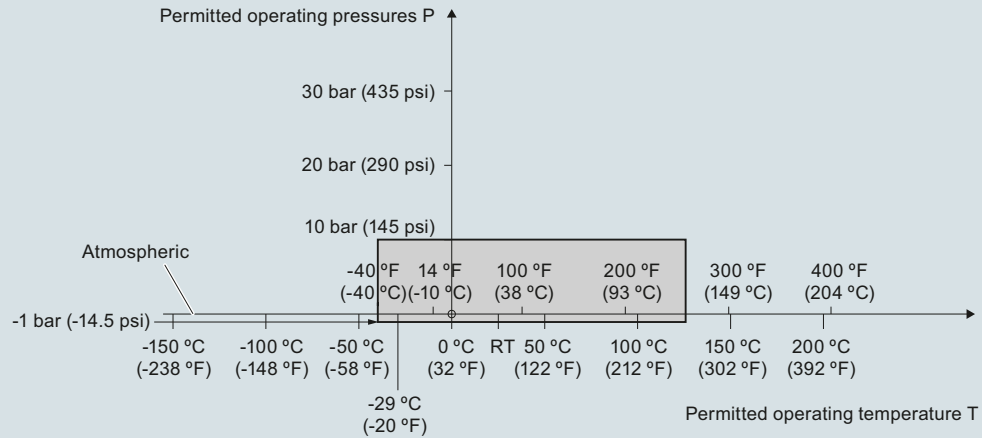
**Pressure/temperature curve**  
CLS200 compact and extended rod  
Threaded process connections  
(7ML5630 and 7ML5640)



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

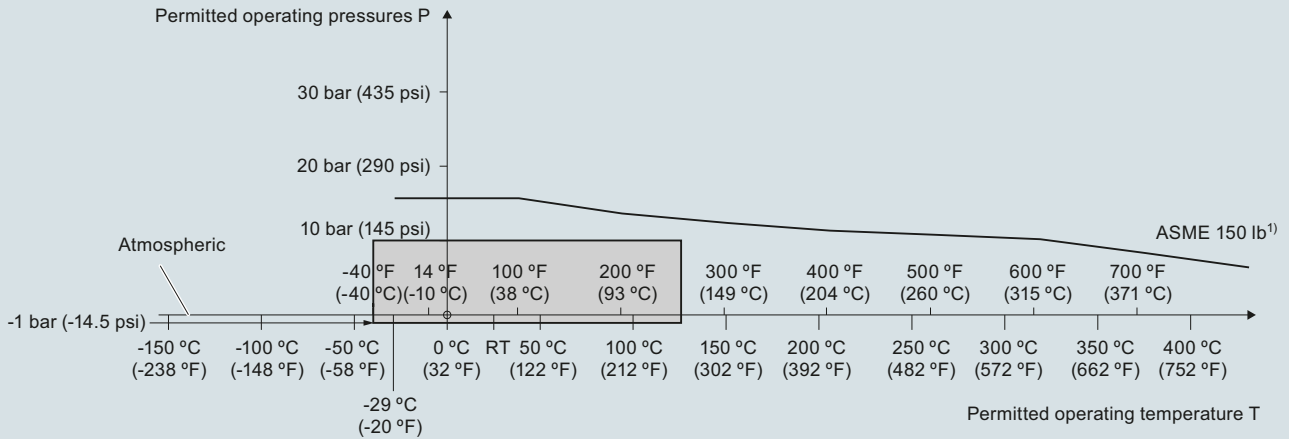
**Characteristic curves (continued)**

**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)

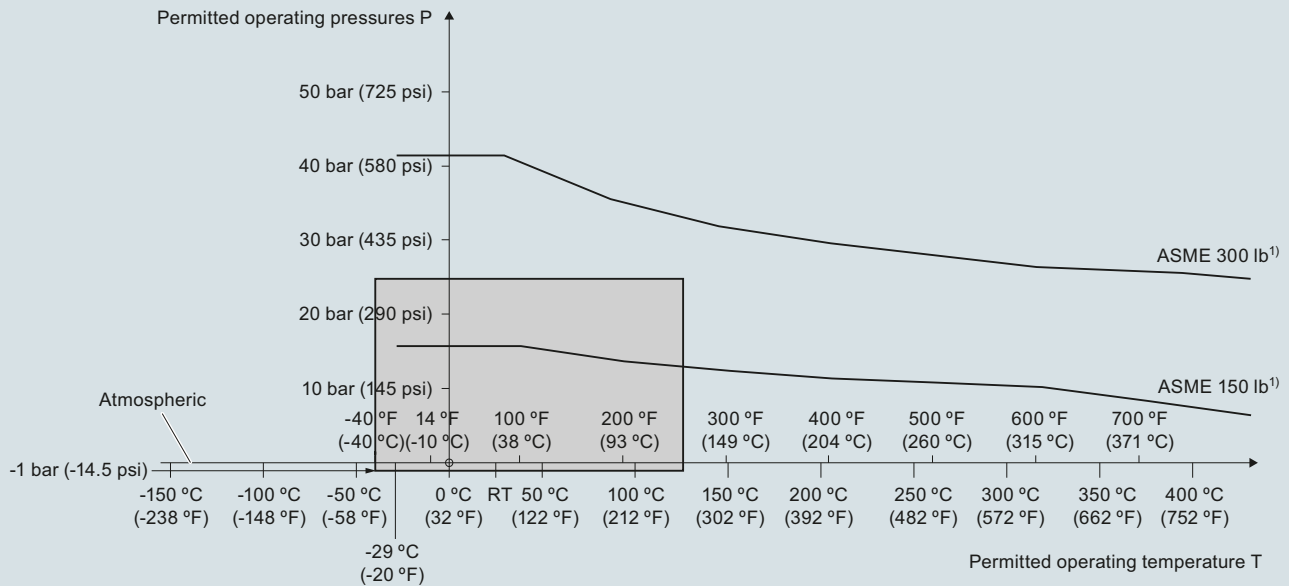
## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS200 - Standard

#### Characteristic curves (continued)

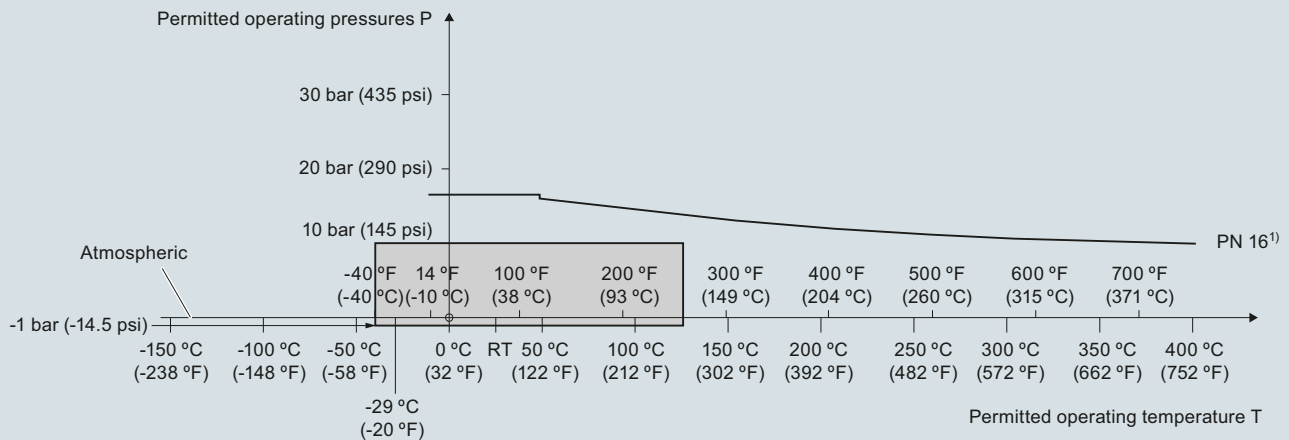
**Pressure/temperature curve**  
CLS200 compact and extended rod  
ASME flanged process connections  
(7ML5630 and 7ML5640)



<sup>1)</sup> The curve denotes the minimum allowable flange class for the shaded area below.

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

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

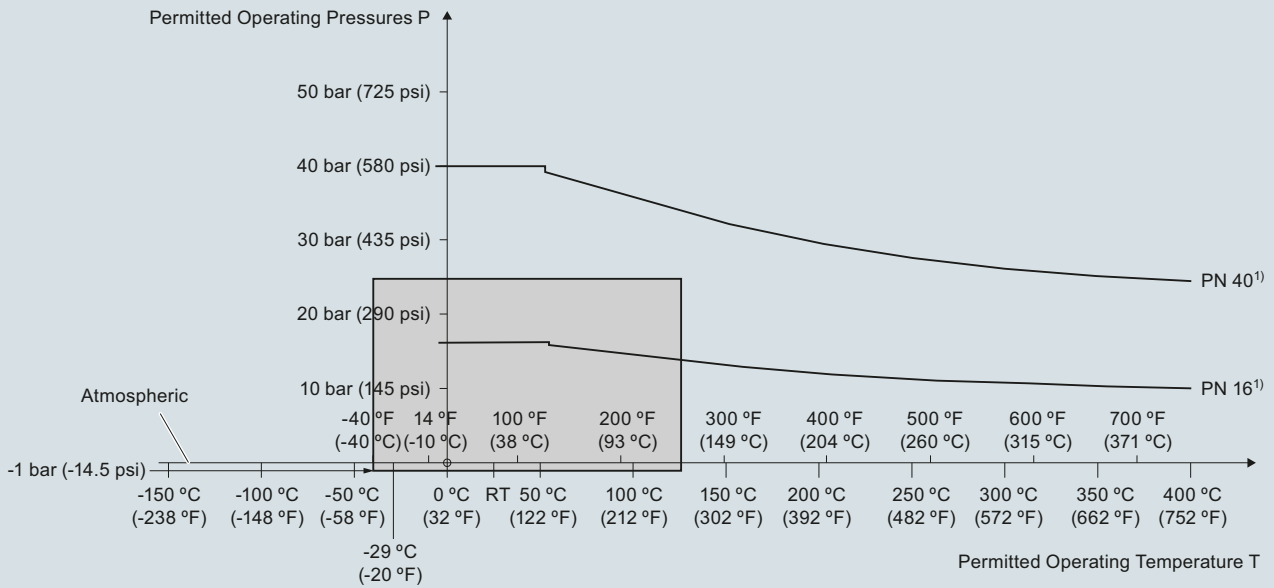


<sup>1)</sup> The curve denotes the minimum allowable flange class for the shaded area below.

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

**Characteristic curves** (continued)

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



<sup>1)</sup> The curve denotes the minimum allowable flange class for the shaded area below.

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

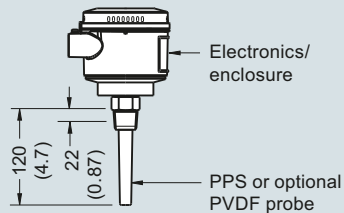
## Level measurement

Point level measurement  
RF Capacitance switches

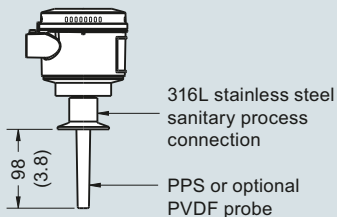
### Pointek CLS200 - Standard

#### Dimensional drawings

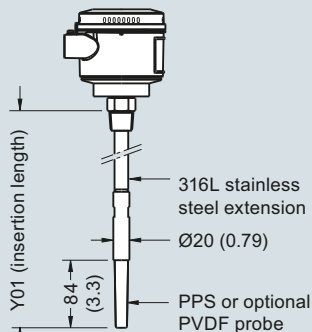
**Compact version**  
Threaded  
(7ML5630 and 7ML5640)



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

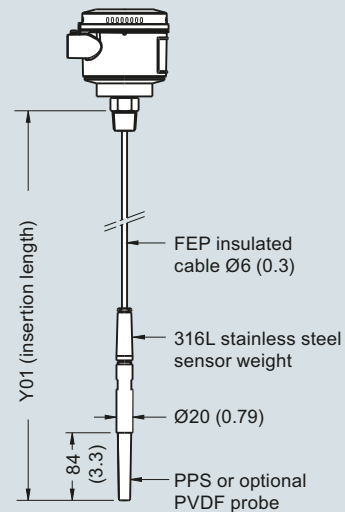


**Extended rod version**  
Threaded  
(7ML5630 and 7ML5640)

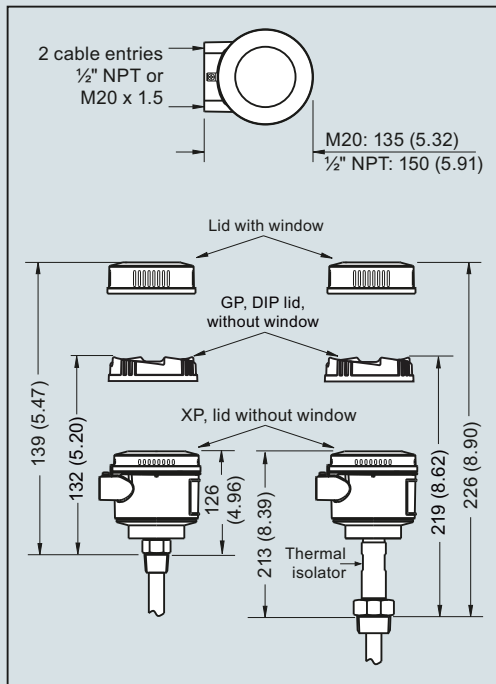


Min. insertion length = 200 (7.87)  
Max. insertion length = 5 500 (216)

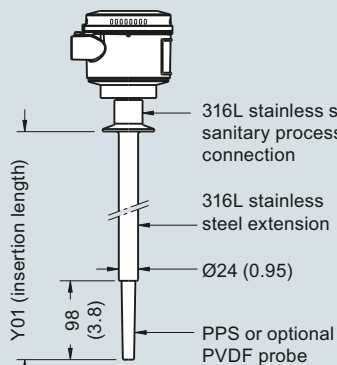
**Extended cable version**  
Threaded  
(7ML5631 and 7ML5641)



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.

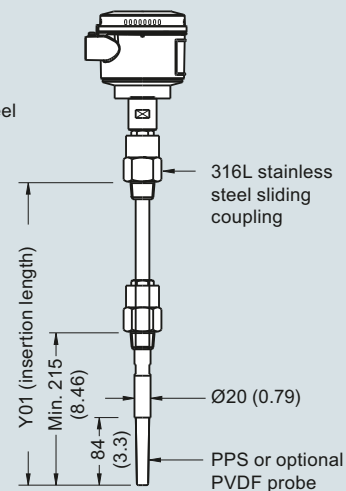


**Sanitary extended version**  
Sanitary fitting  
(7ML5632 and 7ML5642)



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

**Sliding coupling version**  
Threaded  
(7ML5633 and 7ML5643)

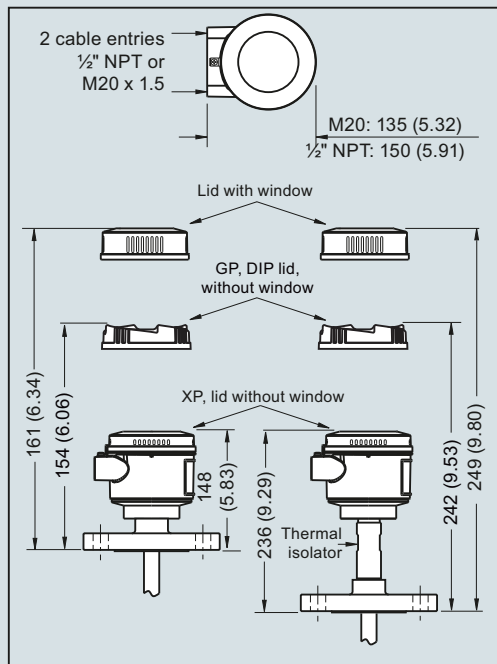
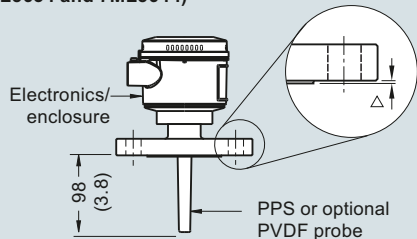


Min. insertion length = 350 (13.82)  
Max. insertion length = 5 500 (216)

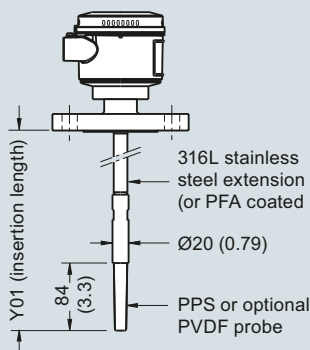
Pointek CLS200 threaded/sanitary process connection, dimensions in mm (inch)

**Dimensional drawings** (continued)

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

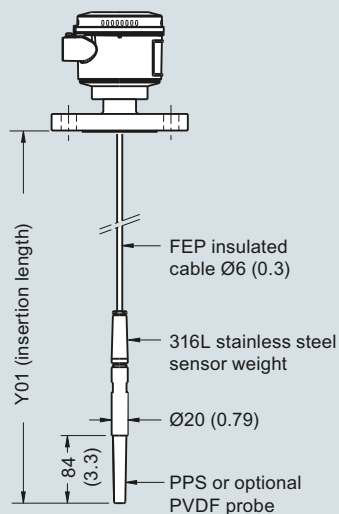


**Extended rod version**  
Welded Flange (7ML5630 and 7ML5640)  
Welded Flange, PFA coated  
(7ML5634 and 7ML5644)



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)

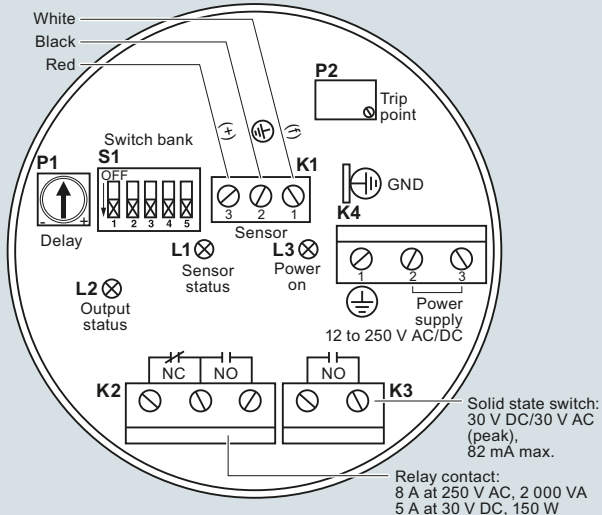
## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS200 - Standard

#### Circuit diagrams

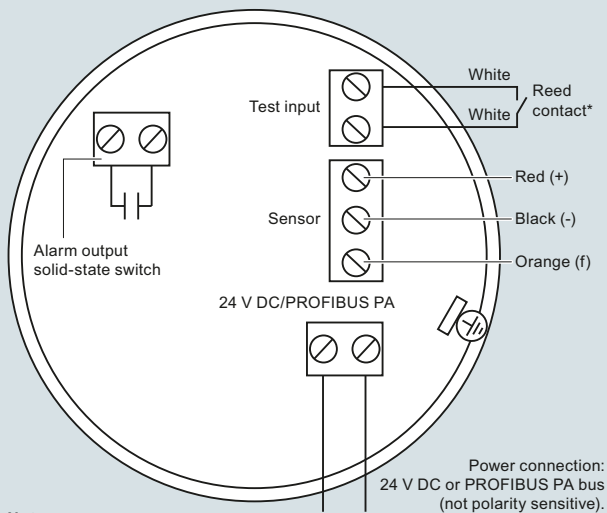
##### Wiring: Pointek CLS200 standard



##### 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.



Pointek CLS200 connections



## 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.

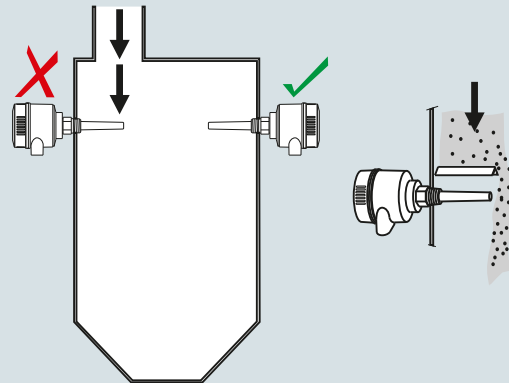
When connected to the PROFIBUS network, advanced diagnostics and set up using SIMATIC PDM are possible.

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

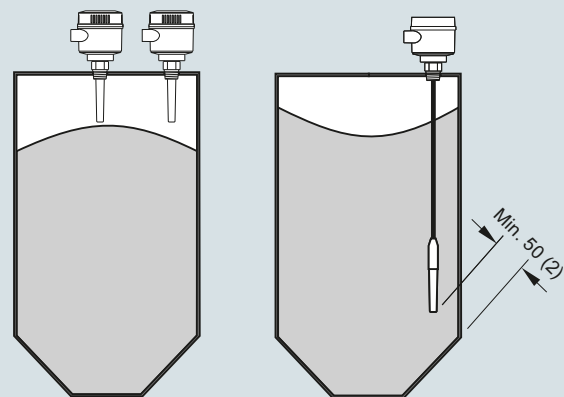
### Installation



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)

# Level measurement

## Point level measurement

### RF Capacitance switches

#### Pointek CLS200 - Digital

#### Technical specifications

<b>Mode of operation</b>	
Measuring principle	Inverse frequency shift capacitive level detection
<b>Input</b>	
Measured variable	Change in pF
<b>Output</b>	
Output signal	
• 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 (ON and/or OFF)	Programmable by user (0 ... 100 s)
• Fail-safe mode	Min. or max.
• Connection	Removable terminal block
<b>Rated operating conditions<sup>1)</sup></b>	
Installation conditions	
• Location	Indoor/outdoor
Ambient conditions	
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) <sup>2)</sup>
• Storage temperature	-40 ... +85 °C (-40 ... +185 °F)
• Installation category	II
• Pollution degree	4
Medium conditions	Liquids, bulk solids, slurries, and interfaces
• Relative dielectric constant $\epsilon_r$	Min. 1.5
• Process temperature	
- Without thermal isolator	-40 ... +85 °C (-40 ... +185 °F) <sup>2)</sup>
- 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) <sup>3)</sup>	-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)
<b>Design</b>	
Material	
• Enclosure	Epoxy-coated aluminum with gasket
• Optional thermal isolator	316L stainless steel
Connection	Removable terminal block, max. 2.5 mm <sup>2</sup>
Degree of protection	IP65/Type 4/NEMA 4 (optional IP68)
Cable inlet	2 x M20 x 1.5 thread (option: 2 x 1/2" 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.

<b>Power supply</b>	
Bus voltage	Standard: 12 ... 30 V DC Intrinsically Safe: 12 ... 24 V DC
Current consumption	12.5 mA
<b>Certificates and approvals</b>	
General Purpose	CSA, FM, CE, RCM
Dust Ignition Proof	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
Flameproof Enclosure with IS Probe	ATEX II 1/2 G EEx d[ia] IIC T6 ... T4 ATEX II 1/2 D T100 °C
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
Intrinsically Safe <sup>4)</sup>	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
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
Non-Sparking	ATEX II 3 G Ex nA II T6 ... T4 ATEX II 2 D IP6X T100 °C
Marine	Lloyds Register of Shipping, Categories ENV1, ENV2, and ENV5
Others	Pattern Approval (China)
<b>Communication</b>	
	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

<sup>1)</sup> When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves on page 5/36.

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

<sup>3)</sup> Pressure rating of process seal is temperature dependent. See Pressure/Temperature curves on page 5/34.

<sup>4)</sup> Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection

**Technical specifications** (continued)

<b>Design: Probe</b>				
	<b>Rod version</b>	<b>Sanitary version</b>	<b>Cable version</b>	<b>Sliding Coupling version</b>
Max. length	5 500 mm (216.53 inch)	5 500 mm (216.53 inch)	<ul style="list-style-type: none"> <li>• 30 000 mm (1 181.1 inch) liquids and slurries</li> <li>• 5 000 mm (196.85 inch) solids (under loads)</li> </ul>	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 <sup>1)</sup>	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) <sup>2)</sup>	FKM (optional FFKM) <sup>2)</sup>	FKM (optional FFKM) <sup>2)</sup>	FKM (optional FFKM) <sup>2)</sup>
Thermal isolator <sup>3)</sup>	Optional	Optional	Optional	Optional
Extension	User selected length	User selected length	Cable extension	User selected length

<sup>1)</sup> PFA coating (7ML5634 and 7ML5644) has 120 micron thickness

<sup>2)</sup> For caustic materials, consult a local sales person for alternative O-rings. For more information, please visit <http://www.usa.siemens.com/level>.

<sup>3)</sup> 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.

#### Article No.

##### Pointek CLS200 RF Capacitance point level switch, digital, rod design

Detects level and interface in liquids, solids, slurries, and foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe. With display and digital communications.

➤ 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

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)

Article No.
7ML5640-0
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

##### Pointek CLS200 RF Capacitance point level switch, digital, rod design

Detects level and interface in liquids, solids, slurries, and foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe. With display and digital communications.

Add Order code Y01 and plain text:

"Insertion length ... mm"

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<sup>2)</sup>

With 5 m (197 inch) of cable<sup>2)</sup>

##### 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 ½ D T100 °C

Intrinsically Safe:<sup>1)</sup>

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

ATEX II ½ D IP6X T100 °C

Flameproof Enclosure with IS Probe:

CE, RCM, ATEX II ½ G EEx d[ia] IIC T6 ... T4,

ATEX II ½ 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:<sup>1)</sup>

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

Article No.
7ML5640-0
M
N
P
Q
R
S
0
1
2
3
0
1
0
1
B
C
D
E
F
G
H
J
K
L
A
B
C
D

<sup>1)</sup> Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection.

<sup>2)</sup> Available with Approvals options F, G, H, J, and K.

Selection and ordering data	Order code	Article No.
<b>Further designs</b>		
Please add <b>"-Z"</b> to Article No. and specify Order code(s).		
Total insertion length: enter the total insertion length in plain text description	<b>Y01</b>	
Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	<b>Y15</b>	
Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000	<b>C11</b>	
Material inspection certificate Type 3.1 per EN 10204	<b>C12</b>	
INMETRO <sup>1)</sup>	<b>E34</b>	
<b>Operating Instructions</b>		
All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>		
<b>Accessories</b>	See page 4/41	
1) Available only with Approvals options C and E.		
		<b>7ML5641-</b>
		<b>Pointek CLS200 RF Capacitance point level switch, digital, cable design</b>
		Detects level and interface in liquids, solids, slurries, and foam. Cable extension options to 30 m (98.43 ft), adaptable sensitivity, with the ability to tune out build-up on probe. With display and digital communications.
		➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.
		<b>Process connection</b>
		<b>Threaded, 316L stainless steel</b>
		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]
		<b>Welded flange, 316L stainless steel, raised face</b>
		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
		<b>Welded flange, 316L stainless steel, Type A flat faced</b>
		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.)
		<b>0 A</b>
		<b>0 B</b>
		<b>0 C</b>
		<b>0 D</b>
		<b>1 A</b>
		<b>1 B</b>
		<b>1 D</b>
		<b>3 A</b>
		<b>3 B</b>
		<b>3 D</b>
		<b>5 A</b>
		<b>5 B</b>
		<b>5 C</b>
		<b>5 D</b>
		<b>5 E</b>
		<b>5 F</b>
		<b>5 G</b>
		<b>5 H</b>
		<b>5 J</b>
		<b>5 K</b>
		<b>5 L</b>
		<b>5 M</b>
		<b>5 N</b>
		<b>5 P</b>
		<b>5 Q</b>
		<b>6 A</b>
		<b>6 B</b>
		<b>6 C</b>
		<b>6 D</b>
		<b>6 E</b>
		<b>6 F</b>
		<b>6 G</b>
		<b>6 H</b>
		<b>6 J</b>
		<b>6 K</b>



Selection and ordering data	Article No.	Article No.														
<p><b>Pointek CLS200 RF Capacitance point level switch, digital, sanitary rod design.</b></p> <p>Detects level and interface in liquids, solids, slurries, and foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe. With display and digital communications.</p> <p>➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>	7ML5642- - - - - - 0	7ML5642- - - - - - 0														
<p><b>Process connection</b></p> <p><u>Sanitary 316L stainless steel</u></p> <p>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.)</p>	8 A 8 B 8 C 8 D 8 E	F G H J K L														
<p><b>Probe length</b></p> <p>(length from process connection face)</p> <p><u>Note: No Y01 needed in Order code for standard lengths</u></p> <p>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)</p> <p><u>Add Order code Y01 and plain text:</u> <u>Insertion length ... mm</u></p> <p>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)</p>	A B C D E F G H J K L M N P Q R S T															
<p><b>Thermal isolator</b></p> <p>Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]</p>	0 1															
<p><b>Remote mount electronics and mounting bracket</b></p> <p>With 2 m (79 inch) of cable<sup>2)</sup> With 5 m (197 inch) of cable<sup>2)</sup></p>	2 3															
<p><b>Wetted seals</b></p> <p>FKM FFKM [for process temperatures above -20 °C (-4 °F)]</p>	0 1															
<p><b>Probe material</b></p> <p>316L stainless steel with PPS probe body 316L stainless steel with PVDF probe body</p>	0 1															
<p><b>Approvals</b></p> <p>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 ½ D T100 °C Intrinsically Safe:<sup>1)</sup> CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II ½ D IP6X T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II ½ G EEx d[ia] IIC T6 ... T4, ATEX II ½ D T100 °C</p>	B C D E															
<p><b>Pointek CLS200 RF Capacitance point level switch, digital, sanitary rod design.</b></p> <p>Detects level and interface in liquids, solids, slurries, and foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe. With display and digital communications.</p>		<p>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:<sup>1)</sup> 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)</p>														
		<p><b>Enclosure and lid</b></p> <p><u>Aluminum epoxy coated</u> 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</p>														
		<p>1) Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection. 2) Available with Approvals options F, G, H, J, and K.</p>														
		<table border="1"> <thead> <tr> <th>Further designs</th> <th>Order code</th> </tr> </thead> <tbody> <tr> <td>Please add "-Z" to Article No. and specify Order code(s).</td> <td></td> </tr> <tr> <td>Total insertion length: enter the total insertion length in plain text description</td> <td>Y01</td> </tr> <tr> <td>Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]; Measuring-point number/identification (max. 27 characters) specify in plain text</td> <td>Y15</td> </tr> <tr> <td>Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000</td> <td>C11</td> </tr> <tr> <td>Material inspection Certificate Type 3.1 per EN 10204</td> <td>C12</td> </tr> <tr> <td>INMETRO<sup>1)</sup></td> <td>E34</td> </tr> </tbody> </table>	Further designs	Order code	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	INMETRO <sup>1)</sup>	E34
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INMETRO <sup>1)</sup>	E34															
		<p><b>Operating Instructions</b></p> <p>All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a></p>														
		<p><b>Accessories</b></p> <p>See page 4/41</p>														
		<p>1) Available only with Approvals options C and E.</p>														

# Level measurement

## Point level measurement

### RF Capacitance switches

#### Pointek CLS200 - Digital

#### Selection and ordering data

#### Article No.

#### Article No.

##### Pointek CLS200 RF Capacitance point level switch, digital, sliding coupling design.

Detects level and interface in liquids, solids, slurries, and, foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe. With display and digital communications.

➤ 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] **0 A**
- 1" NPT [(Taper), ANSI/ASME B1.20.1] **0 B**
- 1¼" NPT [(Taper), ANSI/ASME B1.20.1] **0 C**
- 0 D
- 1½" NPT [(Taper), ANSI/ASME B1.20.1] **1 A**
- R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] **1 B**
- R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] **1 D**
- R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] **3 A**
- G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] **3 B**
- G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] **3 D**
- G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]

##### 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) **C**
- Extended rod, 500 mm (19.69 inch) **D**
- Extended rod, 750 mm (29.53 inch) **E**
- Extended rod, 1 000 mm (39.37 inch) **F**
- Extended rod, 1 250 mm (49.21 inch) **G**
- Extended rod, 1 350 mm (53.15 inch) **H**
- Extended rod, 1 500 mm (59.06 inch) **J**
- Extended rod, 1 750 mm (68.90 inch) **K**
- Extended rod, 2 000 mm (78.74 inch) **L**

Add Order code Y01 and plain text: "Insertion length ... mm"

- Extended rod, 350 ... 1 000 mm (13.82 ... 39.37 inch) **M**
- Extended rod, 1 001 ... 2 000 mm (39.41 ... 78.74 inch) **N**
- Extended rod, 2 001 ... 3 000 mm (78.78 ... 118.11 inch) **P**
- Extended rod, 3 001 ... 4 000 mm (118.15 ... 157.48 inch) **Q**
- Extended rod, 4 001 ... 5 000 mm (157.52 ... 196.85 inch) **R**
- Extended rod, 5 001 ... 5 500 mm (196.89 ... 216.53 inch) **S**

##### Thermal isolator

- Without thermal isolator **0**
- With thermal isolator [for process connection temperatures over 85 °C (185 °F)] **1**

##### Remote mount electronics and mounting bracket

- With 2 m (79 inch) of cable<sup>2)</sup> **2**
- With 5 m (197 inch) of cable<sup>2)</sup> **3**

##### Wetted seals

- FKM and PTFE **0**
- FFKM and PTFE [for process temperatures above -20 °C (-4 °F)] **1**

##### Probe material

- 316L stainless steel with PPS probe body **0**
- 316L stainless steel with PVDF probe body **1**

##### Approvals

- Non-Sparking: **B**  
CE, RCM, ATEX II 3 G Ex nA II T6 ... T4, ATEX II 2 D IP6X T100 °C
- Dust Ignition Proof: **C**  
CE, RCM, ATEX II 1/2 D T100 °C
- Intrinsically Safe:<sup>1)</sup> **D**  
CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II 1/2 D IP6X T100 °C

##### Pointek CLS200 RF Capacitance point level switch, digital, sliding coupling design.

Detects level and interface in liquids, solids, slurries, and, foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe. With display and digital communications.

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:<sup>1)</sup>  
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 **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**

- 1) Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection.
- 2) Available with Approvals options F, G, H, J, and K.

##### 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**

INMETRO<sup>1)</sup> **E34**

##### Operating Instructions

All literature is available to download for free, in a range of languages, at

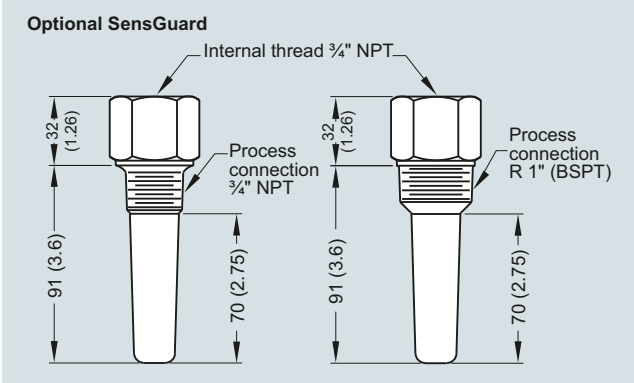
<http://www.siemens.com/processinstrumentation/documentation>

##### Accessories

See page 4/41

- 1) Available only with Approvals options C and E.



Selection and ordering data	Article No.	Options
<p><b>Accessories</b></p> <p>SensGuard, 3/4" NPT (PPS). Only available for CLS200 with 3/4" NPT thread.</p> <p>SensGuard, R 1" (BSPT) (PPS). Only available for CLS200 with 3/4" NPT thread.</p> <p>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)</p> <p><b>General Purpose</b></p> <p>1/2" NPT General Purpose Cable Entry IP68/IP69K NEMA 6, -40 ... +80 °C (-40 ... +176 °F), Dust Ignition Proof, cable size 6 ... 12 mm (0.236 ... 0.472 inch)</p> <p>M20 x 1.5 General Purpose Cable Entry IP68/IP69K NEMA 6, -40 ... +80 °C (-40 ... +176 °F), Dust Ignition Proof, cable size 7 ... 12 mm (0.275 ... 0.472 inch)</p> <p><b>Hazardous Locations</b></p> <p>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)</p> <p>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)</p> <p><b>Blind threaded flanges are available.</b> Customers interested in a custom designed device should consult a local sales person. For more information, please visit <a href="http://www.usa.siemens.com/level">http://www.usa.siemens.com/level</a>.</p> <p><b>Pointek Specials</b></p>	<p><b>7ML1830-1DL</b></p> <p><b>7ML1830-1DM</b></p> <p><b>7ML1930-1AQ</b></p> <p><b>7ML1830-1JA</b></p> <p><b>7ML1830-1JC</b></p> <p><b>7ML1830-1JB</b></p> <p><b>7ML1830-1JD</b></p>	<p><b>Optional SensGuard</b></p>  <p>Optional SensGuard, dimensions in mm (inch)</p>
	See page <b>4/70</b>	

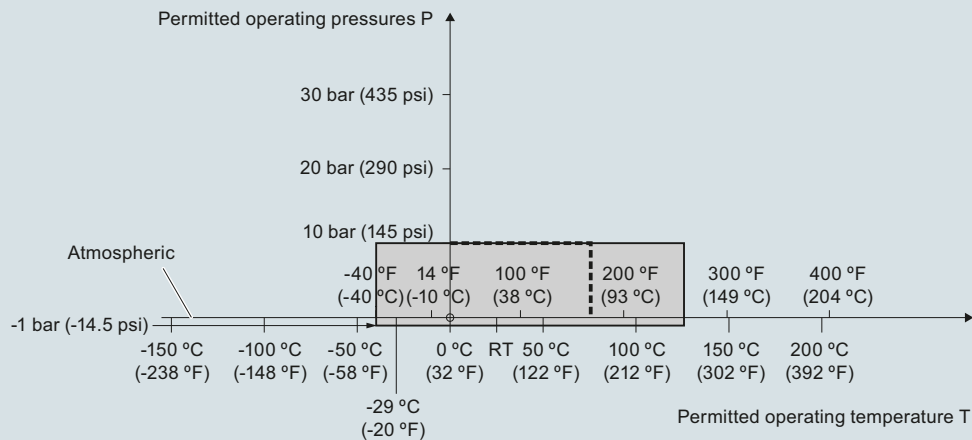
## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS200 - Digital

#### Characteristic curves

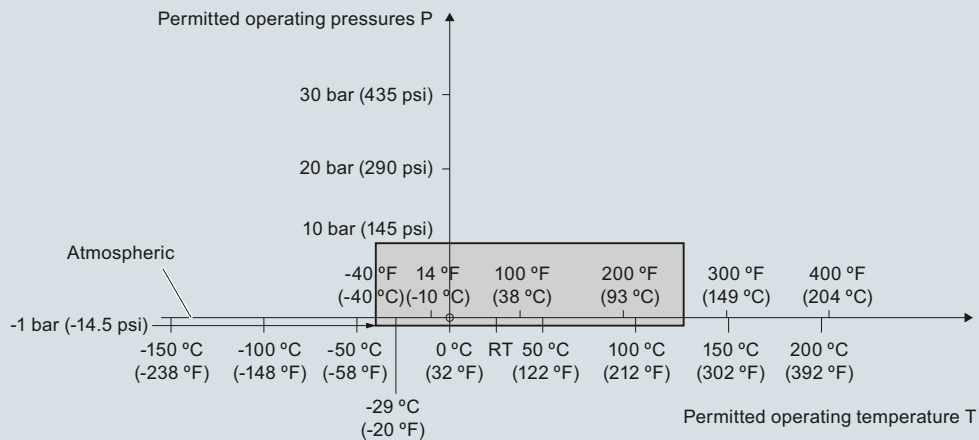
**Pressure/temperature curve**  
CLS200 sliding coupling  
threaded process connections  
(7ML5633 and 7ML5643)



----- Example:  
Permitted operating pressure = 10 bar (145 psi) at 75 °C

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

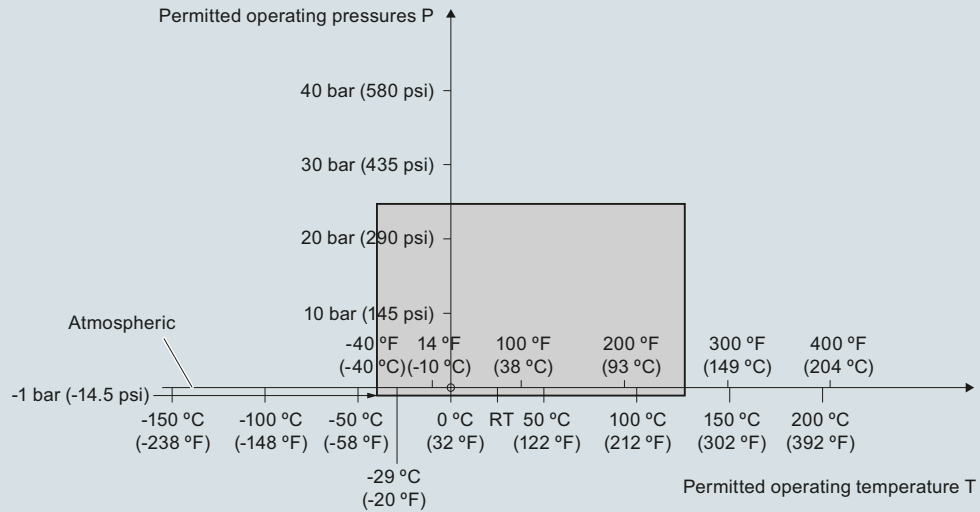
**Pressure/temperature curve**  
CLS200 cable  
Threaded process connections  
(7ML5631 and 7ML5641)



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

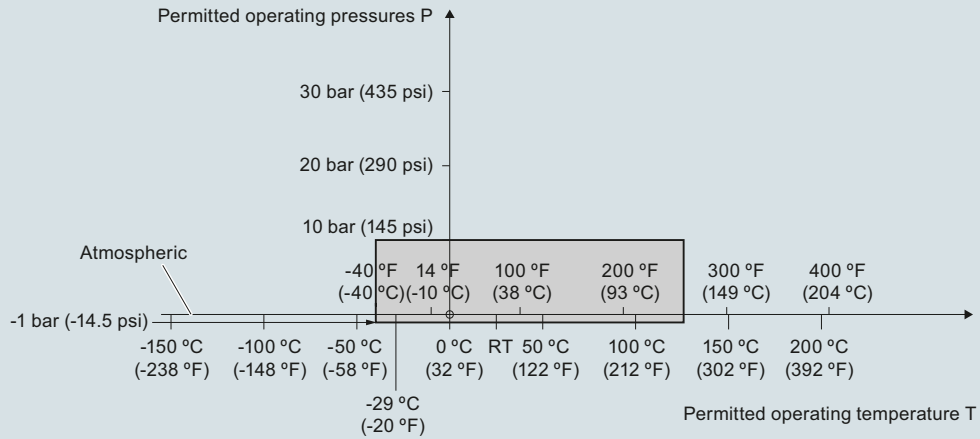
**Characteristic curves (continued)**

**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)

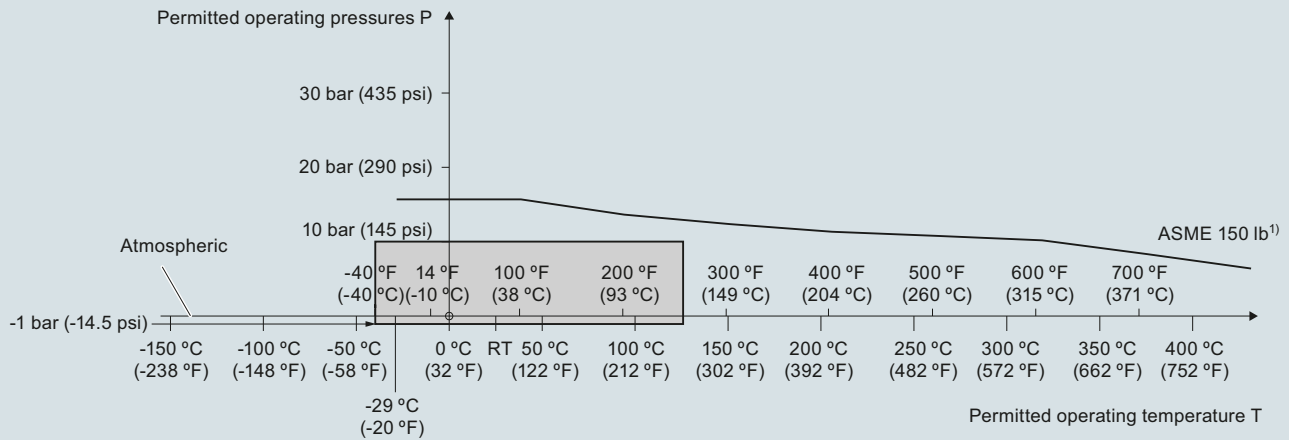
## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS200 - Digital

#### Characteristic curves (continued)

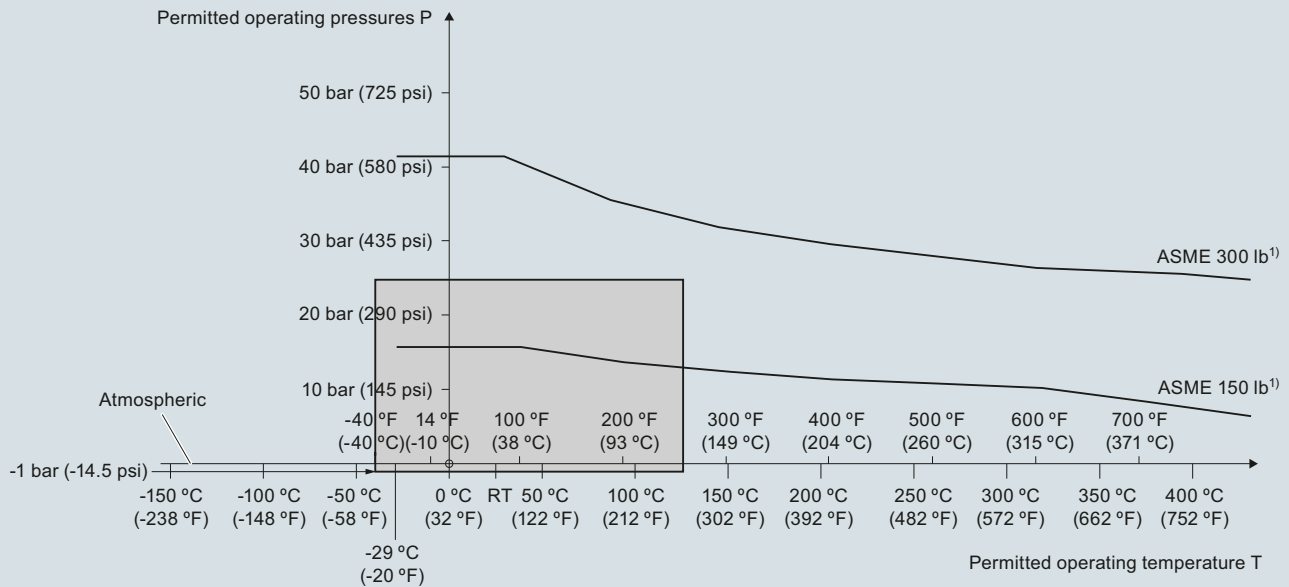
**Pressure/temperature curve**  
CLS200, cable  
ASME flanged process connections  
(7ML5631 and 7ML5641)



<sup>1)</sup> 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)

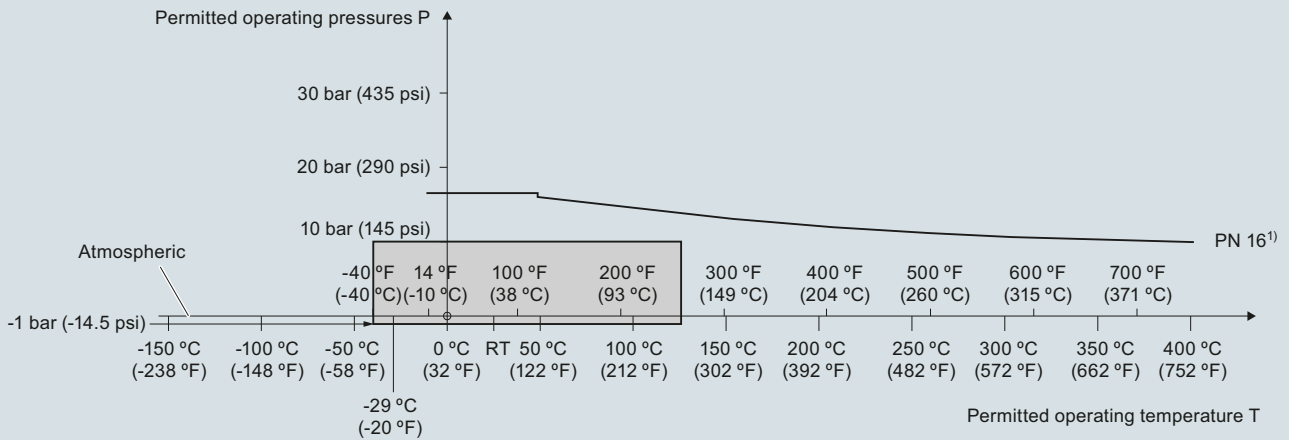


<sup>1)</sup> The curve denotes the minimum allowable flange class for the shaded area below.

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

**Characteristic curves (continued)**

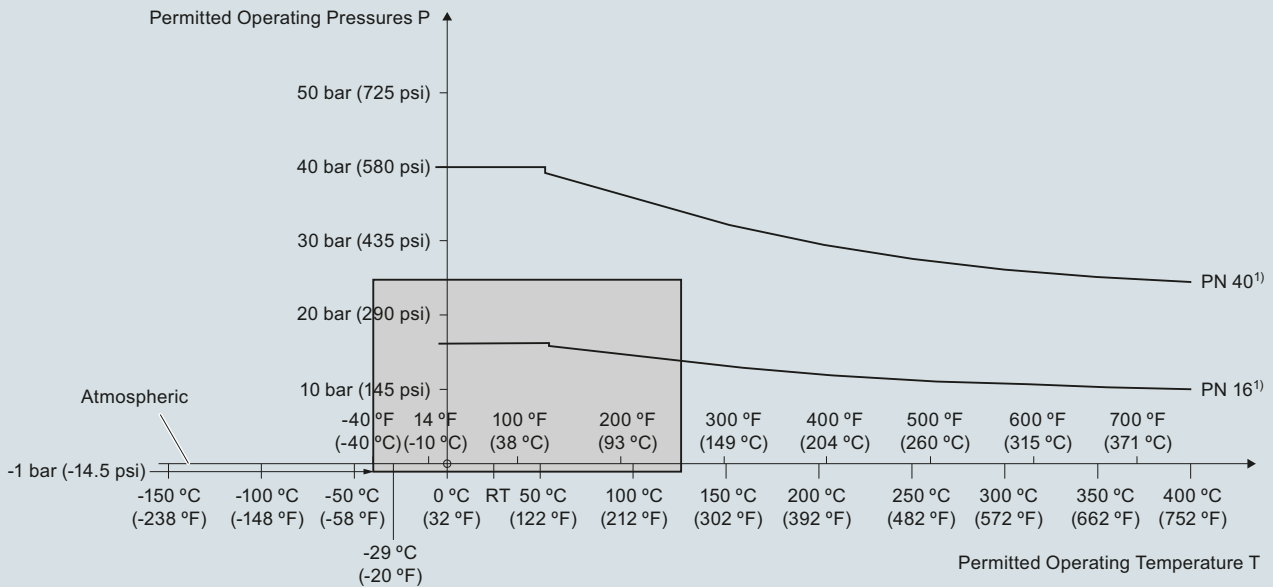
**Pressure/temperature curve**  
CLS200 cable  
EN flanged process connections  
(7ML5631 and 7ML5641)



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)

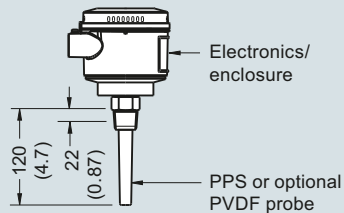
## Level measurement

Point level measurement  
RF Capacitance switches

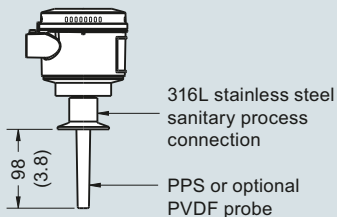
### Pointek CLS200 - Digital

#### Dimensional drawings

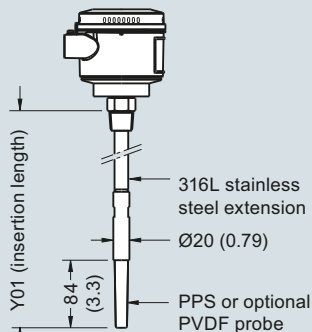
##### Compact version Threaded (7ML5630 and 7ML5640)



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

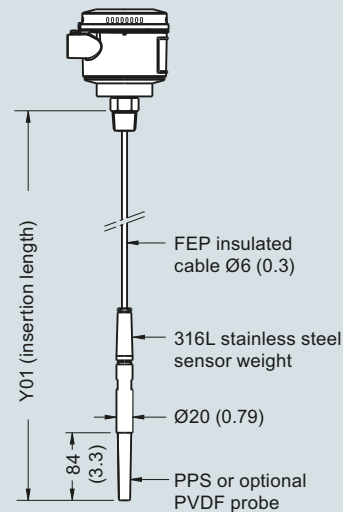


##### Extended rod version Threaded (7ML5630 and 7ML5640)

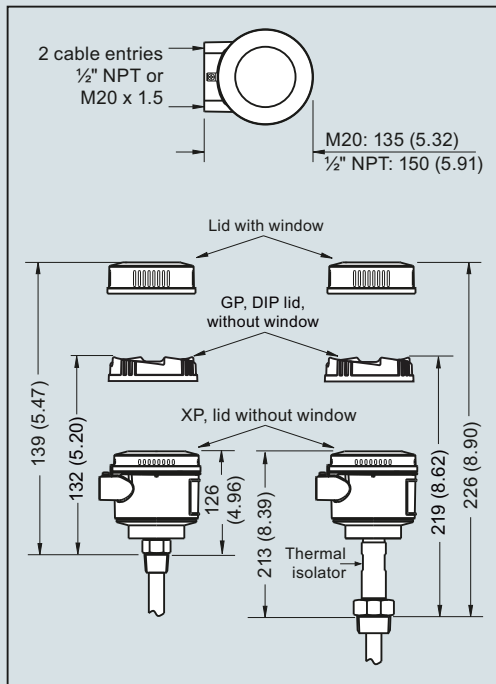


Min. insertion length = 200 (7.87)  
Max. insertion length = 5 500 (216)

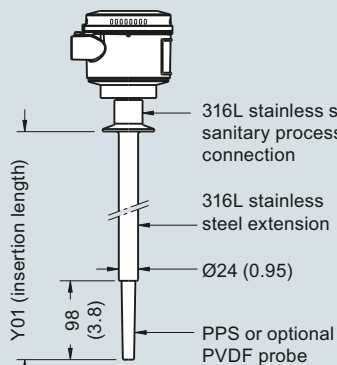
##### Extended cable version Threaded (7ML5631 and 7ML5641)



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.

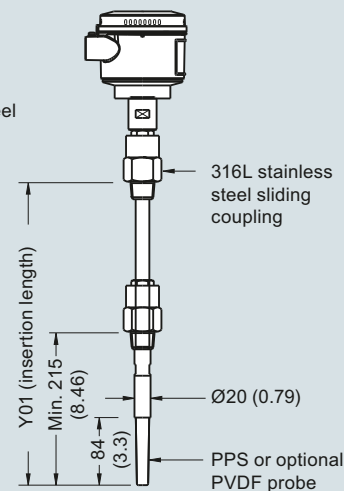


##### Sanitary extended version Sanitary fitting (7ML5632 and 7ML5642)



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

##### Sliding coupling version Threaded (7ML5633 and 7ML5643)

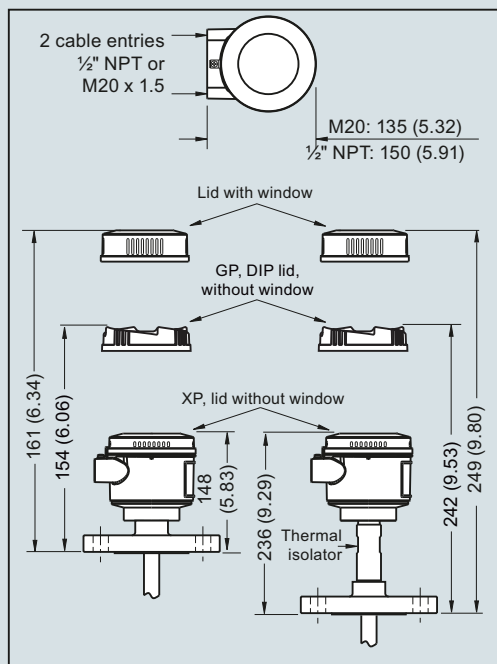
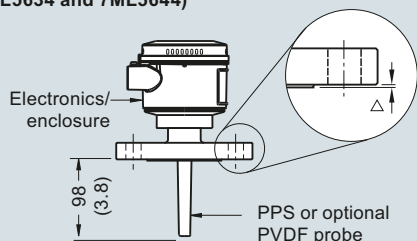


Min. insertion length = 350 (13.82)  
Max. insertion length = 5 500 (216)

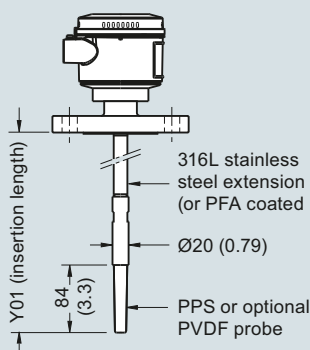
Pointek CLS200 threaded/sanitary process connections, dimensions in mm (inch)

**Dimensional drawings** (continued)

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

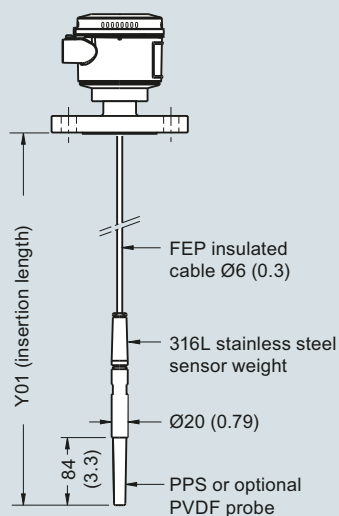


**Extended rod version**  
Welded Flange (7ML5630 and 7ML5640)  
Welded Flange, PFA coated  
(7ML5634 and 7ML5644)



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)

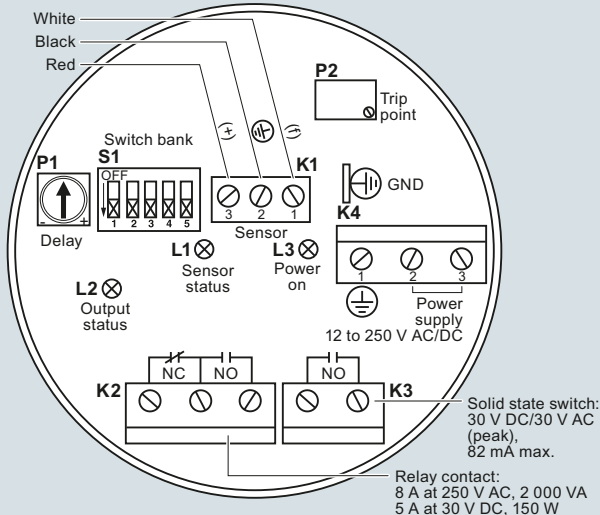
## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS200 - Digital

#### Circuit diagrams

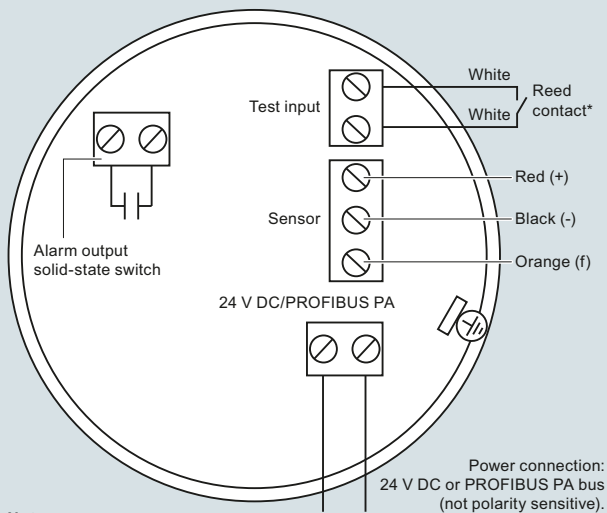
##### Wiring: Pointek CLS200 standard



##### 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.



Pointek CLS200 connections

4



## 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.

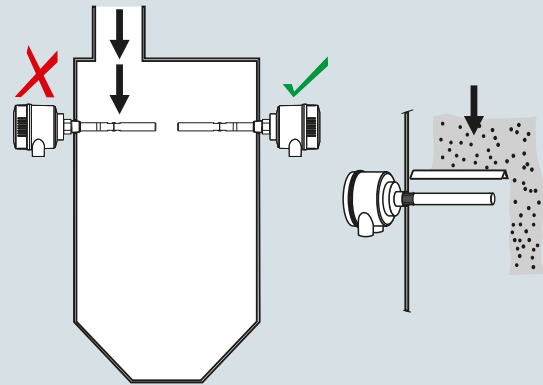
Wetted parts are made of stainless steel with a PFA shield for high chemical resistance, and of ceramic and stainless steel for high temperature version. Materials with low or high dielectric constants can be accurately detected. The unique Active Shield suppresses interference from material buildup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

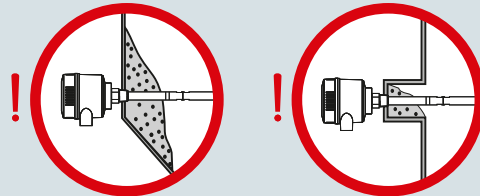
- Key Applications: liquids, slurries, bulk solids, relatively high pressure and temperature, hazardous areas, milling and mining applications

## Configuration

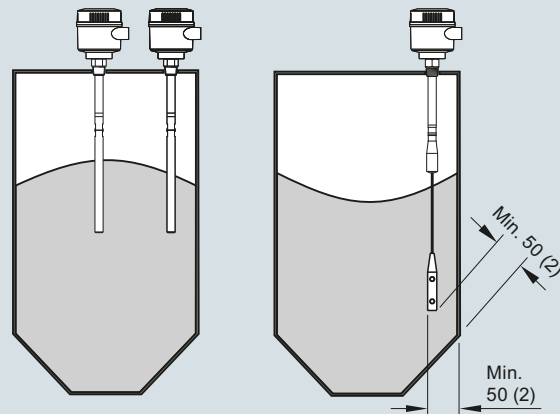
### Installation



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)

## Level measurement

### Point level measurement

### RF Capacitance switches

#### Pointek CLS300 - Standard

#### Technical specifications

Mode of operation		Design	
Measuring principle	Inverse frequency shift capacitive level detection	Material (enclosure)	Powder-coated aluminum with gasket
<b>Input</b>		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)
<b>Output</b>		<b>Controls and displays</b>	
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)	<b>Power supply</b>	
- Max. switching capacity	• 150 W (DC) • 2 000 VA (AC)	Supply	12 ... 250 V AC/DC, 0 ... 60 Hz, galvanically isolated, 2 W
- Time delay (ON and/or OFF)	1 ... 60 s	<b>Certificates and approvals</b>	
• Solid-state output		General Purpose	CSA, FM, CE, RCM
- Output	Galvanically isolated	Flameproof Enclosure with IS Probe	ATEX II 1/2 G EEx d[ia] IIC T6 ... T1 ATEX II 1/2 D T100 °C
- Protection	Against reversed polarity (bipolar)	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
- 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 (Belgium)
- Time delay (pre or post switching)	1 ... 60 s	Others	Pattern Approval (China)
<b>Accuracy</b>		<sup>1)</sup> When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves starting on page 5/57. <sup>2)</sup> Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F). <sup>3)</sup> Pressure rating of process seal is temperature dependent. See Pressure/Temperature curves starting on page 5/57.	
Resolution			
• Min. sensitivity (pF)	1 % change in actual capacitance		
• Max. temperature error	0.2 % of actual capacitance value		
<b>Rated operating conditions<sup>1)</sup></b>			
Installation conditions			
• Location	Indoor/outdoor		
Ambient conditions			
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) <sup>2)</sup>		
• Storage temperature	-40 ... +85 °C (-40 ... +185 °F)		
Medium conditions			
	Liquids, bulk solids, slurries and interfaces, and applications with viscous materials		
• Relative dielectric constant $\epsilon_r$	Min. 1.5		
• Process temperature			
- Rod/Cable version	-40 ... +200 °C (-40 ... +392 °F) <sup>2)</sup>		
- High-temperature version	-40 ... +400 °C (-40 ... +752 °F)		
• Process pressure <sup>3)</sup>	-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 <sub>2</sub> <sup>1)</sup> ) isolators (no insulation on active probe), 316L stainless steel	316 stainless steel, optional PFA, PEEK isolators
O-ring seal material	FKM (optional FFKM) <sup>2)</sup>	Graphite <sup>2)</sup>	FKM (optional FFKM) <sup>2)</sup>
Thermal isolator	Optional	Standard	Optional
Extension	User selectable length	User selectable length	User selectable cable length

<sup>1)</sup> Zirconium Oxide

<sup>2)</sup> For caustic materials, consult a local sales person for alternative O-rings. For more information, please visit <http://www.usa.siemens.com/level>.

Selection and ordering data	Article No.	Article No.
<p><b>Pointek CLS300 RF Capacitance point level switch, rod design.</b></p> <p>Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, with active shield to tune out build-up on probe.</p> <p>➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>	7ML5650-	7ML5650-
<p><b>Process connection</b></p> <p>Threaded, 316L stainless steel</p> <p>¾" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 A</b></p> <p>1" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 B</b></p> <p>1¼" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 C</b></p> <p>1½" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 D</b></p> <p>R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] <b>1 A</b></p> <p>R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] <b>1 B</b></p> <p>R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] <b>1 D</b></p> <p>G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] <b>3 A</b></p> <p>G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] <b>3 B</b></p> <p>G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] <b>3 D</b></p> <p><b>Welded flange, 316L stainless steel, raised face</b></p> <p>1" ASME, 150 lb <b>5 A</b></p> <p>1" ASME, 300 lb <b>5 B</b></p> <p>1" ASME, 600 lb <b>5 C</b></p> <p>1½" ASME, 150 lb <b>5 D</b></p> <p>1½" ASME, 300 lb <b>5 E</b></p> <p>1½" ASME, 600 lb <b>5 F</b></p> <p>2" ASME, 150 lb <b>5 G</b></p> <p>2" ASME, 300 lb <b>5 H</b></p> <p>2" ASME, 600 lb <b>5 J</b></p> <p>3" ASME, 150 lb <b>5 K</b></p> <p>3" ASME, 300 lb <b>5 L</b></p> <p>3" ASME, 600 lb <b>5 M</b></p> <p>4" ASME, 150 lb <b>5 N</b></p> <p>4" ASME, 300 lb <b>5 P</b></p> <p>4" ASME, 600 lb <b>5 Q</b></p> <p><b>Welded flange, 316L stainless steel, Type A flat faced</b></p> <p>DN 25, PN 16 <b>6 A</b></p> <p>DN 25, PN 40 <b>6 B</b></p> <p>DN 40, PN 16 <b>6 C</b></p> <p>DN 40, PN 40 <b>6 D</b></p> <p>DN 50, PN 16 <b>6 E</b></p> <p>DN 50, PN 40 <b>6 F</b></p> <p>DN 80, PN 16 <b>6 G</b></p> <p>DN 80, PN 40 <b>6 H</b></p> <p>DN 100, PN 16 <b>6 J</b></p> <p>DN 100, PN 40 <b>6 K</b></p> <p>(Note: flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)</p> <p><b>Probe length</b></p> <p>(length from flange face) (threaded lengths include process thread)</p> <p>Note: No Y01 needed in Order code for standard lengths</p> <p>Standard version, rod 350 mm (13.78 inch) <b>A</b></p> <p>Extended rod, length 500 mm (19.69 inch) <b>B</b></p> <p>Extended rod, length 750 mm (29.53 inch) <b>C</b></p> <p>Extended rod, length 1 000 mm (39.37 inch) <b>D</b></p> <p>Add Order code Y01 and plain text: "Insertion length ... mm"</p> <p>Extended rod, factory adjusted length 250 ... 499 mm (9.8 ... 19.65 inch) <b>E</b></p> <p>Extended rod, factory adjusted length 500 ... 749 mm (19.69 ... 29.49 inch) <b>F</b></p> <p>Extended rod, factory adjusted length 750 ... 999 mm (29.53 ... 39.3 inch) <b>G</b></p>		<p><b>Pointek CLS300 RF Capacitance point level switch, rod design.</b></p> <p>Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, with active shield to tune out build-up on probe.</p> <p><b>Thermal isolator</b></p> <p>Without thermal isolator <b>0</b></p> <p>With thermal isolator [for process connection temperatures over 85 °C (185 °F)] <b>1</b></p> <p><b>Wetted seals</b></p> <p>FKM <b>0</b></p> <p>FFKM [for process temperatures above -20 °C (-4 °F)] <b>1</b></p> <p><b>Probe material</b></p> <p>316L stainless steel with PFA lining and PEEK isolators <b>0</b></p> <p><b>Approvals</b></p> <p>Dust Ignition Proof with IS Probe: CE, RCM, ATEX II ½ D T100 °C <b>C</b></p> <p>Flameproof Enclosure with IS Probe: CE, RCM, ATEX II ½ G EEx d[ia] IIC T6 ... T1, ATEX II ½ D T100 °C <b>D</b></p> <p>Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II ½ G EEx d[ia] IIC T6 ... T1, ATEX II ½ D T100 °C <b>E</b></p> <p>Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G, CSA/FM Class III T4 <b>F</b></p> <p>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 <b>G</b></p> <p>General Purpose (CSA, FM) <b>H</b></p> <p>General Purpose (CE, RCM) <b>J</b></p> <p>General Purpose with WHG approval (CSA, FM, CE, RCM) <b>K</b></p> <p><b>Enclosure and lid</b></p> <p>Aluminum epoxy coated</p> <p>2 x ½" NPT via adapter - cable inlet, IP65 <b>A</b></p> <p>2 x M20 x 1.5 cable inlet, IP65 <b>B</b></p> <p>2 x ½" NPT via adapter - cable inlet, IP68 <b>C</b></p> <p>2 x M20 x 1.5 cable inlet, IP68 <b>D</b></p> <p><b>Active shield length</b></p> <p>Standard length - (125 mm threaded, 105 mm flanged) <b>0</b></p> <p>Extended shield - (250 mm threaded, 230 mm flanged)<sup>1)</sup> <b>1</b></p> <p>Extended shield - (400 mm threaded, 380 mm flanged)<sup>2)</sup> <b>2</b></p> <p><sup>1)</sup> Available with Probe version options B ... D, F, G only [≥ 500 mm (19.69 inch)].</p> <p><sup>2)</sup> Available with Probe version options C, D, and G only [≥ 750 mm (29.53 inch)].</p>

## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS300 - Standard

#### Selection and ordering data

#### Order code

#### Article No.

##### 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**

INMETRO<sup>1)</sup>

**E34**

##### 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 **4/69**

<sup>1)</sup> Available only with Approvals options C, D, E.

#### Pointek CLS300 RF Capacitance point level switch, cable design.

Detects level and interface in aggressive liquids, solids, slurries, and foam. Cable extension options to 25 m (82.02 ft), adaptable sensitivity, with active shield to tune out build-up on probe.

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

#### Process connection

##### Threaded, 316L stainless steel

1¼" NPT [(Taper), ANSI/ASME B1.20.1]

**0 C**

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

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

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)

Note: No Y01 needed in Order code for standard lengths

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**

Add Order code Y01 and plain text:

"Insertion length ... mm"

Extended cable, 500 ... 1 000 mm

**E**

(19.69 ... 39.37 inch)

Extended cable, 1 001 ... 5 000 mm

**F**

(39.41 ... 196.85 inch)

Extended cable, 5 001 ... 10 000 mm

**G**

(196.89 ... 393.70 inch)

Extended cable, 10 001 ... 15 000 mm

**H**

(393.74 ... 590.55 inch)

Extended cable, 15 001 ... 20 000 mm

**J**

(590.59 ... 787.40 inch)

Extended cable, 20 001 ... 25 000 mm

**K**

(787.44 ... 984.25 inch)

Selection and ordering data	Article No.	Order code
<b>Pointek CLS300 RF Capacitance point level switch, cable design.</b> Detects level and interface in aggressive liquids, solids, slurries, and foam. Cable extension options to 25 m (82.02 ft), adaptable sensitivity, with active shield to tune out build-up on probe.	7ML5651-	
<b>Thermal isolator</b> Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	0 1	
<b>Wetted seals</b> FKM FFKM [for process temperatures above -20 °C (-4 °F)]	0 1	
<b>Probe material</b> Bare 316L stainless steel cable, PEEK isolators and 316L stainless steel cable weight PFA coated cable, PEEK isolators and 316L stainless steel cable weight	0 1	
<b>Approvals</b> Dust Ignition Proof with IS Probe: CE, RCM, ATEX II ½ D T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II ½ G EEx d[ia] IIC T6 ... T1, ATEX II ½ D T100 °C Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II ½ G EEx d[ia] IIC T6 ... T1, ATEX II ½ 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)	C D E F G H J K	
<b>Enclosure and lid</b> <u>Aluminum epoxy coated</u> 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	
<b>Active shield length</b> Standard length - (125 mm threaded, 105 mm flanged) Extended shield - (250 mm threaded, 230 mm flanged) Extended shield - (400 mm threaded, 380 mm flanged) <sup>1)</sup>	0 1 2	
<b>Further designs</b> 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 INMETRO <sup>1)</sup>		Y01 Y15 C11 C12 E34
<b>Operating Instructions</b> All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a> .		
<b>Accessories</b> <sup>1)</sup> Available only with Approvals options C, D, E.		See page 4/69

## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS300 - Standard

#### Selection and ordering data

#### Article No.

##### Pointek CLS300 RF Capacitance point level switch, high temperature design.

Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, with active shield to tune out build-up on 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] **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**

Welded flange, 316L stainless steel, raised face

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**

Welded flange, 316L stainless steel,

Type A flat faced

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)

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**

##### Pointek CLS300 RF Capacitance point level switch, high temperature design.

Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, with active shield to tune out build-up on 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**

##### Wetted seals

Graphite **0**

##### Probe material

316L stainless steel with ceramic (ZrO<sub>2</sub>) isolators **0**

##### Approvals

Dust Ignition Proof with IS Probe:  
CE, RCM, ATEX II ½ D T100 °C **C**  
 Flameproof Enclosure with IS Probe:  
CE, RCM, ATEX II ½ G EEx d[ia] IIC T6 ... T1, ATEX II ½ D T100 °C **D**  
 Flameproof Enclosure with IS Probe with WHG approval:  
CE, RCM, ATEX II ½ G EEx d[ia] IIC T6 ... T1, ATEX II ½ 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

Aluminum epoxy coated  
 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 - **0**  
 (125 mm threaded, 105 mm flanged)  
 Extended shield - **1**  
 (250 mm threaded, 230 mm flanged)<sup>1)</sup>  
 Extended shield - **2**  
 (400 mm threaded, 380 mm flanged)<sup>2)</sup>

<sup>1)</sup> Available with Probe version options B ... D, F, G only [≥ 500 mm (19.69 inch)].

<sup>2)</sup> Available with Probe version options C, D, and G only [≥ 750 mm (29.53 inch)].

Selection and ordering data	Order code
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<b>Further designs</b>	
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Please add <b>"-Z"</b> to Article No. and specify Order code(s).	
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Total insertion length: enter the total insertion length in plain text description <sup>1)</sup>	<b>Y01</b>
--	------------

Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	<b>Y15</b>
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Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000	<b>C11</b>
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Material Inspection Certificate Type 3.1 per EN 10204	<b>C12</b>
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INMETRO <sup>2)</sup>	<b>E34</b>
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<b>Operating Instructions</b>	
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All literature is available to download for free, in a range of languages, at	
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<a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a> .	
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<b>Accessories</b>	See page <b>4/69</b>
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<sup>1)</sup> Not available with Probe length option B.

<sup>2)</sup> Available only with Approvals options C, D, E.

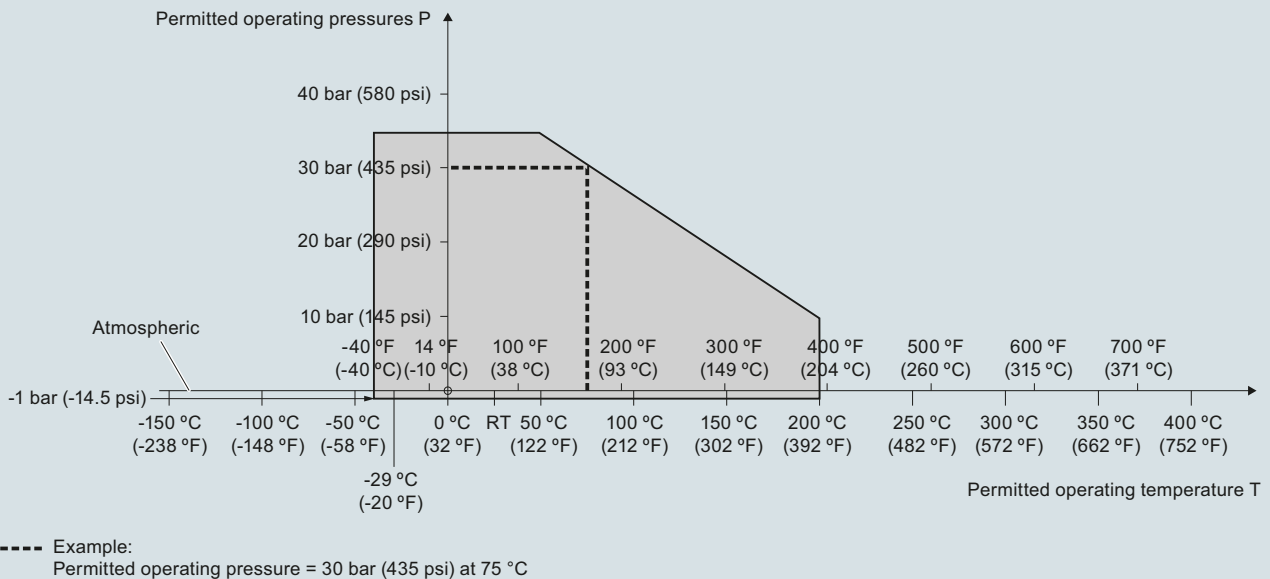
## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS300 - Standard

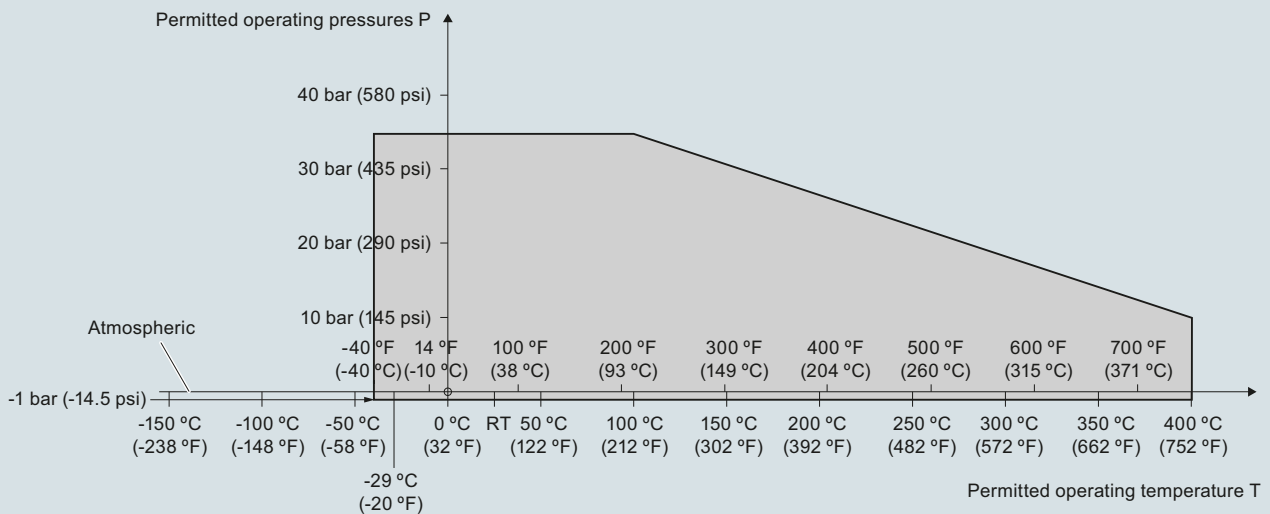
#### Characteristic curves

**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)**

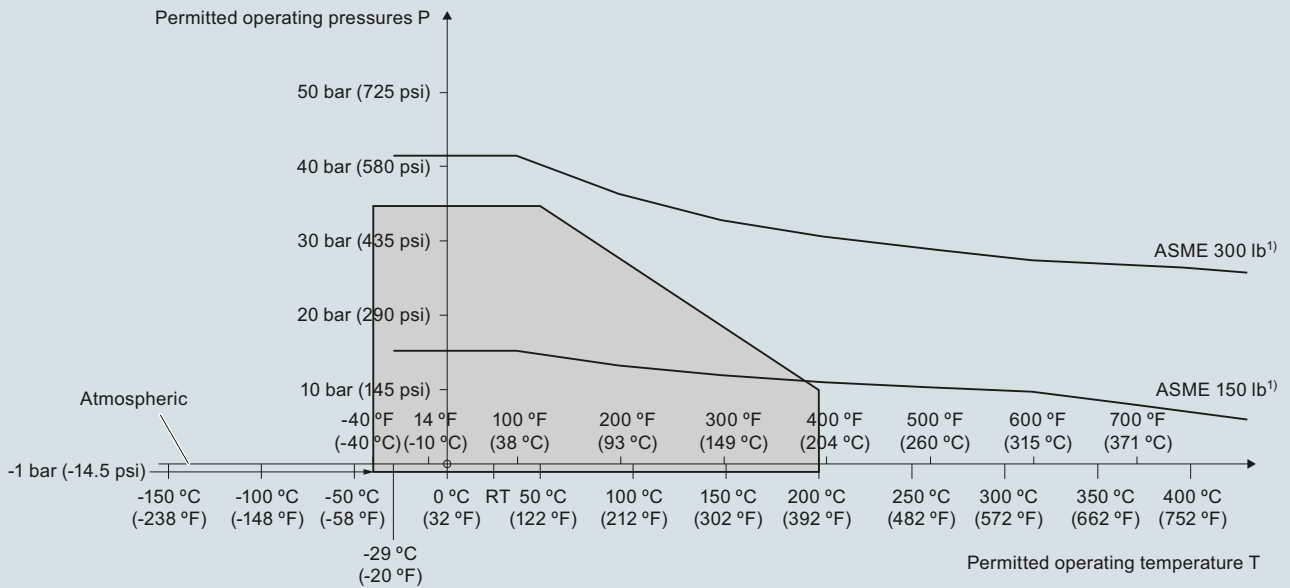


Pointek CLS300 process pressure/temperature derating curves (7ML5652 and 7ML5662)



**Characteristic curves** (continued)

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



<sup>1)</sup> The curve denotes the minimum allowable flange class for the shaded area below.

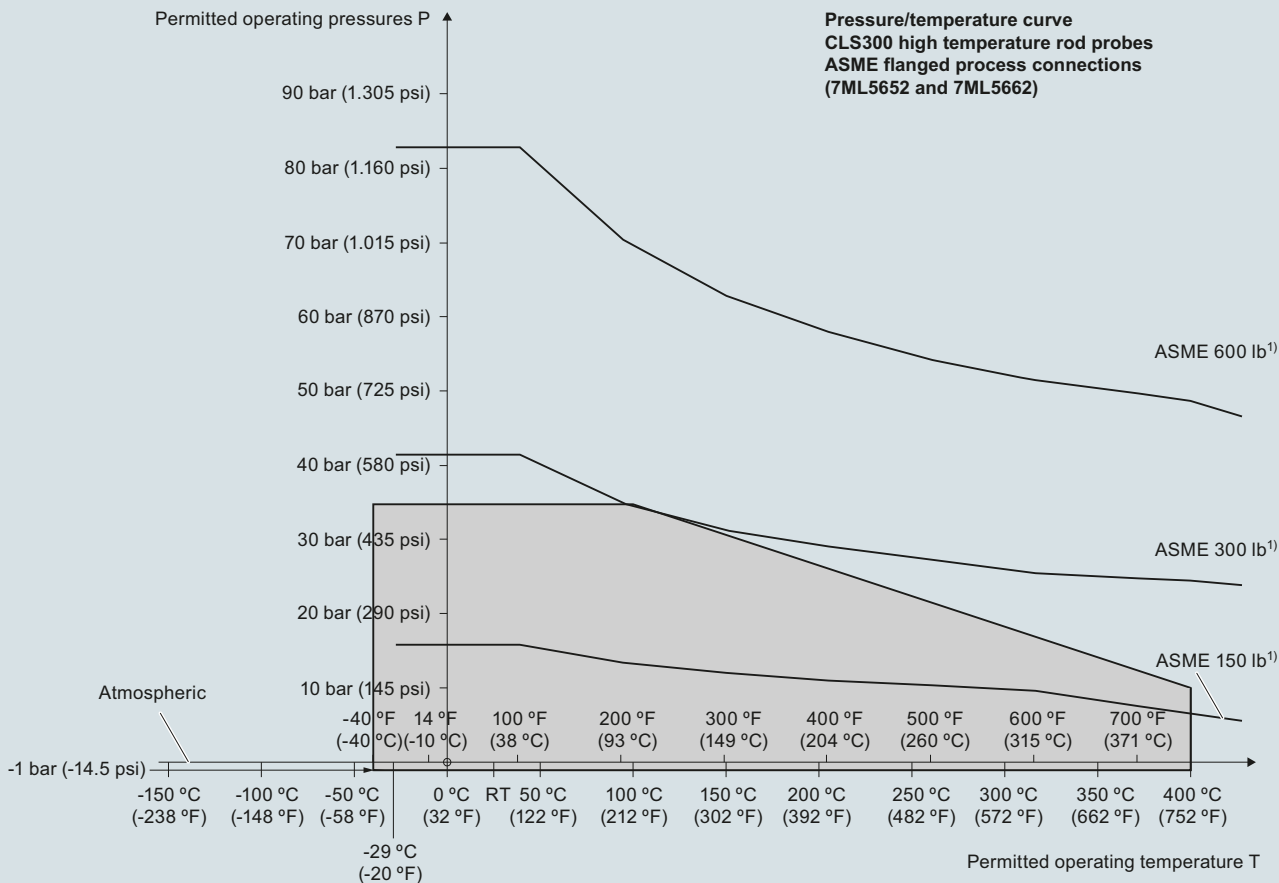
Pointek CLS300 process pressure/temperature derating curves (7ML5650, 7ML5651, 7ML5660, and 7ML5661)

## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS300 - Standard

#### Characteristic curves (continued)

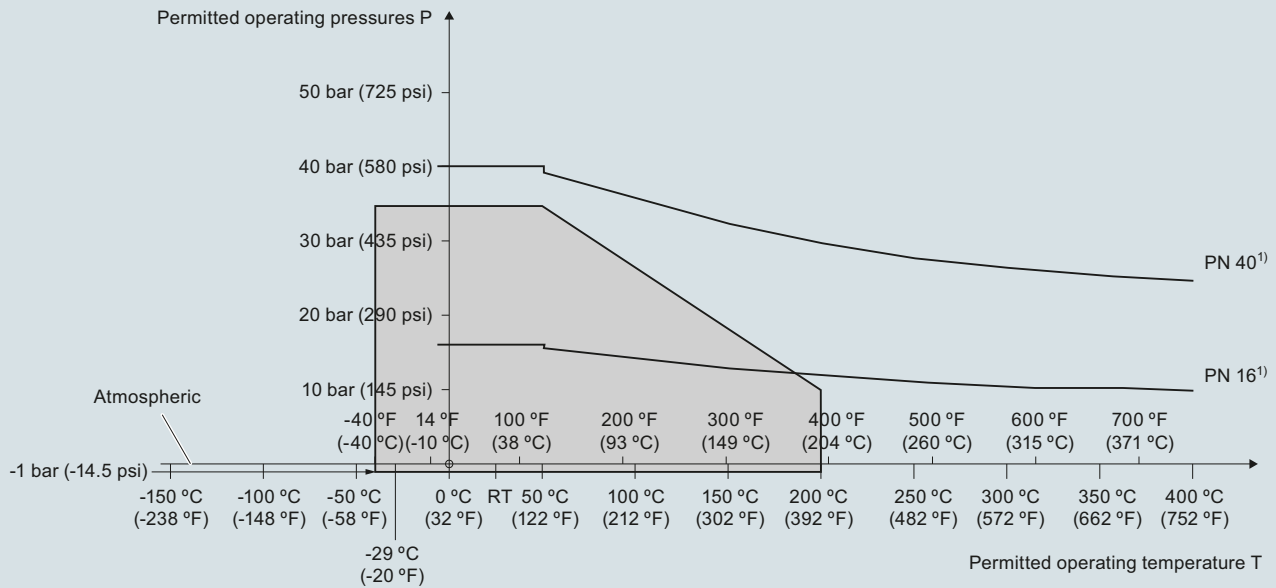


<sup>1)</sup> The curve denotes the minimum allowable flange class for the shaded area below.

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

**Characteristic curves (continued)**

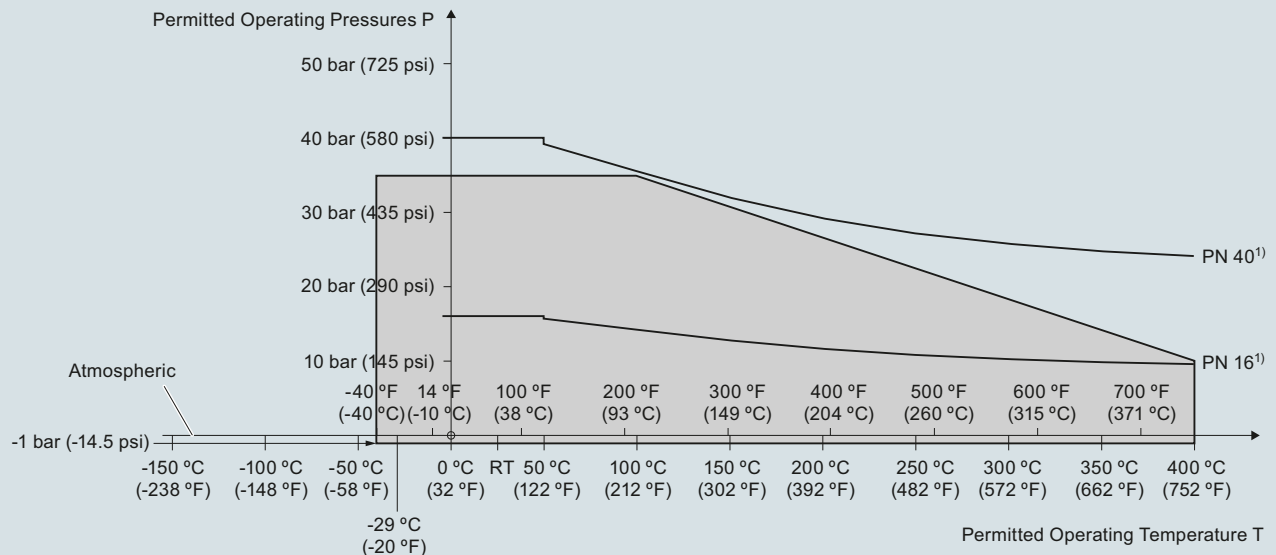
**Pressure/temperature curve**  
CLS300 extended rod and cable probes  
EN flanged process connections  
(7ML5650, 7ML5651, 7ML5660 and 7ML5661)



<sup>1)</sup> 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)



<sup>1)</sup> The curve denotes the minimum allowable flange class for the shaded area below.

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

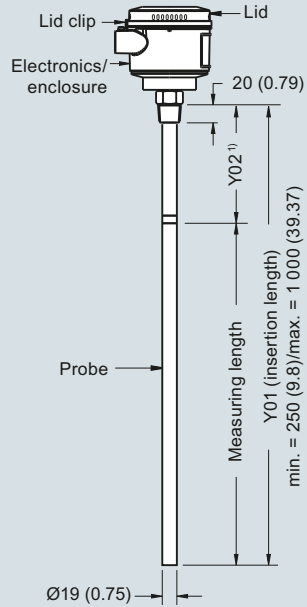
# Level measurement

Point level measurement  
RF Capacitance switches

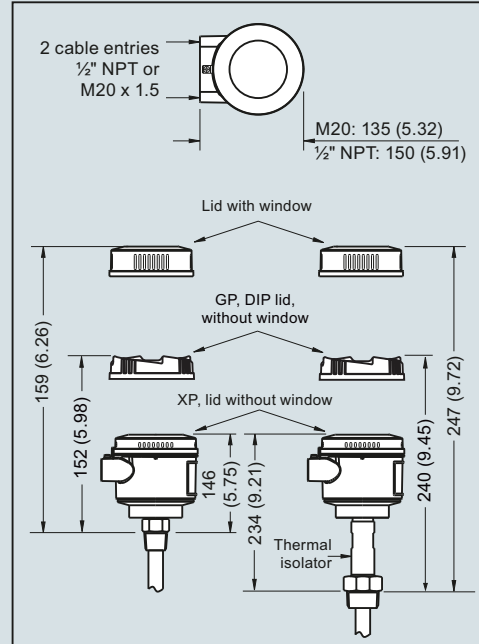
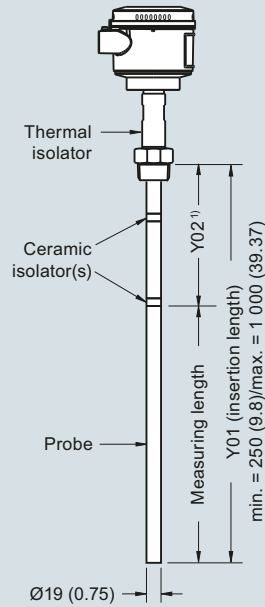
## Pointek CLS300 - Standard

### Dimensional drawings

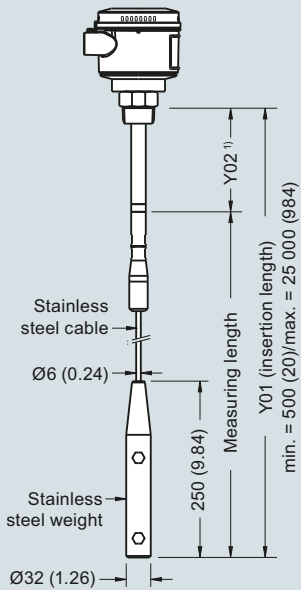
**Rod version  
Threaded (7ML5650 and 7ML5660)**



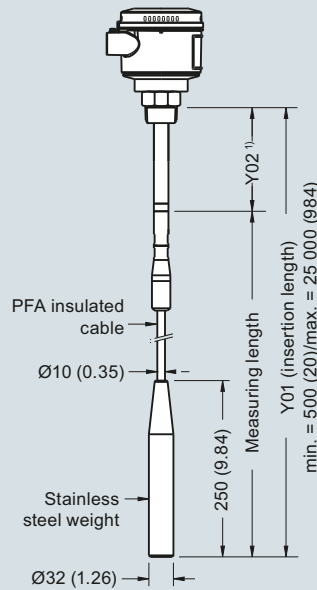
**High temperature rod version  
Threaded (7ML5652 and 7ML5662)**



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



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



**Note:**

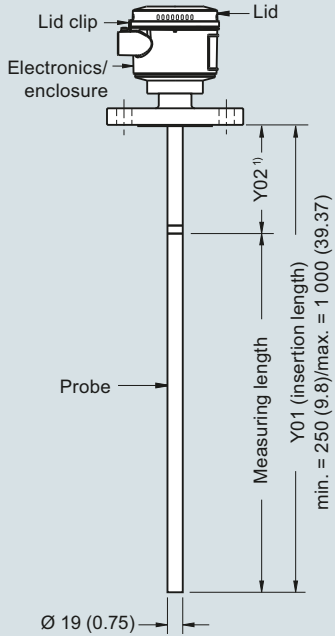
<sup>1)</sup> Extended Active Shield (Y02): standard length 125 (4.92). Optional active shield lengths: 250 (9.84) or 400 (15.75).

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

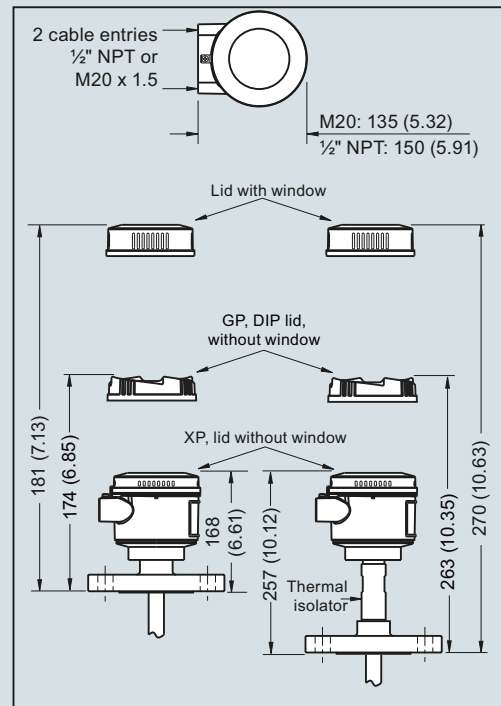
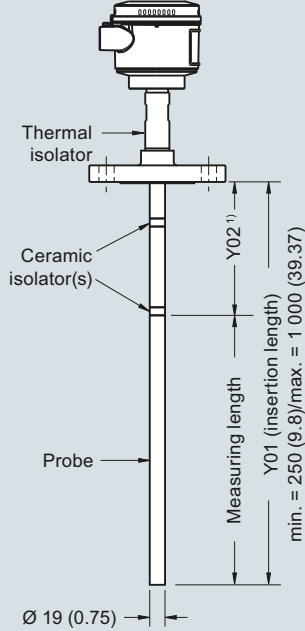
4

**Dimensional drawings** (continued)

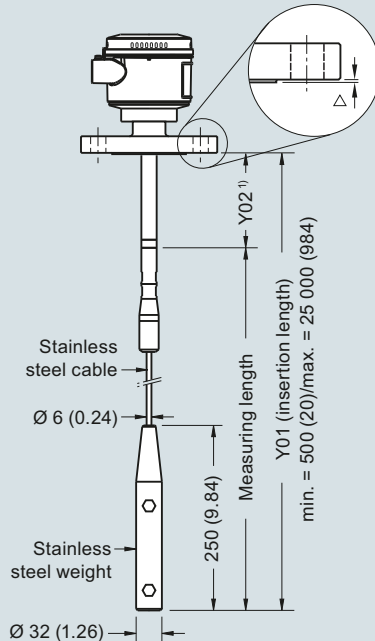
**Rod version  
Welded flange (7ML5650 and 7ML5660)**



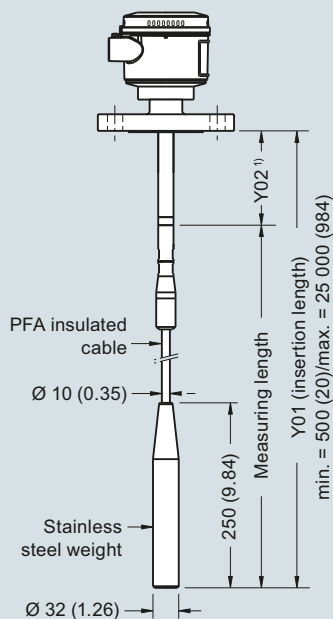
**High temperature rod version  
Welded flange (7ML5652 and 7ML5662)**



**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:**

<sup>1)</sup> 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)

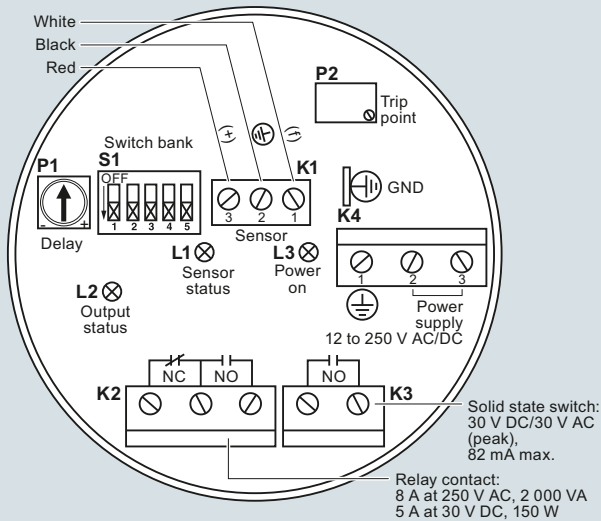
## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS300 - Standard

#### Circuit diagrams

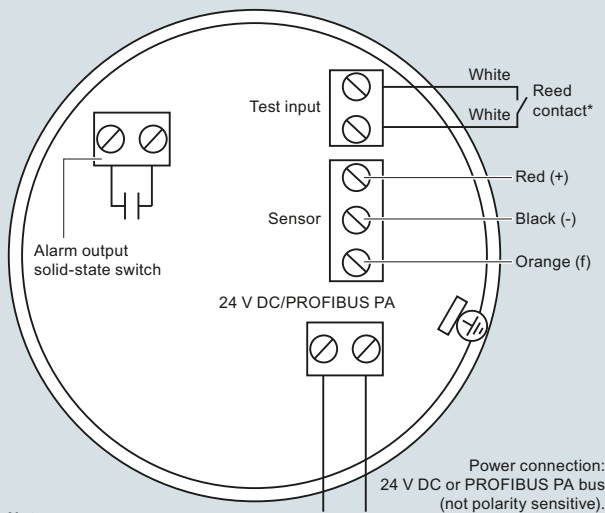
##### Wiring: Pointek CLS300 standard



##### 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

## 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.

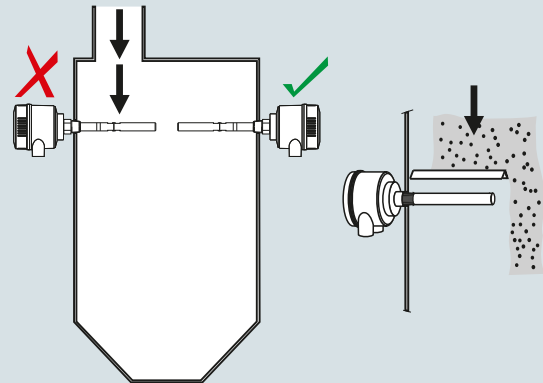
Wetted parts are made of stainless steel with a PFA shield for high chemical resistance, and of ceramic and stainless steel for high temperature version. Materials with low or high dielectric constants can be accurately detected. The unique Active Shield suppresses interference from material buildup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

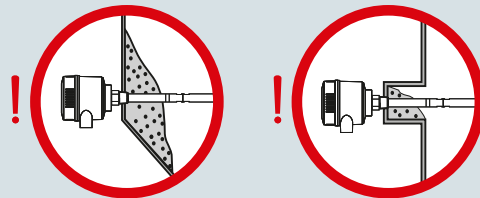
- Key Applications: liquids, slurries, bulk solids, relatively high pressure and temperature, hazardous areas, milling and mining applications

## Configuration

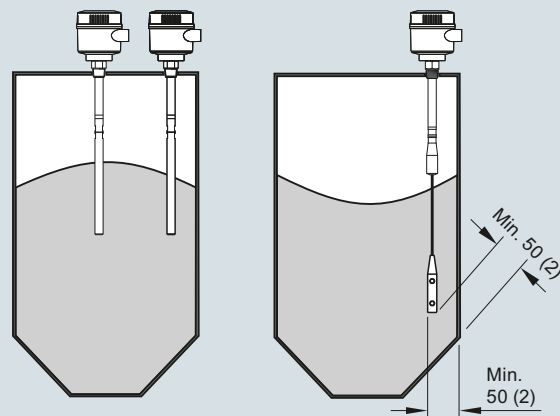
### Installation



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

<b>Mode of operation</b>	
Measuring principle	Inverse frequency shift capacitive level detection
<b>Input</b>	
Measured variable	Change in picoFarad (pF)
<b>Output</b>	
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)	Programmable by user (0 ... 100 s)
Fail-safe mode	Min. or max.
Connection	Removable terminal block
<b>Accuracy</b>	
Resolution	
• Min. sensitivity (pF)	1 % change in actual capacitance
• Max. temperature error	0.2 % of actual capacitance value
<b>Rated operating conditions<sup>1)</sup></b>	
Installation conditions	
• Location	Indoor/outdoor
Ambient conditions	
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) <sup>2)</sup>
• Storage temperature	-40 ... +85 °C (-40 ... +185 °F)
Medium conditions	Liquids, bulk solids, slurries, interfaces, and applications with viscous materials
	Min. 1.5
• Relative dielectric constant $\epsilon_r$	
• Process temperature	
- Rod/Cable version	-40 ... +200 °C (-40 ... +392 °F) <sup>2)</sup>
- High Temperature version	-40 ... +400 °C (-40 ... +752 °F)
• Process pressure <sup>3)</sup>	-1 ... +35 bar g (-14.6 ... +511 psi g)
<b>Design</b>	
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)
<b>Controls and displays</b>	
Local display	LCD
Configuration	• Locally, using 3 button keypad (for standalone operation) • Remotely, using SIMATIC PDM (for installation on a network)

<b>Power supply</b>	
Bus voltage (at process connection)	• Standard: 12 ... 30 V DC • Intrinsically Safe: 12 ... 24 V DC
Current consumption	12.5 mA
<b>Certificates and approvals</b>	
General Purpose	CSA, FM, CE, RCM
Dust Ignition Proof	ATEX II 1/2 D, 2 D IP6X T100 °C
Flameproof Enclosure With IS Probe	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 <sup>4)</sup>	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
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
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
Marine	Lloyds Register of Shipping, Categories ENV1, ENV2, and ENV5
Others	Pattern Approval (China)
<b>Communication</b>	
	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

- When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves starting on page 5/57.
- Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F)
- Pressure rating of process seal is temperature dependent. See Pressure/Temperature curves starting on page 5/57.
- 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 <sub>2</sub> <sup>1)</sup> isolators (no insulation on active probe), 316L stainless steel	316 stainless steel, optional PFA, PEEK isolators
O-ring seal material	FKM (optional FFKM) <sup>2)</sup>	Graphite <sup>2)</sup>	FKM (optional FFKM) <sup>2)</sup>
Thermal isolator	Optional	Standard	Optional
Extension	User selectable length	User selectable length	User selectable cable length

<sup>1)</sup> Zirconium Oxide

<sup>2)</sup> For caustic materials, consult a local sales person for alternative O-rings. For more information, please visit <http://www.usa.siemens.com/level>.



Selection and ordering data	Article No.	Article No.
<p><b>Pointek CLS300 RF Capacitance point level switch, digital, rod design.</b></p> <p>Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, and active shield to tune out build-up on probe. With display and digital communications.</p> <p>➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>	7ML5660-	7ML5660-
<p><b>Process connection</b></p> <p>Threaded, 316L stainless steel</p> <p>¾" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 A</b></p> <p>1" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 B</b></p> <p>1¼" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 C</b></p> <p>1½" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 D</b></p> <p>R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] <b>1 A</b></p> <p>R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] <b>1 B</b></p> <p>R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] <b>1 D</b></p> <p>G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] <b>3 A</b></p> <p>G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] <b>3 B</b></p> <p>G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] <b>3 D</b></p> <p><u>Welded flange, 316L stainless steel, raised face</u></p> <p>1" ASME, 150 lb <b>5 A</b></p> <p>1" ASME, 300 lb <b>5 B</b></p> <p>1" ASME, 600 lb <b>5 C</b></p> <p>1½" ASME, 150 lb <b>5 D</b></p> <p>1½" ASME, 300 lb <b>5 E</b></p> <p>1½" ASME, 600 lb <b>5 F</b></p> <p>2" ASME, 150 lb <b>5 G</b></p> <p>2" ASME, 300 lb <b>5 H</b></p> <p>2" ASME, 600 lb <b>5 J</b></p> <p>3" ASME, 150 lb <b>5 K</b></p> <p>3" ASME, 300 lb <b>5 L</b></p> <p>3" ASME, 600 lb <b>5 M</b></p> <p>4" ASME, 150 lb <b>5 N</b></p> <p>4" ASME, 300 lb <b>5 P</b></p> <p>4" ASME, 600 lb <b>5 Q</b></p> <p><u>Welded flange, 316L stainless steel, Type A flat faced</u></p> <p>DN 25, PN 16 <b>6 A</b></p> <p>DN 25, PN 40 <b>6 B</b></p> <p>DN 40, PN 16 <b>6 C</b></p> <p>DN 40, PN 40 <b>6 D</b></p> <p>DN 50, PN 16 <b>6 E</b></p> <p>DN 50, PN 40 <b>6 F</b></p> <p>DN 80, PN 16 <b>6 G</b></p> <p>DN 80, PN 40 <b>6 H</b></p> <p>DN 100, PN 16 <b>6 J</b></p> <p>DN 100, PN 40 <b>6 K</b></p> <p>(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)</p> <p><b>Probe length</b></p> <p>(length from flange face) (threaded lengths include process thread)</p> <p><u>Note: No Y01 needed in Order code for standard lengths</u></p> <p>Standard version, rod 350 mm (13.78 inch) <b>A</b></p> <p>Extended rod, length 500 mm (19.69 inch) <b>B</b></p> <p>Extended rod, length 750 mm (29.53 inch) <b>C</b></p> <p>Extended rod, length 1 000 mm (39.37 inch) <b>D</b></p>		<p><b>Pointek CLS300 RF Capacitance point level switch, digital, rod design.</b></p> <p>Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, and active shield to tune out build-up on probe. With display and digital communications.</p> <p><u>Add Order code Y01 and plain text:</u> <u>"Insertion length ... mm"</u></p> <p>Extended rod, factory adjusted length 250 ... 499 mm (9.8 ... 19.65 inch) <b>E</b></p> <p>Extended rod, factory adjusted length 500 ... 749 mm (19.69 ... 29.49 inch) <b>F</b></p> <p>Extended rod, factory adjusted length 750 ... 999 mm (29.53 ... 39.3 inch) <b>G</b></p> <p><b>Thermal isolator</b></p> <p>Without thermal isolator <b>0</b></p> <p>With thermal isolator [for process connection temperatures over 85 °C (185 °F)] <b>1</b></p> <p><b>Wetted seals</b></p> <p>FKM <b>0</b></p> <p>FFKM [for process temperatures above -20 °C (-4 °F)] <b>1</b></p> <p><b>Probe material</b></p> <p>316L stainless steel with PFA lining and PEEK isolators <b>0</b></p> <p><b>Approvals</b></p> <p>Dust Ignition Proof: CE, RCM, ATEX II ½ D, 2 D IP6X T100 °C <b>B</b></p> <p>Intrinsically Safe<sup>1)</sup> CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II ½ D, 2 D IP6X T100 °C <b>C</b></p> <p>Flameproof Enclosure with IS Probe: CE, RCM, ATEX II ½ G EEx d[ia] IIC T6 ... T4, ATEX II ½ D T100 °C <b>D</b></p> <p>Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 <b>E</b></p> <p>Intrinsically Safe<sup>1)</sup> 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 <b>F</b></p> <p>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 <b>G</b></p> <p>General Purpose (CSA, FM) <b>H</b></p> <p>General Purpose (CSA, FM, CE, RCM) <b>J</b></p> <p><b>Enclosure and Lid</b></p> <p><u>Aluminum epoxy coated</u></p> <p>2 x ½" NPT via adapter - cable inlet, IP65 <b>A</b></p> <p>2 x M20 x 1.5 cable inlet, IP65 <b>B</b></p> <p>2 x ½" NPT via adapter - cable inlet, IP68 <b>C</b></p> <p>2 x M20 x 1.5 cable inlet, IP68 <b>D</b></p> <p><b>Active shield length</b></p> <p>Standard length - <b>0</b> (125 mm threaded, 105 mm flanged)</p> <p>Extended shield - <b>1</b> (250 mm threaded, 230 mm flanged)<sup>2)</sup></p> <p>Extended shield - <b>2</b> (400 mm threaded, 380 mm flanged)<sup>3)</sup></p>
		<p><sup>1)</sup> Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection.</p> <p><sup>2)</sup> Available with Probe version options B ... D, F, G only [≥ 500 mm (19.69 inch)].</p> <p><sup>3)</sup> Available with Probe version options C, D, and G only [≥ 750 mm (29.53 inch)].</p>

## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS300 - Digital

#### Selection and ordering data

#### Order code

#### Article No.

##### 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**

INMETRO<sup>1)</sup>

**E34**

##### 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 4/69

<sup>1)</sup> Available only with Approvals options B and D.

#### Pointek CLS300 RF Capacitance point level switch, digital, cable design.

Detects level and interface in aggressive liquids, solids, slurries, and foam. Cable extension options to 25 m (82.02 ft), adaptable sensitivity, with active shield to tune out build-up on probe. With display and digital communications.

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

#### Process connection

Threaded, 316L stainless steel

1¼" NPT [(Taper), ANSI/ASME B1.20.1]

1½" NPT [(Taper), ANSI/ASME B1.20.1]

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

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

7ML5661-

0 C

0 D

1 D

3 D

Welded flange, 316L stainless steel, raised face

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

5 D

5 E

5 F

5 G

5 H

5 J

5 K

5 L

5 M

5 N

5 P

5 Q

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

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 standard lengths

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:

"Insertion length ... mm"

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

Selection and ordering data	Article No.	Order code
<b>Pointek CLS300 RF Capacitance point level switch, digital, cable design.</b> Detects level and interface in aggressive liquids, solids, slurries, and foam. Cable extension options to 25 m (82.02 ft), adaptable sensitivity, with active shield to tune out build-up on probe. With display and digital communications.	7ML5661-	
<b>Thermal isolator</b> Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	0 1	
<b>Wetted seals</b> FKM FFKM [for process temperatures above -20 °C (-4 °F)]	0 1	
<b>Probe material</b> Bare 316L stainless steel cable, PEEK isolators and 316L stainless steel cable weight PFA coated cable, PEEK isolators and 316L stainless steel cable weight	0 1	
<b>Approvals</b> Dust Ignition Proof: CE, RCM, ATEX II ½ D, 2 D IP6X T100 °C Intrinsically Safe <sup>1)</sup> CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II ½ D, 2 D IP6X T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II ½ G EEx d[ia] IIC T6 ... T4, ATEX II ½ D T100 °C Intrinsically Safe <sup>1)</sup> 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)	B C D F G H J	
<b>Enclosure and Lid</b> 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	
<b>Active shield length</b> Standard length - (125 mm threaded, 105 mm flanged) Extended shield - (250 mm threaded, 230 mm flanged) Extended shield - (400 mm threaded, 380 mm flanged) <sup>2)</sup>	0 1 2	
<b>Further designs</b> 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 INMETRO <sup>1)</sup>		Y01 Y15 C11 C12 E34
<b>Operating Instructions</b> All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a> .		
<b>Accessories</b> <sup>1)</sup> Available only with Approvals options B and D.		See page 4/69

## Level measurement

Point level measurement

RF Capacitance switches

### Pointek CLS300 - Digital

#### Selection and ordering data

#### Article No.

#### Article No.

##### Pointek CLS300 RF Capacitance point level switch, digital, high temperature design.

Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, with active shield to tune out build-up on probe. With display and digital communications.

➤ 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]	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

###### Welded flange, 316L stainless steel, raised face

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

###### Welded flange, 316L stainless steel,

###### Type A flat faced

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)

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

##### Pointek CLS300 RF Capacitance point level switch, digital, high temperature design.

Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, with active shield to tune out build-up on probe. With display and digital communications.

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 (ZrO<sub>2</sub>)isolators

##### Approvals

Dust Ignition Proof  
CE, RCM, ATEX II ½ D, 2 D IP6X T100 °C  
Intrinsically Safe<sup>1)</sup>  
CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4,  
ATEX II ½ D, 2 D IP6X T100 °C  
Flameproof Enclosure with IS Probe:  
CE, RCM, ATEX II ½ G EEx d[ia] IIC T6 ... T4,  
ATEX II ½ D T100 °C  
Intrinsically Safe<sup>1)</sup>  
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	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) <sup>2)</sup>	1
Extended shield - (400 mm threaded, 380 mm flanged) <sup>3)</sup>	2

<sup>1)</sup> Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection.

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

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

Selection and ordering data	Order code	Article No.
<p><b>Further designs</b></p> <p>Please add <b>"-Z"</b> to Article No. and specify Order code(s).</p>		
<p>Total insertion length: enter the total insertion length in plain text description</p>	<b>Y01</b>	
<p>Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text</p>	<b>Y15</b>	
<p>Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000</p>	<b>C11</b>	
<p>Material Inspection Certificate Type 3.1 per EN 10204</p>	<b>C12</b>	
<p>INMETRO<sup>1)</sup></p>	<b>E34</b>	
<p><b>Operating Instructions</b></p> <p>All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>.</p>		
<p><b>Accessories</b></p> <p><sup>1)</sup> Available only with Approvals options B and D.</p>	<b>See page 4/69</b>	
		<p><b>Accessories</b></p> <p>One metallic cable gland M20 x 1.5, -40 ... +80 °C (-40 ... +176 °F) with integrated shield connection (available for PROFIBUS PA)</p> <p><b>7ML1930-1AQ</b></p> <p><b>General Purpose</b></p> <p>½" NPT General Purpose Cable Entry IP68/IP69K NEMA 6, -40 ... +80 °C (-40 ... +176 °F), Dust Ignition Proof, cable size 6 ... 12 mm (0.236 ... 0.472 inch)</p> <p><b>7ML1830-1JA</b></p> <p>M20 x 1.5 General Purpose Cable Entry IP68/IP69K NEMA 6, -40 ... +80 °C (-40 ... +176 °F), Dust Ignition Proof, cable size 7 ... 12 mm (0.275 ... 0.472 inch)</p> <p><b>7ML1830-1JC</b></p> <p><b>Hazardous Locations</b></p> <p>½" 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)</p> <p><b>7ML1830-1JB</b></p> <p>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)</p> <p><b>7ML1830-1JD</b></p> <p><b>Blind threaded flanges are available.</b> Customers interested in a custom designed device should consult a local sales person. For more information, please visit <a href="http://www.usa.siemens.com/level">http://www.usa.siemens.com/level</a>.</p>

## Level measurement

### Point level measurement

### RF Capacitance switches

#### Pointek CLS300 - Digital

#### Selection and ordering data

##### Pointek Specials<sup>1)</sup>

#### 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<sup>2)</sup>

#### CLS200 Gasket (IP65), Synprene

Spare gasket, enclosure version (IP65 versions only)

**A5E01163672**

#### CLS200 Gasket (IP68), Silicone

Spare gasket, enclosure version (IP68 versions)

**A5E01163673**

#### CLS200/CLS300/LC300 Blind Lid

Spare aluminum blind lid (for standard versions only)

**A5E01163674**

#### CLS200/CLS300 Lid with window

Spare aluminum lid with window

**A5E01163676**

#### CLS200 Sensor Kit for cable units

Kit, sensor for cable units, PPS, standard, FKM

**A5E01163677**

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, mounting hole 27 mm (1 inch)

**A5E01163685**

#### CLS200 PROFIBUS Connector (IP65)

Spare, PROFIBUS connector (IP65 versions only)

**A5E01163686**

#### CLS200 Miscellaneous Parts

CLS200 with FFKM O-rings (any version)<sup>2)</sup>

#### 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**

#### 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**

##### Pointek Specials<sup>1)</sup>

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 1330 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).<sup>2)</sup>

Kit, stainless steel rod 1830 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).<sup>2)</sup>

Kit, stainless steel rod customized length up to 1 m<sup>2)</sup>

Kit, stainless steel rod customized length up to 2 m<sup>2)</sup>

#### CLS300 Electronics Kits with drivers (for rod or cable versions)

Kit, electronics with driver, standard CLS300. To be used in cable versions with length greater than 5 m.<sup>3)4)</sup>

**A5E01163723**

Kit, electronics with driver, digital CLS300. To be used in cable versions with length greater than 5 m.<sup>3)4)</sup>

**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.<sup>3)4)</sup>

**A5E01163724**

Kit, electronics with driver, digital CLS300. To be used in cable versions with length greater than 5 m.<sup>3)4)</sup>

**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**

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

<sup>2)</sup> Please consult a local sales person for part number and pricing

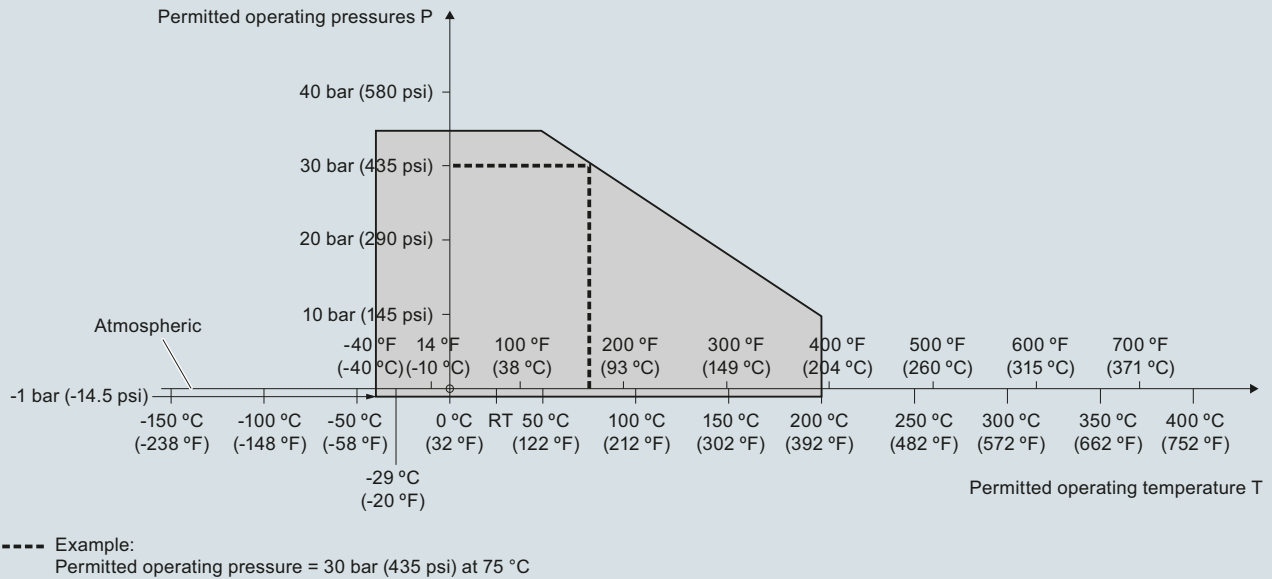
<sup>3)</sup> For General Purpose approvals only

<sup>4)</sup> To maintain approvals, qualified trained Siemens personnel required for part replacement

<sup>5)</sup> Customers interested in a custom designed device should consult a local sales person. For more information, please visit <http://www.usa.siemens.com/level>.

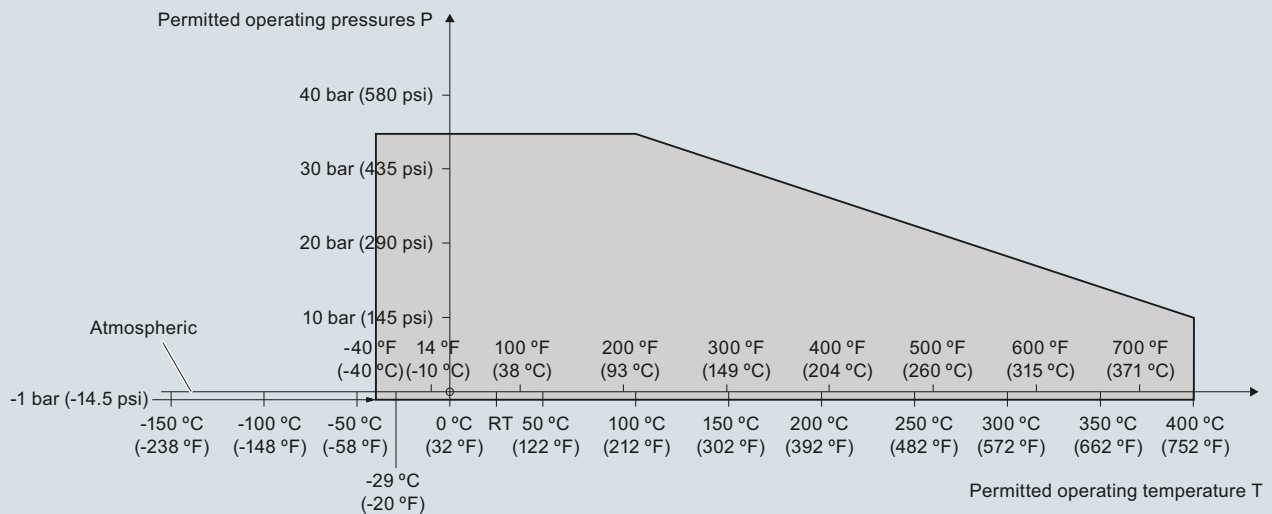
**Characteristic curves**

**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)

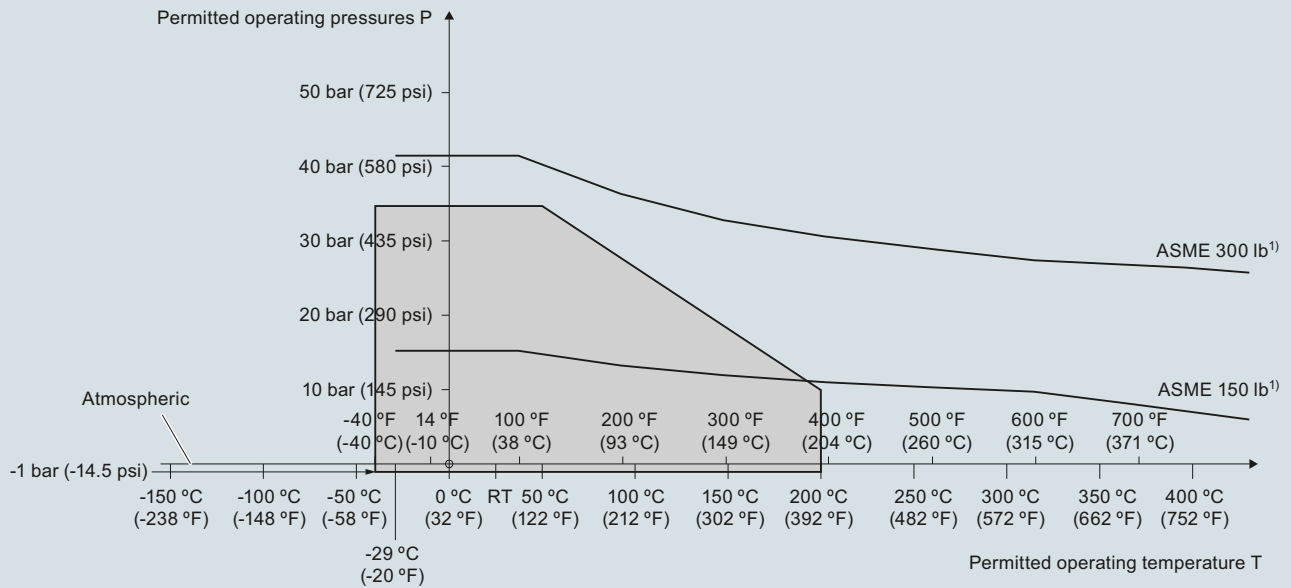
## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS300 - Digital

#### Characteristic curves (continued)

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

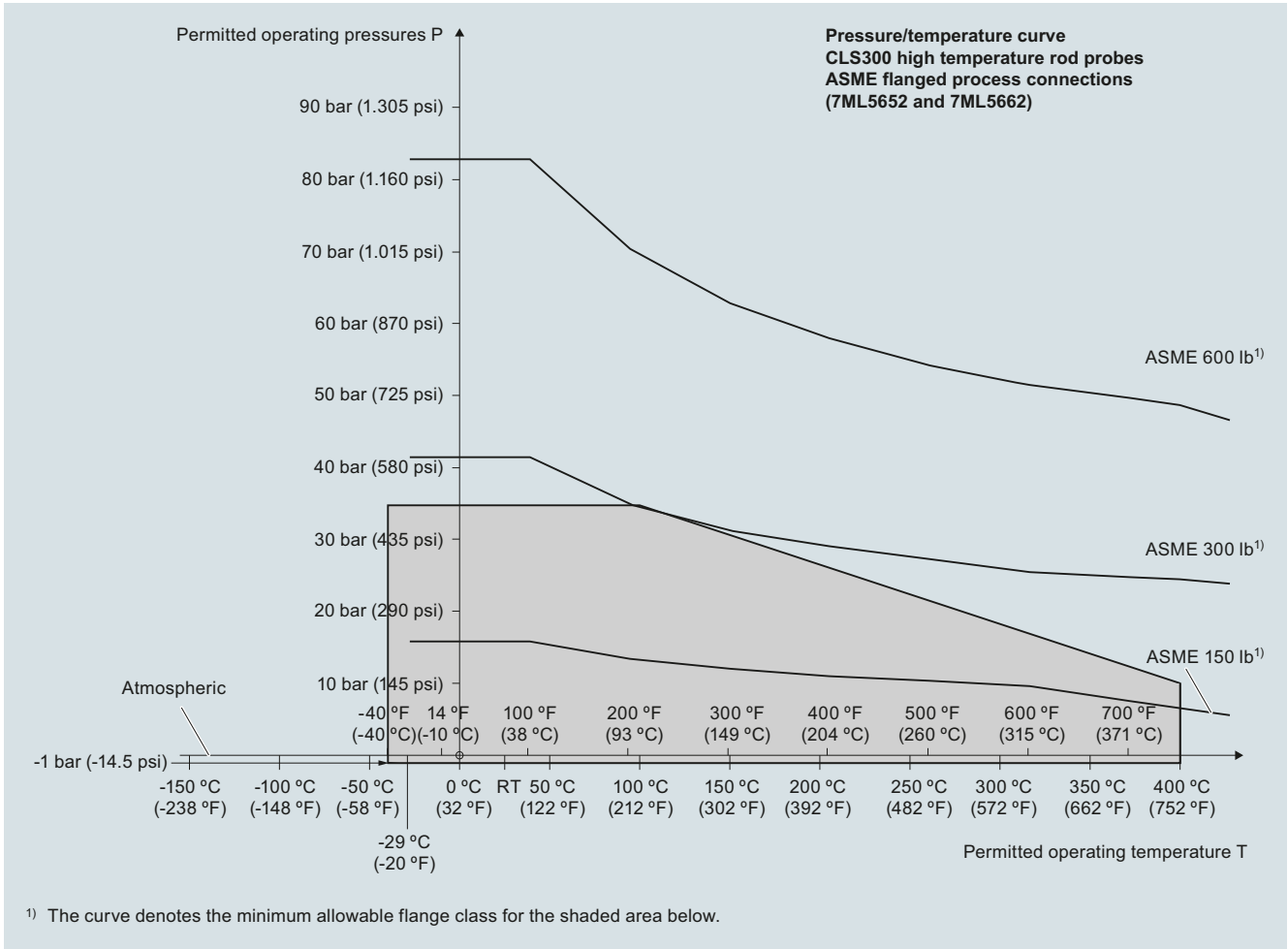


<sup>1)</sup> The curve denotes the minimum allowable flange class for the shaded area below.

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



**Characteristic curves** (continued)



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

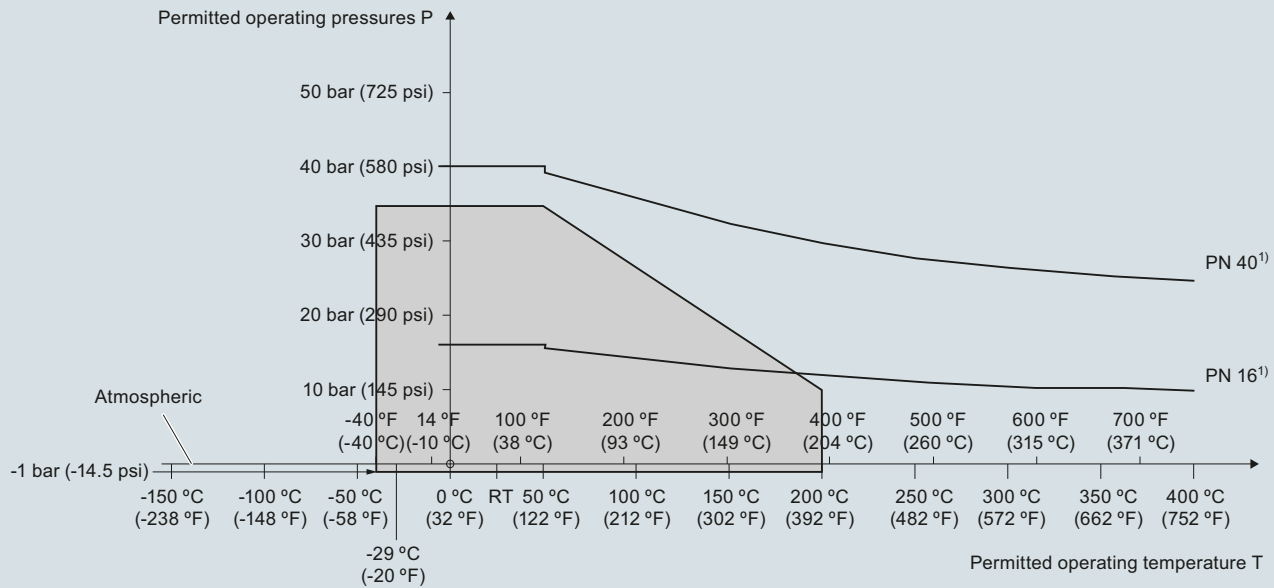
## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS300 - Digital

#### Characteristic curves (continued)

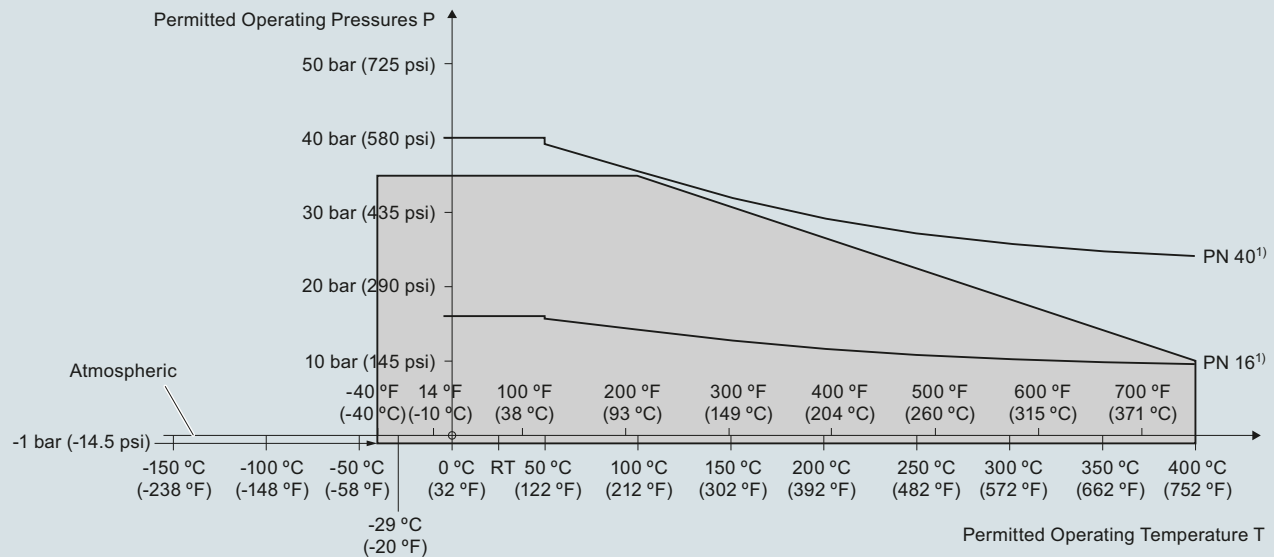
**Pressure/temperature curve**  
CLS300 extended rod and cable probes  
EN flanged process connections  
(7ML5650, 7ML5651, 7ML5660 and 7ML5661)



<sup>1)</sup> 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)

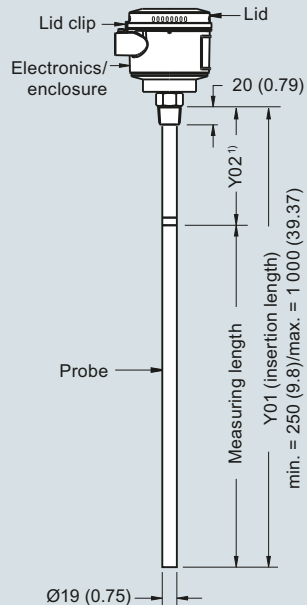


<sup>1)</sup> The curve denotes the minimum allowable flange class for the shaded area below.

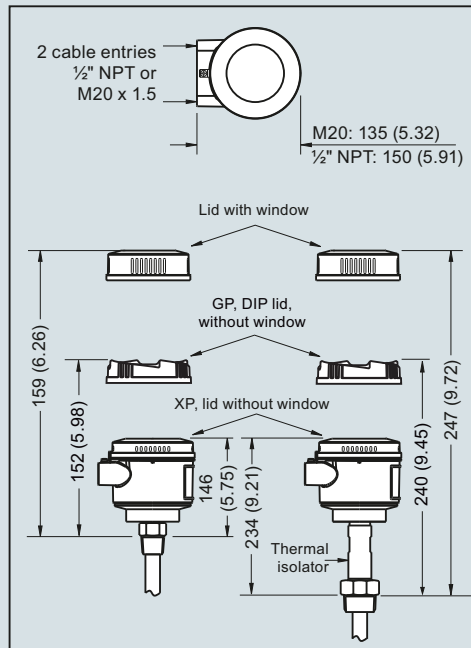
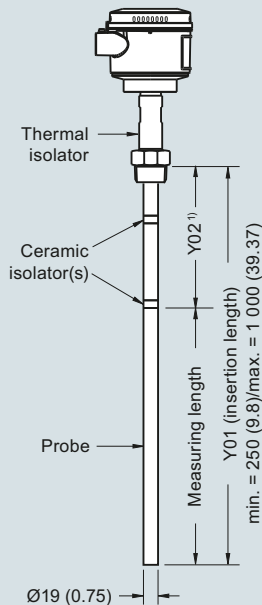
Pointek CLS300 process pressure/temperature derating curves (7ML5652 and 7ML5662)

**Dimensional drawings**

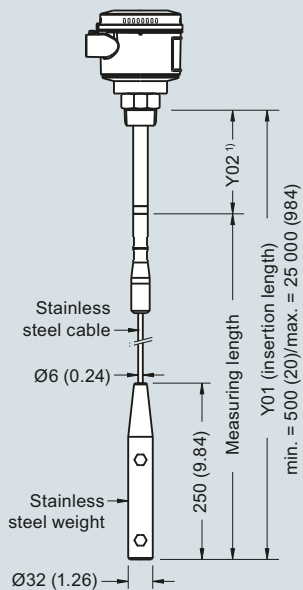
**Rod version  
Threaded (7ML5650 and 7ML5660)**



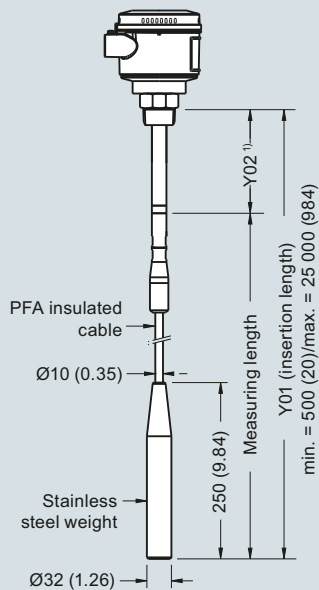
**High temperature rod version  
Threaded (7ML5652 and 7ML5662)**



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



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



**Note:**

<sup>1)</sup> 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)

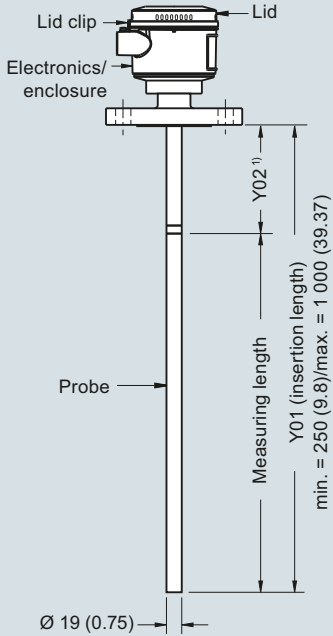
## Level measurement

Point level measurement  
RF Capacitance switches

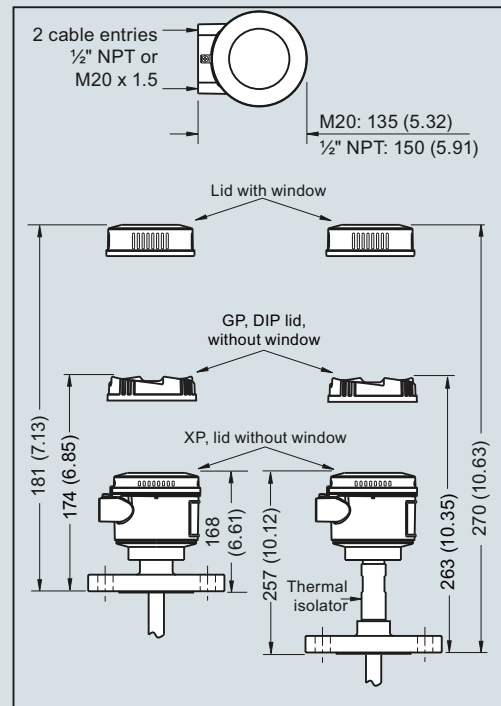
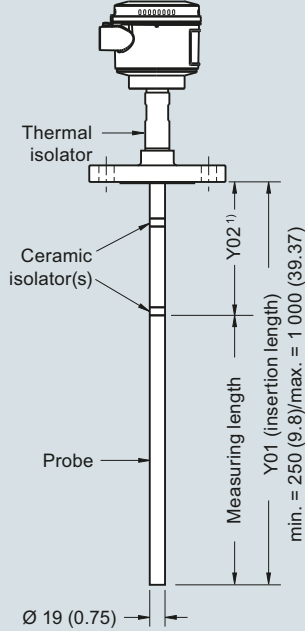
### Pointek CLS300 - Digital

#### Dimensional drawings (continued)

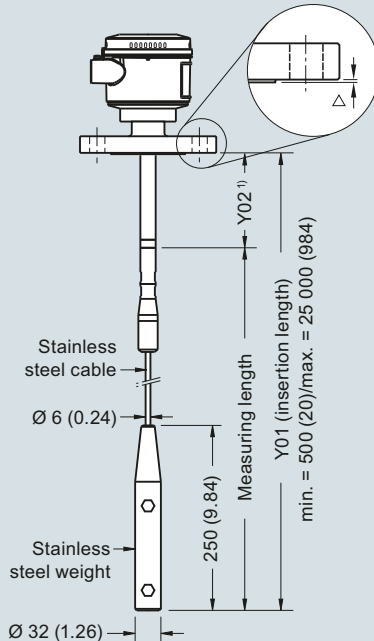
##### Rod version Welded flange (7ML5650 and 7ML5660)



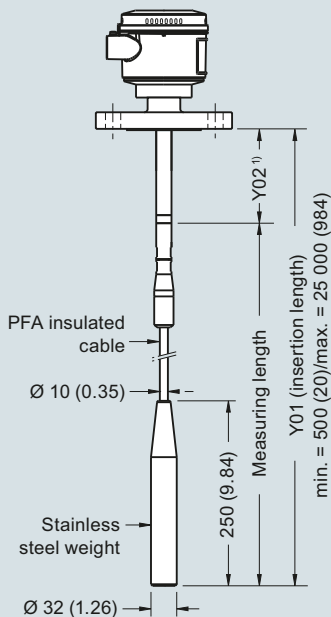
##### High temperature rod version Welded flange (7ML5652 and 7ML5662)



##### 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:**

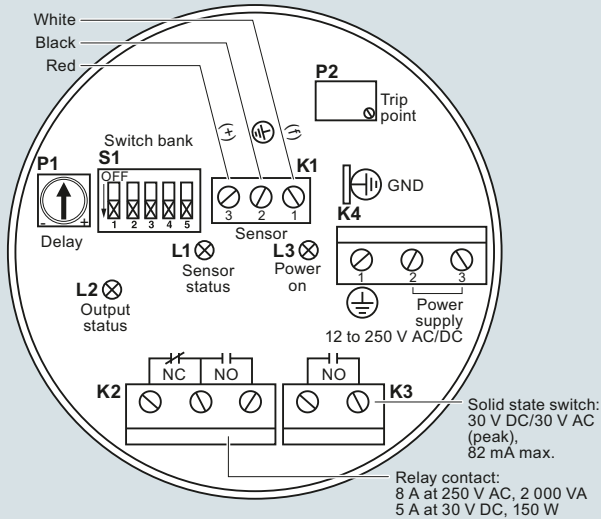
<sup>1)</sup> Extended Active Shield (Y02): standard length 105 (4.13). Optional active shield lengths: 230 (9.06) or 380 (14.96).  
Insertion length does not include any raised face/gasket face dimension (see Flange Facing Table above)

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

4

**Circuit diagrams**

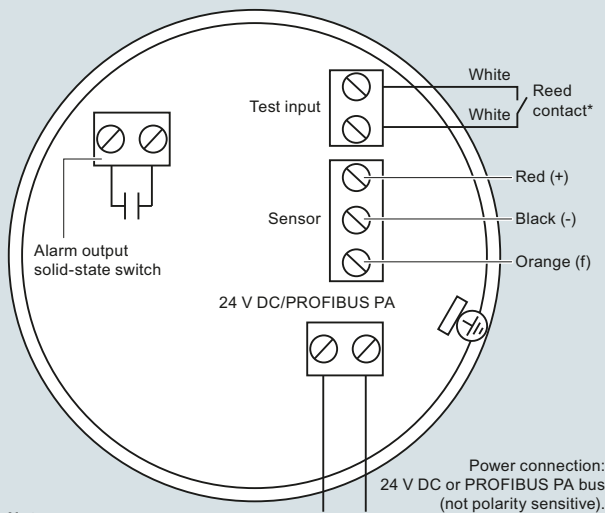
**Wiring: Pointek CLS300 standard**



**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

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

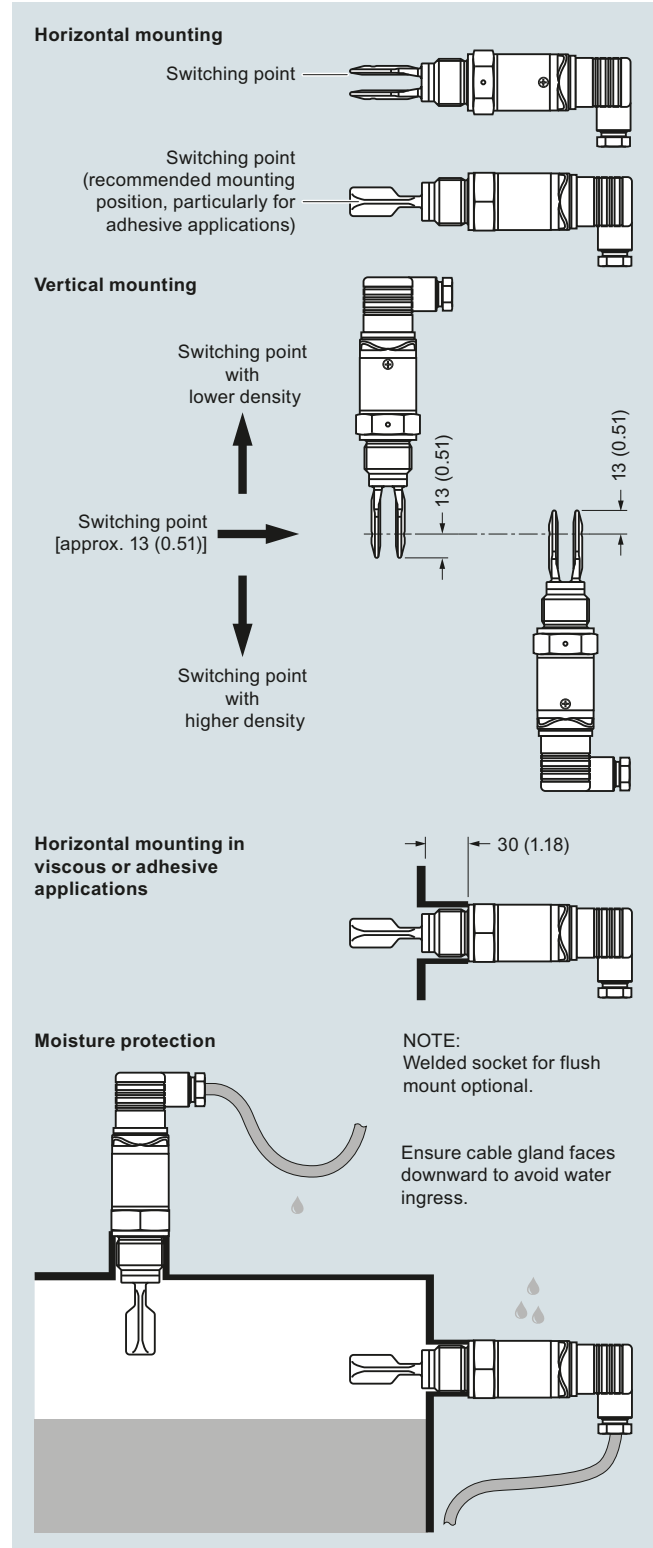
#### Application

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



SITRANS LVL100 installation, dimensions in mm (inch)

#### Technical specifications

<b>Mode of operation</b>	
Measuring principle	Vibrating point level switch
<b>Input</b>	
Measured variable	High and low and demand
<b>Output</b>	
Output options	<ul style="list-style-type: none"> <li>• Contactless electronic switch</li> <li>• Transistor output PNP</li> </ul>
<b>Measuring accuracy</b>	
Hysteresis	Approx. 2 mm (0.08 inch) with vertical installation
Switching delay	Approx. 500 ms (on/off)
Frequency	Approx. 1 100 Hz
<b>Rated operating conditions</b>	
Installation conditions	
• Location	Indoor/outdoor
Ambient conditions	
• Ambient temperature	-40 ... +70 °C (-40 ... +158 °F)
• Storage temperature	-40 ... +80 °C (-40 ... +176 °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 <sup>3</sup> (0.025 ... 0.09 lb/in <sup>3</sup> )
<b>Design</b>	
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	Klingersil 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)
<b>Power supply</b>	
Supply voltage	20 ... 253 V AC, 50/60 Hz 20 ... 253 V DC
Power consumption	Max. 0.5 W
<b>Certificates and approvals</b>	
	<ul style="list-style-type: none"> <li>• Overfill protection (WHG)</li> <li>• Shipping approvals</li> </ul>

## Level measurement

Point level measurement

Vibrating switches

### SITRANS LVL100

#### Selection and ordering data

#### Article No.

#### Order code

#### SITRANS LVL100 Vibrating point level switch.

Detects level and material in liquids and slurries. Compact, with 40 mm (1.6 inch) insertion.

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

#### Approvals

Without approvals  
Shipping approvals<sup>5)</sup>  
Overfill protection (WHG)<sup>1)</sup>  
Canada/US for Ex-free area (including Ordinary Location Approval)<sup>7)</sup>

#### Process temperature

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

#### Process connection

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

#### Electronics

Contactless electronic switch 20 ... 250 V AC/DC<sup>4)</sup>  
Transistor output PNP 10 ... 35 V DC

#### Housing

316L

#### Electrical connection/Protection

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

Article No.	Order code
7ML5745-	
A 0	
1	
2	
3	
4	
A	
B	
C	
A 0	
A 1	
A 2	
A 3	
A 4	
A 5	
A 6	
A 7	
A 8	
B 0	
B 1	
B 2	
B 3	
B 4	
B 5	
B 6	
C 0	
C 1	
C 2	
C 3	
D 0	
D 1	
D 2	
1	
2	
1	
A	
B	
C	
D	

#### 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

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

Article No.

7ML1930-1EE

G1" A/316L with FKM Seal

7ML1930-1EF

M27 x 1.5/316L with FKM Seal

7ML1930-1EG

G $\frac{3}{4}$ " 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

<sup>1)</sup> Available only with Electronics option 2.

<sup>2)</sup> Available only with Process connection options A0, A2, A4, A6, C0, C2, D0, and D1.

<sup>3)</sup> Available only with Process connection options A1, A3, A5, and A7 ... B6, C1, C3, and D2.

<sup>4)</sup> Available only with Electrical connection/Protection options B and C.

<sup>5)</sup> Available only with Process temperature options A and B.

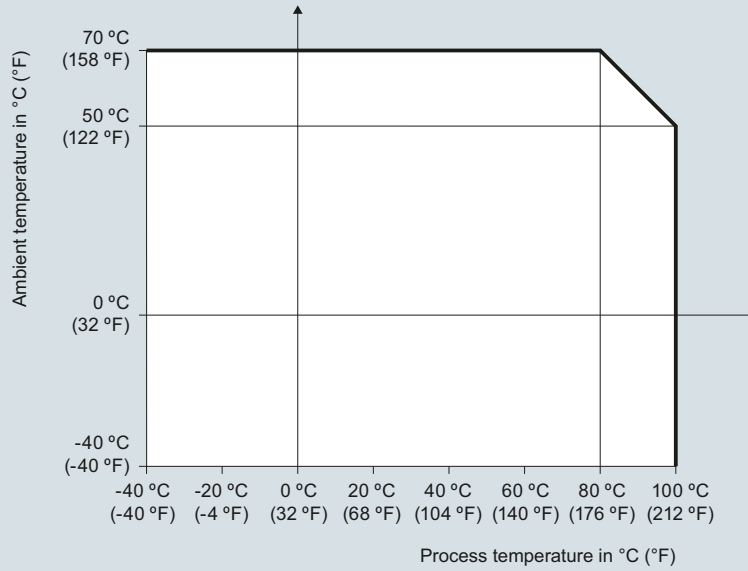
<sup>6)</sup> Available only with Shipping approval options DNV and GL.

<sup>7)</sup> Available only with Electrical connection/Protection option B.

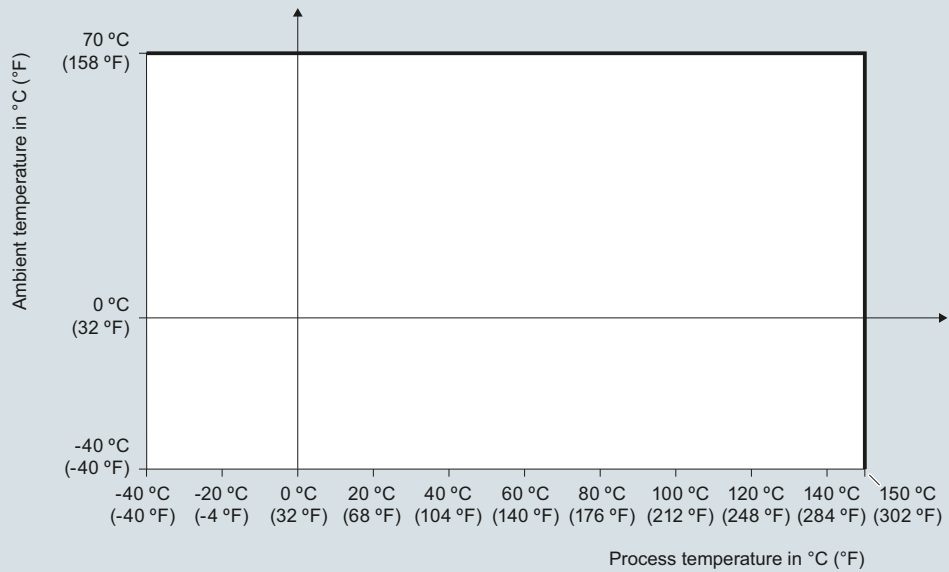


**Characteristic curves**

**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

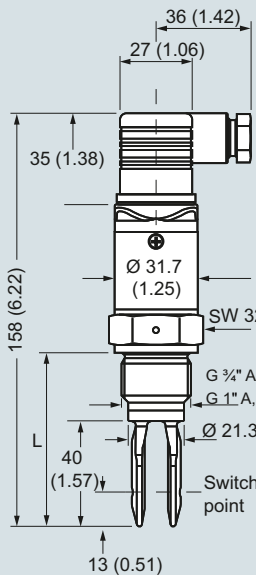
Vibrating switches

### SITRANS LVL100

#### Dimensional drawings

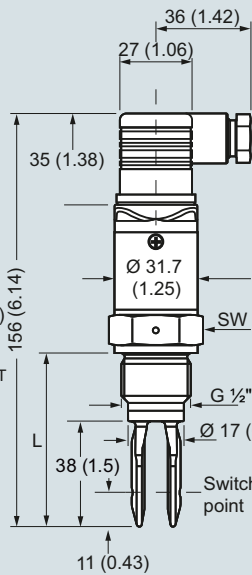
##### SITRANS LVL100 (standard)

Thread G 3/4" A, G 1" A  
(DIN ISO 228/1),  
3/4" NPT or 1" NPT  
(valve plug ISO 4400)



L =  
Length with G 3/4" A, 3/4" NPT: 66 (2.6)  
Length with G 1" A, 1" NPT: 69 (2.7)

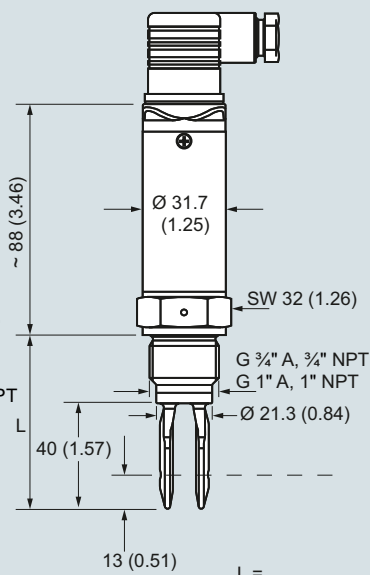
Thread G 1/2" A  
(DIN ISO 228/1),  
1/2" NPT  
(valve plug ISO 4400)



L =  
Length with G 1/2" A, 1/2" NPT: 62 (2.4)

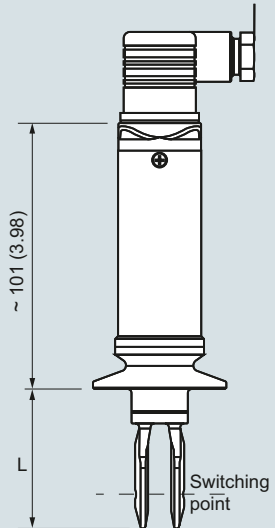
##### SITRANS LVL100 (extended high temperature)

Thread G 3/4" A, G 1" A  
(DIN ISO 228/1),  
3/4" NPT or 1" NPT  
(valve plug DIN 43650)

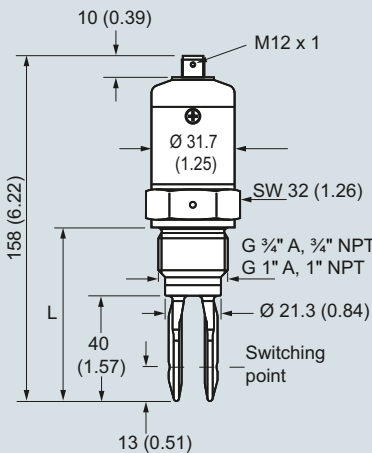


L =  
Length with G 3/4" A, 3/4" NPT: 66 (2.6)  
Length with G 1" A, 1" NPT: 69 (2.7)  
Length with Tri-clamp: 53 (2.1)

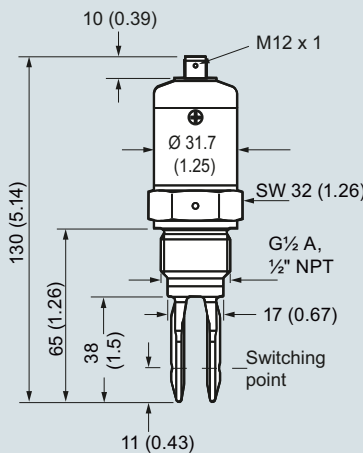
Tri-clamp (valve plug DIN 43650)



##### SITRANS LVL100 (standard with M12 connector)



L =  
Length with G 3/4" A, 3/4" NPT: 66 (2.6)  
Length with G 1" A, 1" NPT: 69 (2.7)

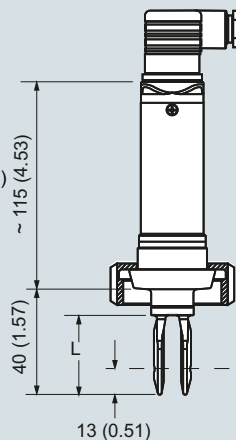


L =  
Length with G 1/2" A, 1/2" NPT: 62 (2.4)

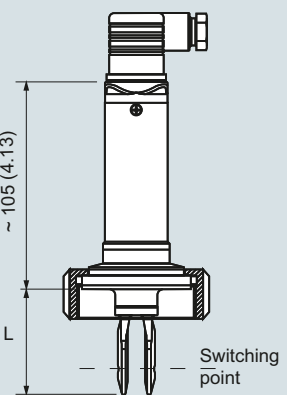
##### SITRANS LVL100 (extended, high temperature)

Bolting DIN 11851  
(valve plug DIN 43650)

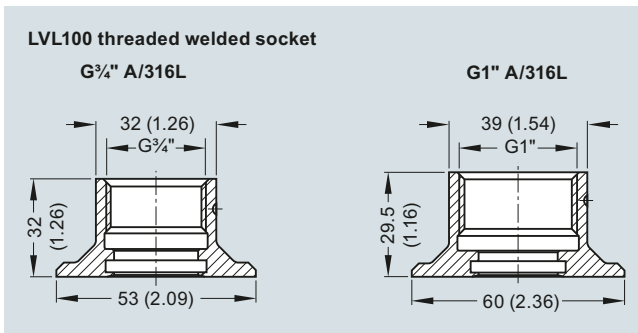
SMS 1145  
(valve plug DIN 43650)



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



SITRANS LVL100, dimensions in mm (inch)

**Options**

SITRANS LVL100 welded socket, dimensions in mm (inch)

## Level measurement

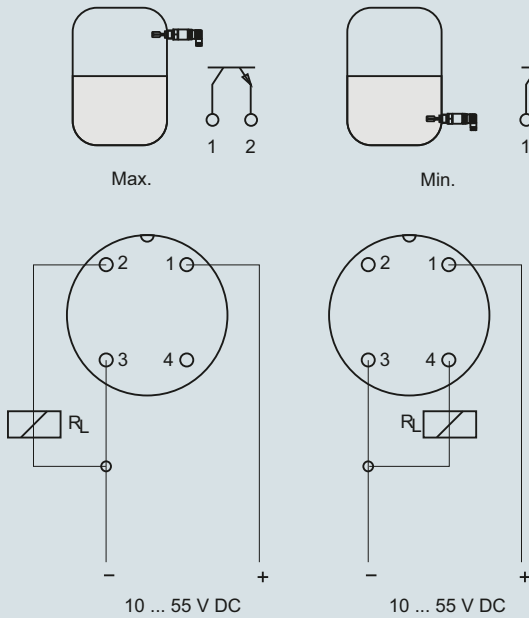
Point level measurement

Vibrating switches

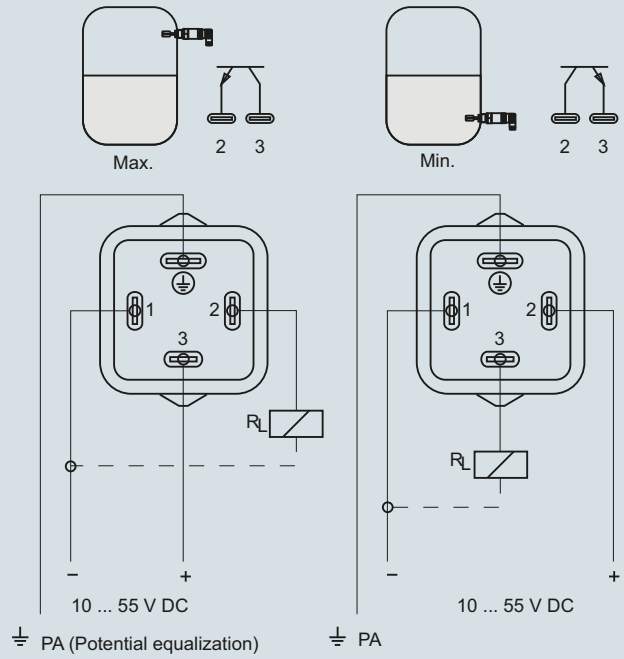
### SITRANS LVL100

#### Circuit diagrams

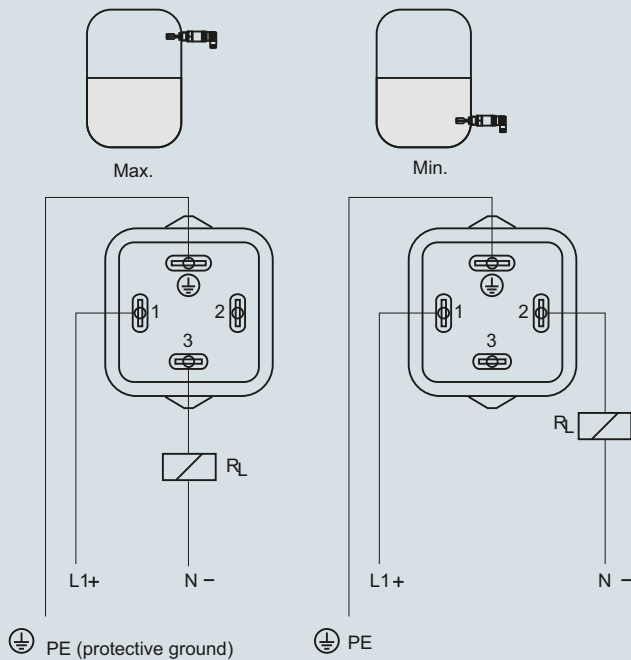
Transistor PNP (M12 x 1 plug connection)



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  $> 0.5 \text{ g/cm}^3$  ( $0.018 \text{ lb/in}^3$ ). 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.

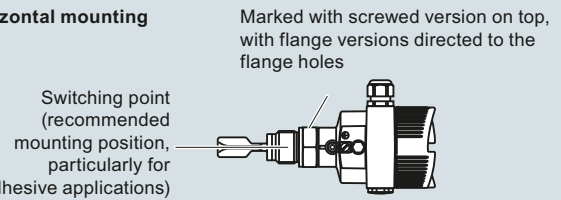
The tuning fork is piezoelectrically energized and vibrates at its mechanical resonance frequency of approximately 1 200 Hz. The vibration frequency changes when the tuning fork is covered by the medium. This change is detected by the integrated oscillator and converted into a switching command. The 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.

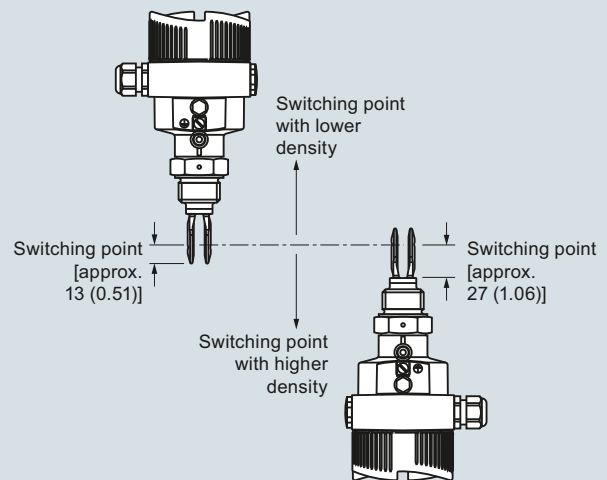
- Key Applications: for use in liquids and slurries, for level measurement, overflow, and dry run protection

## Configuration

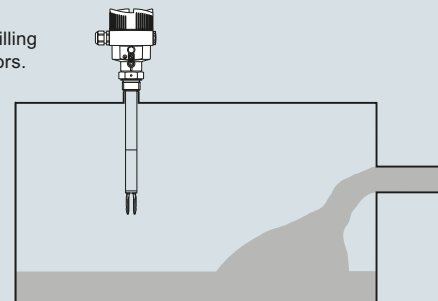
### Horizontal mounting



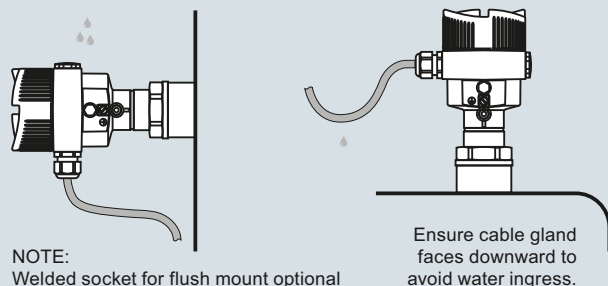
### Vertical mounting



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"> <li>Aluminum die-cast AlSi10Mg, powder-coated, basis: Polyester</li> <li>Stainless steel housing, electropolished 316L</li> <li>Stainless steel housing, precision casting 316L</li> <li>Plastic housing, plastic PBT (Polyester)</li> </ul>
<b>Input</b>		• Enclosure	
Measured variable	High and low and demand (via mode switch)	• Tuning fork	316L (1.4404 or 1.4435), Alloy C22
<b>Output</b>		• Extension tube [ø 21.3 mm (0.839 inch)]	316L (1.4404 or 1.4435), Alloy C22
Output options	<ul style="list-style-type: none"> <li>Relay output (DPDT), 2 floating SPDTs</li> <li>Contactless electronic switch</li> <li>2-wire Namur signal output</li> <li>Transistor (NPN/PNP) 10 ... 55 V DC</li> <li>8/16 mA</li> </ul>	• Process connection: threaded	<ul style="list-style-type: none"> <li>Standard, Extended: 316L (1.4404 or 1.4435), Alloy C22</li> <li>High temperature: Inconel 718</li> </ul>
<b>Measuring accuracy</b>		• Process connection: flange	<ul style="list-style-type: none"> <li>Standard, Extended: 316L (1.4404 or 1.4435), Alloy C22</li> <li>High temperature: Inconel 718</li> </ul>
Repeatability	0.1 mm (0.004 inch)	• Process seal	Klingsil C-4400
Hysteresis	Approx. 2 mm (0.08 inch) with vertical installation	Process connection	
Switching delay	<ul style="list-style-type: none"> <li>Standard, Extended: approx. 500 ms (on/off)</li> <li>High temperature: approx. 1 s (optionally adjustable at factory)</li> </ul>	• Pipe thread, cylindrical (ISO 228 T1)	G ¾" A, G 1" A
Frequency	<ul style="list-style-type: none"> <li>Standard, Extended: Approx. 1 200 Hz</li> <li>High temperature: 1400 Hz</li> </ul>	• Pipe thread, tapered	¾" NPT, 1" NPT, 1½" NPT
<b>Rated operating conditions</b>		• Flanges	DIN from DN 25, ASME from 1"
Installation conditions		• Hygienic fittings	Bolting DN 40 PN 40, 1, 1½, 2, 2½" Tri-Clamp PN 10, conus DN 25 PN 40, Tukenhagen Varivent DN 50 PN 10, SMS
• Location	Indoor/outdoor	Degree of protection	Type 4X/NEMA 4X/IP66/IP67
Ambient conditions		Conduit entry	<ul style="list-style-type: none"> <li>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</li> <li>1 x ½" NPT cable entry, 1 x blind stopper ½" NPT, 1 x ½" NPT cable entry</li> <li>1 x M12 x 1; 1 x blind stopper M20 x 1.5</li> </ul>
• Ambient temperature	-40 ... +70 °C (-40 ... +158 °F)	Weight	
• Storage temperature	-40 ... +80 °C (-40 ... +176 °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	<b>Power supply</b>	
Medium conditions		Supply voltage	
• Temperature		• Relay DPDT	20 ... 253 V AC, 50/60 Hz, 20 ... 72 V DC
- LVL200S Standard	-50 ... +150 °C (-58 ... +302 °F)	• Contactless	20 ... 253 V AC, 50/60 Hz, 20 ... 253 V DC
- LVL200S High temperature option	-50 ... +250 °C (-58 ... +482 °F)	• 2-wire NAMUR	
- LVL200E Standard: with 316L/Alloy C22	-50 ... +150 °C (-58 ... +302 °F)	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 $U_0$ approx. 8.2 V Short-circuit current $I_U$ approx. 8.2 mA
- LVL200E High temperature option with 316L/Alloy C22	-50 ... +250 °C (-58 ... +482 °F)	Operating voltage 8/16 mA (via the signal conditioning instrument)	
- LVL200H High temperature	-196 ... +450 °C (-321 ... +842 °F)	• Non-Ex instrument	12 ... 36 V DC
Pressure (vessel)	<ul style="list-style-type: none"> <li>Standard, Extended: -1 ... 64 bar g (-14.5 ... 928 psi g)</li> <li>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)</li> </ul> <p>Note: The process pressure is dependent on configuration, including process fitting, e.g. flange</p>	• Ex-d instrument (ATEX, FM, CSA)	12 ... 36 V DC
Density	0.7 ... 2.5 g/cm <sup>3</sup> (0.025 ... 0.09 lb/in <sup>3</sup> ); 0.5 ... 2.5 g/cm <sup>3</sup> (0.018 ... 0.09 lb/in <sup>3</sup> ) by switching over Density optionally starts at 0.47 cm <sup>3</sup> (0.017 lb/in <sup>3</sup> )	• Ex-ia instrument (ATEX)	12 ... 29 V DC
		• Ex-ia instrument (FM, CSA)	12 ... 31 V DC

### Technical specifications (continued)

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

# Level measurement

## Point level measurement

### Vibrating switches

#### SITRANS LVL200

#### Selection and ordering data

#### Article No.

#### Article No.

<b>SITRANS LVL200 Vibrating point level switch, standard design</b>	<b>7ML5746-</b>
Detects level and material in liquids and slurries. Short insertion. For hazardous applications.	- - - - - <b>A 0</b> - - - - -
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
<b>Electronics</b>	
Contactless electronic switch 20 ... 250 V AC/DC <sup>1)9)24)</sup>	<b>1</b>
Double relay (DPDT) 20 ... 72 V DC/20 ... 250 V AC <sup>24)</sup>	<b>2</b>
NAMUR signal <sup>9)</sup>	<b>4</b>
Transistor (NPN/PNP) 10 ... 55 V DC <sup>1)25)</sup>	<b>5</b>
Two-wire (8/16 mA) 12 ... 36 V DC <sup>27)</sup>	<b>6</b>
<b>Approvals</b>	
Without approvals	<b>A</b>
Overfill protection (WHG) <sup>9)</sup>	<b>B</b>
ATEX II 1G, ½G, 2G Ex ia IIC T6 <sup>6)</sup>	<b>W</b>
ATEX II 1G, ½G, 2G Ex ia IIC T6 + WHG <sup>6)9)</sup>	<b>C</b>
ATEX II ½G, 2G Ex d IIC T6 + WHG <sup>5)15)</sup>	<b>D</b>
ATEX II 1G, ½G, 2G Ex ia IIC T6 + shipping approvals <sup>6)16)</sup>	<b>E</b>
ATEX II ½G, 2G Ex d IIC T6 + shipping approvals <sup>5)15)</sup>	<b>F</b>
ATEX II 1G, ½G, 2G Ex ia IIC T6 + ATEX II ½D IP6X T <sup>6)7)17)</sup>	<b>G</b>
IECEx Ex ia IIC T6 <sup>6)18)</sup>	<b>H</b>
Shipping approvals <sup>16)</sup>	<b>K</b>
ATEX II 3G Ex nA II T5 ... T1 X <sup>14)19)</sup>	<b>L</b>
FM (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G <sup>5)20)</sup>	<b>N</b>
FM (XP) Class I, Div. 1, Groups A, B, C, D, (DIP) Class II, III, Div. 1, Groups E, F, G <sup>2)5)10)</sup>	<b>P</b>
FM (NI) Class I, Div. 2, Groups A, B, C, D <sup>21)</sup>	<b>Q</b>
IECEx d IIC T6 ... T2 Ga/Gb <sup>5)15)</sup>	<b>R</b>
CSA (XP) Class I, II, III Div. 1, Groups A, B, C, D, E, F, G <sup>5)15)</sup>	<b>S</b>
CSA (NI) Class I, II, III, Div. 2, Groups A, B, C, D, E, F, G <sup>22)</sup>	<b>T</b>
BR-Ex d IIC T6 ... T2 <sup>5)23)</sup>	<b>U</b>
CSA (IS) Class I, II, III Div. 1, Groups A, B, C, D, E, F, G <sup>6)9)</sup>	<b>V</b>
ATEX II ½D, 2D ExtD A20/21, A21 IP6 T... <sup>19)26)</sup>	<b>X</b>
GOST-R/EAC + ATEX II 1G, ½G, 2G Ex ia IIC T6 + WHG <sup>9)26)</sup>	<b>Z</b>
GOST-R/EAC + ATEX II ½G, Ex d IIC T2 ... T6 + WHG <sup>5)15)28)</sup>	<b>Z</b>
GOST-R/EAC + ATEX II ½G, Ex d IIC T2 ... T6 + Ship approval <sup>5)15)28)</sup>	<b>Z</b>
GOST-R/EAC + ATEX II 1G, ½G, 2G Ex ia IIC T6 + II ½D, 2D ExtD <sup>7)17)28)</sup>	<b>Z</b>
GOST-R/EAC + ATEX II ½D, 2D ExtD A20/21, A21 IP6 T... <sup>17)26)</sup>	<b>Z</b>
<b>Process connection</b>	
Thread G¾" A, PN 64/316L	<b>A 0 0</b>
Thread G¾" A, PN 64/316L Ra < 0.8 µm	<b>A 0 1</b>
Thread ¾" NPT, PN 64/316L	<b>A 0 2</b>
Thread ¾" NPT, PN 64/316L Ra < 0.8 µm	<b>A 0 3</b>
Thread ¾" NPT, PN 64/Alloy 400 (2.4360)	<b>A 0 4</b>
Thread G¾" A, PN 64/Alloy C22 (2.4602)	<b>A 0 5</b>
Thread ¾" NPT, PN 64/Alloy C22 (2.4602)	<b>A 0 6</b>
Thread G1" A, PN 64/316L	<b>A 0 7</b>
Thread G1" A, PN 64/316L ECTFE coated MB1982 <sup>4)</sup>	<b>A 0 8</b>
Thread G1" A, PN 64/316L PFA coated <sup>4)</sup>	<b>A 1 0</b>
Thread G1" A, PN 64/Alloy 400 (2.4360)	<b>A 1 1</b>
Thread G1" A, PN 64/316L Ra < 0.8 µm	<b>A 1 2</b>
Thread 1" NPT, PN 64/316L	<b>A 1 3</b>
Thread 1" NPT, PN 64/316L ECTFE coated MB1982 <sup>4)</sup>	<b>A 1 4</b>

<b>SITRANS LVL200 Vibrating point level switch, standard design</b>	<b>7ML5746-</b>
Detects level and material in liquids and slurries. Short insertion. For hazardous applications.	- - - - - <b>A 0</b> - - - - -
Thread 1" NPT, PN 64/316L PFA-coated <sup>4)</sup>	<b>A 1 5</b>
Thread 1" NPT, PN 64/Alloy 400 (2.4360)	<b>A 1 6</b>
Thread 1" NPT, PN 64/316L Ra < 0.8 µm	<b>A 1 7</b>
Thread G1" A, PN 64/Alloy C22 (2.4602)	<b>A 1 8</b>
Thread G1" A, PN 64/Alloy C22 (2.4602) Ra < 0.3 µm	<b>A 2 0</b>
Thread G1½" A, PN 64/316L	<b>A 2 1</b>
Thread G1½" A, PN 64/316L Ra < 0.8 µm	<b>A 2 2</b>
Thread G1½" A, PN 64/Alloy C22 (2.4602)	<b>A 2 3</b>
Thread 1" NPT, PN 64/Alloy C22 (2.4602)	<b>A 2 4</b>
Thread 1½" NPT, PN 64/316L	<b>A 2 5</b>
Thread 1½" NPT, PN 64/316L Ra < 0.8 µm	<b>A 2 6</b>
Thread 1½" NPT, PN 64/Alloy C22 (2.4602)	<b>A 2 7</b>
Thread G2" A, PN 64/316L	<b>A 2 8</b>
Thread M27 x 1.5, PN 64/316L	<b>A 3 0</b>
Conus DN 25, PN 40/316L Ra < 0.3 µm	<b>A 3 1</b>
Conus DN 25, PN 40/316L Ra < 0.8 µm	<b>A 3 2</b>
Conus DN 25, PN 40/ECTFE (ZB3033) <sup>4)</sup>	<b>A 3 3</b>
Conus M52, PN 40/316L	<b>A 3 4</b>
Conus M52, PN 40/316L Ra < 0.3 µm	<b>A 3 5</b>
Conus M52, PN 40/316L Ra < 0.8 µm	<b>A 3 6</b>
Tri-Clamp 1", PN 16/316L Ra < 0.3 µm	<b>A 3 7</b>
Tri-Clamp 1", PN 16/Alloy C22 (2.4602)	<b>A 3 8</b>
Tri-Clamp 1", PN 16/316L Ra < 0.8 µm	<b>A 4 0</b>
Tri-Clamp 1½", PN 16/316L Ra < 0.3 µm	<b>A 4 1</b>
Tri-Clamp 1½", PN 16/Alloy C22 (2.4602)	<b>A 4 2</b>
Tri-Clamp 1½", PN 16/316L Ra < 0.8 µm	<b>A 4 3</b>
Tri-Clamp 2", PN 16/316L Ra < 0.3 µm	<b>A 4 4</b>
Tri-Clamp 2", PN 16/Alloy C22 (2.4602)	<b>A 4 5</b>
Tri-Clamp 2", PN 16/316L Ra < 0.8 µm	<b>A 4 6</b>
Tri-Clamp 2½", PN 10/316L Ra < 0.3 µm	<b>A 4 7</b>
Tri-Clamp 2½", PN 10/316L Ra < 0.8 µm	<b>A 4 8</b>
Tri-Clamp 3", PN 10/316L Ra < 0.3 µm	<b>A 5 0</b>
Tri-Clamp 3", PN 10/316L Ra < 0.8 µm	<b>A 5 1</b>
Bolting DN 32, PN 40 DIN11851/316L Ra < 0.3 µm	<b>A 5 2</b>
Bolting DN 32, PN 40 DIN11851/316L Ra < 0.8 µm	<b>A 5 3</b>
Bolting DN 25, PN 40 DIN11851/316L Ra < 0.3 µm	<b>A 5 4</b>
Bolting DN 25, PN 40 DIN11851/316L Ra < 0.8 µm	<b>A 5 5</b>
Bolting DN 40, PN 40 DIN11851/316L Ra < 0.3 µm	<b>A 5 6</b>
Bolting DN 40, PN 40 DIN11851/316L Ra < 0.8 µm	<b>A 5 7</b>
Bolting DN 40, PN 40 DIN11864-1 A/316L Ra < 0.8 µm ZB3052	<b>A 5 8</b>
Bolting DN 50, PN 25 DIN11851/316L Ra < 0.3 µm	<b>A 6 0</b>
Bolting DN 50, PN 25 DIN11851/316L Ra < 0.8 µm	<b>A 6 1</b>
Bolting DN 50, PN 25 DIN11864-1 A/316L Ra < 0.8 µm ZB3052	<b>A 6 2</b>
Hygienic w. compr. nut F40, PN 25/316L	<b>A 6 3</b>
Hygienic w. compr. nut F40, PN 25/316L Ra < 0.3 µm	<b>A 6 4</b>
Hygienic w. compr. nut F40, PN 25/316L Ra < 0.8 µm	<b>A 6 5</b>
Varivent N50-40/316L Ra < 0.3 µm	<b>A 6 6</b>
Varivent N50-40/316L Ra < 0.8 µm	<b>A 6 7</b>
Varivent N125/100/316L Ra < 0.8 µm	<b>A 6 8</b>
DRD flange, PN 40/316L ZB3007	<b>A 7 0</b>
SMS DN 38/316L Ra < 0.8 µm <sup>4)</sup>	<b>A 7 1</b>
SMS DN 51, PN 6/316L Ra < 0.8 µm <sup>4)</sup>	<b>A 7 2</b>
Swagelok VCR screwing ZG2579, PN 64/316L	<b>A 7 3</b>
Neumo biocontrol size 25, PN 16/316L Ra < 0.8 µm	<b>A 7 4</b>



Selection and ordering data	Article No.	Article No.
<b>SITRANS LVL200 Vibrating point level switch, standard design</b>	<b>7ML5746-</b>	<b>7ML5746-</b>
Detects level and material in liquids and slurries. Short insertion. For hazardous applications.	- A 0	- A 0
Neumo biocontrol size 50, PN 16/316L Ra < 0.8 µm <sup>4)</sup>	A 7 5	B 3 0
Neumo biocontrol size 65, PN 16/316L Ra < 0.8 µm	A 7 6	B 3 1
Neumo biocontrol size 80, PN 16/316L Ra < 0.8 µm	A 7 7	B 3 2
SÜDMO DN 50, PN 10/316L Ra < 0.8 µm	A 7 8	B 3 3
Small flange DN 25, PN 1.5 DIN 28403/316L pol. Ra < 0.8 µm	A 8 0	B 3 4
Small flange DN 40, PN 1.5 DIN 28403/316L pol. Ra < 0.8 µm	A 8 1	B 3 5
Ingold connection, PN16/316L a < 0.8 µm (acc. to MB2523)	A 8 2	B 3 6
Ingold connection, PN 16/Alloy C22 (2.4602) Ra < 0.8 µm (acc. to MB6017)	A 8 3	B 3 7
Terminal DN 33.7 PN 40 DIN 11864-3-A-/316L BN2 Ra < 0.8 µm <sup>4)</sup>	A 8 4	B 3 8
Hygienic fl. DN 50 PN 16 DIN 11864-2-A-/316L Ra < 0.8 µm	A 8 5	B 4 0
Flange DN 25, PN 6 Form C, DIN 2501/316L	A 8 6	B 4 1
Flange DN 25, PN 6 Form C, DIN 2501/PFA <sup>4)</sup>	A 8 7	B 4 2
Flange DN 25, PN 40 Form C, DIN 2501/316L	A 8 8	B 4 3
Flange DN 25, PN 40 Form C, DIN 2501/Alloy C22 (2.4602)	B 0 0	B 4 4
Flange DN 25, PN 40 Form C, DIN 2501/ECTFE <sup>4)</sup>	B 0 1	B 4 5
Flange DN 25, PN 40 Form C, DIN 2501/PFA <sup>4)</sup>	B 0 2	B 4 6
Flange DN 25, PN 40 Form C, DIN 2501/Enamelled	B 0 3	B 4 7
Flange DN 25, PN 40 Form D, DIN 2501/316L	B 0 4	B 4 8
Flange DN 25, PN 40 Form F, DIN 2501/316L	B 0 5	B 5 0
Flange DN 25, PN 40 Form N, DIN 2501/316L	B 0 6	B 5 1
Flange DN 25, PN 40 Form N, DIN 2501/Alloy C22 (2.4602)	B 0 7	B 5 2
Flange DN 25, PN 40 Form N, DIN 2501/Alloy 400 (2.4360) solid	B 0 8	B 5 3
Flange DN 25, PN 40 V13, DIN 2501/316L	B 1 0	B 5 4
Flange DN 32, PN 40 Form C, DIN 2501/316L	B 1 1	B 5 5
Flange DN 32, PN 40 Form C, DIN 2501/ECTFE <sup>4)</sup>	B 1 2	B 5 6
Flange DN 40, PN 6 Form C, DIN 2501/316L	B 1 3	B 5 7
Flange DN 40, PN 6 Form C, DIN 2501/ECTFE <sup>4)</sup>	B 1 4	B 5 8
Flange DN 40, PN 40 Form C, DIN 2501/316L	B 1 5	B 6 0
Flange DN 40, PN 40 Form C, DIN 2501/Alloy C22 (2.4602)	B 1 6	B 6 2
Flange DN 40, PN 40 Form C, DIN 2501/ECTFE <sup>4)</sup>	B 1 7	B 6 3
Flange DN 40, PN 40 Form C, DIN 2501/PFA <sup>4)</sup>	B 1 8	B 6 4
Flange DN 40, PN 40 Form C, DIN 2501/Enamelled <sup>3)</sup>	B 2 0	B 6 5
Flange DN 40, PN 40 Form F, DIN 2501/316L	B 2 1	B 6 6
Flange DN 40, PN 40 Form N, DIN 2501/316L	B 2 2	B 6 7
Flange DN 40, PN 40 Form E, DIN 2501/316L	B 2 3	B 6 8
Flange DN 40, PN 40 V13, DIN 2501/316L	B 2 4	B 7 0
Flange DN 50, PN 40 Form C, DIN 2501/316L	B 2 5	B 7 1
Flange DN 50, PN 40 Form C, DIN 2501/Alloy C22 (2.4602)	B 2 6	B 7 2
Flange DN 50, PN 40 Form C, DIN 2501/ECTFE <sup>4)</sup>	B 2 7	B 7 3
Flange DN 50, PN 40 Form C, DIN 2501/ECTFE (ZB3108) <sup>4)</sup>	B 2 8	
Flange DN 50, PN 40 Form C, DIN 2501/PFA <sup>4)</sup>		
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 N, DIN 2501/Alloy C22 (2.4602)		
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)		
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)		
Flange DN 65, PN 40 Form C, DIN 2501/ECTFE <sup>4)</sup>		
Flange DN 65, PN 40 Form C, DIN 2501/PFA <sup>4)</sup>		
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)		
Flange DN 80, PN 40 Form C, DIN 2501/ECTFE <sup>4)</sup>		
Flange DN 80, PN 40 Form C, DIN 2501/PFA <sup>4)</sup>		
Flange DN 80, PN 40 Form C, DIN 2501/Enamelled <sup>3)</sup>		
Flange DN 80, PN 40 Form F, DIN 2501/316L		
Flange DN 80, PN 40 Form N, DIN 2501/316L		
Flange DN 100, PN 16 Form C, DIN 2501/316L		
Flange DN 100, PN 16 Form C, DIN 2501/Alloy C22 (2.4602)		
Flange DN 100, PN 16 Form C, DIN 2501/ECTFE <sup>4)</sup>		
Flange DN 100, PN 16 Form C, DIN 2501/PFA <sup>4)</sup>		
Flange DN 100, PN 16 Form C, DIN 2501/Enamelled <sup>3)</sup>		
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/ECTFE <sup>4)</sup>		
Flange DN 100, PN 40 Form C, DIN 2501/PFA <sup>4)</sup>		

# Level measurement

## Point level measurement

### Vibrating switches

#### SITRANS LVL200

#### Selection and ordering data

#### Article No.

#### Article No.

#### SITRANS LVL200 Vibrating point level switch, standard design

Detects level and material in liquids and slurries. Short insertion. For hazardous applications.

	7ML5746-
Flange DN 100, PN 40 Form C, DIN 2501/Enamelled <sup>3)</sup>	B 7 4
Flange DN 100, PN 40 Form F, DIN 2501/316L	B 7 5
Flange DN 100, PN 40 Form N, DIN 2501/316L	B 7 6
Flange DN 100, PN 40 V13, DIN 2501/316L	B 7 7
Flange DN 100, PN 64 Form E, DIN 2501/316L	B 7 8
Flange DN 100, PN 100 Form E, DIN 2501/316L	B 8 0
Flange DN 100, PN 100 Form L, DIN 2501/316L	B 8 1
Flange DN 125, PN 16 Form F, DIN 2501/316L	B 8 2
Flange DN 125, PN 40 Form C, DIN 2501/316L	B 8 3
Flange DN 125, PN 40 Form N, DIN 2512/ 316L	B 8 4
Flange DN 150, PN 16 Form C, DIN 2501/316L	B 8 5
Flange DN 150, PN 16 Form C, DIN 2501/Alloy C22 (2.4602)	B 8 6
Flange DN 150, PN 16 Form C, DIN 2501/ECTFE <sup>4)</sup>	B 8 7
Flange DN 150, PN 16 Form C, DIN 2501/PFA <sup>4)</sup>	B 8 8
Flange DN 150, PN 16 Form D, DIN 2501/316L	C 0 0
Flange DN 150, PN 40 Form C, DIN 2501/316L	C 0 1
Flange DN 150, PN 40 Form C, DIN 2501/Alloy C22 (2.4602)	C 0 2
Flange DN 150, PN 40 Form F, DIN 2501/316L	C 0 3
Flange DN 150, PN 40 Form N, DIN 2512/316L	C 0 4
Flange DN 200, PN 10 Form C, DIN 2501/ECTFE <sup>4)</sup>	C 0 5
Flange DN 200, PN 16 Form C, DIN 2501/316L	C 0 6
Flange DN 25, PN 40 Form B1, EN 1092-1/316L	C 0 7
Flange DN 25, PN 40 Form B1, EN 1092-1/Alloy C22 (2.4602)	C 0 8
Flange DN 25, PN 40 Form B1, EN/316L/PFA <sup>4)</sup>	C 1 0
Flange DN 25, PN 40 Form B1, EN 1092-1/Enamelled <sup>3)</sup>	C 1 1
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
Flange DN 25, PN 100 Form B2, EN 1092-1/316L	C 1 5
Flange DN 40, PN 40 Form B1, EN/316L	C 1 6
Flange DN 40, PN 40 Form B1, EN 1092-1/PFA <sup>4)</sup>	C 1 7
Flange DN 40, PN 40 Form B2, EN/316L	C 1 8
Flange DN 50, PN 40 Form B1, EN/316L	C 2 0
Flange DN 50, PN 40 Form B1, EN 1092-1/Alloy C22 (2.4602)	C 2 1
Flange DN 50, PN 40 Form B1, EN 1092-1/Alloy 400 (2.4360) ZB2977	C 2 2
Flange DN 50, PN 40 Form B1, EN 1092-1/ECTFE <sup>4)</sup>	C 2 3
Flange DN 50, PN 40 Form B1, EN/316L/PFA <sup>4)</sup>	C 2 4
Flange DN 50, PN 40 Form B1, EN 1092-1/Enamelled <sup>3)</sup>	C 2 5

#### SITRANS LVL200 Vibrating point level switch, standard design

Detects level and material in liquids and slurries. Short insertion. For hazardous applications.

	7ML5746-
Flange DN 50, PN 40 Form C, EN 1092-1/316L	C 2 6
Flange DN 50, PN 40 Form D, EN/316L	C 2 7
Flange DN 50, PN 40 Form D, EN 1092-1/Alloy C22 (2.4602)	C 2 8
Flange DN 50, PN 40 Form B2, EN 1092-1/316L	C 3 0
Flange DN 50, PN 40 Form E, EN 1092-1/316L	C 3 1
Flange DN 80, PN 40 Form B1, EN 1092-1/316L	C 3 2
Flange DN 80, PN 40 Form B1, EN 1092-1/Alloy C22 (2.4602)	C 3 3
Flange DN 80, PN 40 Form B1, EN 1092-1/ECTFE <sup>4)</sup>	C 3 4
Flange DN 80, PN 40 Form B1, EN 1092-1/Enamelled <sup>3)</sup>	C 3 5
Flange DN 80, PN 40 Form B2, EN 1092-1/316L	C 3 6
Flange DN 100, PN 16 Form B1, EN 1092-1/316L	C 3 7
Flange DN 100, PN 16 Form B1, EN 1092-1/Alloy C22 (2.4602)	C 3 8
Flange DN 100, PN 16 Form B1, EN 1092-1/Enamelled <sup>3)</sup>	C 4 0
Flange DN 100, PN 40 Form B1, EN 1092-1/316L	C 4 1
Flange DN 100, PN 40 Form B1, EN 1092-1/Enamelled <sup>3)</sup>	C 4 2
Flange DN 100, PN 40 Form C, EN 1092-1/316L	C 4 3
Flange DN 100, PN 63 Form B2, EN 1092-1/316L	C 4 4
Flange DN 150, PN 16 Form B1, EN 1092-1/316L	C 4 5
Flange DN 150, PN 16 Form B1, EN 1092-1/PFA <sup>4)</sup>	C 4 6
Flange DN 150, PN 40 Form B1, EN 1092-1/316L	C 4 7
Flange DN 150, PN 40 Form B1, EN 1092-1/ECTFE <sup>4)</sup>	C 4 8
Flange DN 150, PN 40 Form B2, EN 1092-1/316L	C 5 0
Flange 1" 150 lb ASME B16.5/316L	C 5 1
Flange 1" 150 lb RF, ASME B16.5/Alloy C22 (2.4602)	C 5 2
Flange 1" 150 lb RF, ASME B16.5/Alloy 400 (2.4360) ZB2977	C 5 3
Flange 1" 150 lb RF, ASME B16.5/ECTFE <sup>4)</sup>	C 5 4
Flange 1" 150 lb RF, ASME B16.5/PFA <sup>4)</sup>	C 5 5
Flange 1" 150 lb RF, ASME B16.5/Enamelled <sup>3)</sup>	C 5 6
Flange 1" 300 lb RF, ASME B16.5/316L	C 5 7
Flange 1" 300 lb RF, ASME B16.5/ECTFE <sup>4)</sup>	C 5 8
Flange 1" 600 lb RF, ASME B16.5/316L	C 6 0
Flange 1½" 150 lb RF, ASME B16.5/316L	C 6 1
Flange 1½" 150 lb RF, ASME B16.5/Alloy C22 (2.4602)	C 6 2
Flange 1½" 150 lb RF, ASME B16.5/ECTFE <sup>4)</sup>	C 6 3
Flange 1½" 150 lb RF, ASME B16.5/PFA <sup>4)</sup>	C 6 4
Flange 1½" 150 lb RF, ASME B16.5 Enamelled <sup>3)</sup>	C 6 5
Flange 1½" 150 lb FF, ASME B16.5/ECTFE <sup>4)</sup>	C 6 6
Flange 1½" 300 lb RF, ASME B16.5/316L	C 6 7
Flange 1½" 300 lb RF, ASME B16.5/Alloy 400 (2.4360) ZB2977	C 6 8
Flange 1½" 300 lb RF, ASME B16.5/ECTFE <sup>3)</sup>	C 7 0
Flange 1½" 600 lb RF, ASME B16.5/316L	C 7 1
Flange 2" 150 lb RF, ASME B16.5/316L	C 7 2
Flange 2" 150 lb RF, ASME B16.5/Alloy C22 (2.4602)	C 7 3

Selection and ordering data	Article No.	Article No.
<b>SITRANS LVL200 Vibrating point level switch, standard design</b>	<b>7ML5746-</b>	<b>7ML5746-</b>
Detects level and material in liquids and slurries. Short insertion. For hazardous applications.	- A 0	- A 0
Flange 2" 150 lb RF, ASME B16.5/Alloy 400 (2.4360) ZB2977	C 7 4	D 4 6
Flange 2" 150 lb RF, ASME B16.5/ECTFE <sup>4)</sup>	C 7 5	D 4 7
Flange 2" 150 lb RF, ASME B16.5/PFA <sup>4)</sup>	C 7 6	D 4 8
Flange 2" 150 lb RF, ASME B16.5/Enamelled <sup>3)</sup>	C 7 7	D 5 0
Flange 2" 150 lb FF, ASME B16.5/316L	C 7 8	D 5 1
Flange 2" 150 lb FF, ASME B16.5/ECTFE <sup>4)</sup>	C 8 0	D 5 2
Flange 2" 150 lb SG (small groove), ASME B16.5/316L	C 8 1	D 5 3
Flange 2" 300 lb RF, ASME B16.5/316L	C 8 2	D 5 4
Flange 2" 300 lb RF, ASME B16.5/Alloy C22 (2.4602)	C 8 3	D 5 5
Flange 2" 300 lb RF, ASME B16.5/ECTFE <sup>4)</sup>	C 8 5	D 5 6
Flange 2" 300 lb RF, ASME B16.5/PFA <sup>4)</sup>	C 8 6	D 5 7
Flange 2" 300 lb RF, ASME B16.5 Enamelled <sup>3)</sup>	C 8 7	D 5 8
Flange 2" 300 lb RJF, ASME B16.5/316L	C 8 8	D 6 0
Flange 2" 300 lb ST, ASME B16.5/316L	D 0 0	D 6 1
Flange 2" 300 lb LG (large groove), ASME B16.5/316L	D 0 1	D 6 2
Flange 2" 300 lb LT, ASME B16.5/316L	D 0 2	D 6 3
Flange 2" 600 lb RF, ASME B16.5/316L	D 0 3	D 6 5
Flange 2" 600 lb RF, ASME B16.5/Alloy 400 (2.4360) ZB2977	D 0 4	D 7 0
Flange 2" 600 lb RF, ASME B16.5/ECTFE <sup>4)</sup>	D 0 5	
Flange 2" 600 lb RJF, ASME B16.5/316L	D 0 6	
Flange 2" 600 lb LG, ASME B16.5/316L	D 0 7	
Flange 2" 900 lb RJF, ASME B16.5/316L	D 0 8	
Flange 2½" 150 lb RF, ASME B16.5/316L	D 1 0	
Flange 2½" 300 lb RF, ASME B16.5/316L	D 1 1	
Flange 3" 150 lb RF, ASME B16.5/316L	D 1 2	
Flange 3" 150 lb RF, ASME B16.5/Alloy C22 (2.4602)	D 1 3	
Flange 3" 150 lb RF, ASME B16.5/ECTFE <sup>4)</sup>	D 1 4	A
Flange 3" 150 lb RF, ASME B16.5/PFA <sup>4)</sup>	D 1 5	B
Flange 3" 150 lb RF, ASME B16.5/Enamelled <sup>3)</sup>	D 1 6	C
Flange 3" 150 lb FF, ASME B16.5/316L	D 1 7	D
Flange 3" 150 lb FF, ASME B16.5/ECTFE <sup>4)</sup>	D 1 8	E
Flange 3" 150 lb FF, ASME B16.5/PFA <sup>4)</sup>	D 2 0	F
Flange 3" 300 lb RF, ASME B16.5/316L	D 2 1	G
Flange 3" 300 lb RF, ASME B16.5/Alloy C22 (2.4602)	D 2 2	H
Flange 3" 300 lb RF, ASME B16.5/ECTFE <sup>4)</sup>	D 2 3	V
Flange 3" 300 lb RF, ASME B16.5/PFA <sup>4)</sup>	D 2 4	
Flange 3" 300 lb RF, ASME B16.5/Enamelled <sup>3)</sup>	D 2 5	
Flange 3" 600 lb RF, ASME B16.5/316L	D 2 6	
Flange 3½" 150 lb RF, ASME B16.5/316L	D 2 7	
Flange 3½" 150 lb RF, ASME B16.5/ECTFE <sup>4)</sup>	D 2 8	
Flange 4" 150 lb RF, ASME B16.5/316L	D 3 0	
Flange 4" 150 lb RF, ASME B16.5/Alloy C22 (2.4602)	D 3 1	
Flange 4" 150 lb RF, ASME B16.5/ECTFE <sup>4)</sup>	D 3 2	
Flange 4" 150 lb RF, ASME B16.5/PFA <sup>4)</sup>	D 3 3	
Flange 4" 150 lb RF, ASME B16.5/Enamelled <sup>3)</sup>	D 3 4	
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 <sup>4)</sup>	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	
<b>SITRANS LVL200 Vibrating point level switch, standard design</b>		
Detects level and material in liquids and slurries. Short insertion. For hazardous applications.		
Flange 6" 150 lb RF, ASME B16.5/Alloy C22 (2.4602)		
Flange 6" 150 lb RF, ASME B16.5/ECTFE <sup>4)</sup>		
Flange 6" 150 lb RF, ASME B16.5/PFA <sup>4)</sup>		
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/ECTFE <sup>4)</sup>		
Flange 1" BS.10 Table E/316L		
Flange 1" BS.10 Table E/PFA <sup>4)</sup>		
Flange 1½" BS.10 Table E/316L		
Flange 3½" BS.10 Table E/316L		
Flange 4" BS.10 Table E/ECTFE <sup>4)</sup>		
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 PN 64, EN 10226-1/316L		
Flange 2" 900 lb RF, ASME B16.5/316L		
<b>Adapter/Process temperature</b>		
Without adapter/-50 ... +150 °C (-58 ... +302 °F)		1
With adapter/-50 ... +200 °C (-58 ... +392 °F) <sup>3)</sup>		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
<b>Housing/Cable entry</b>		
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 HAN 7D (bent) according to Tier One (ZB7555) <sup>1)</sup>		V

## 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).

Switching status indication with colors red-green<sup>12)</sup>

**A21**

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

**W01**

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

**Y17**

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

**Y18**

NACE0175 to 3.1 Material Certificate for material (EN10204 NACE MR 0175)<sup>8)</sup> 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<sup>8)</sup>

**C05**

2.2-Factory certificate for material (EN 10204)<sup>8)</sup>

**C15**

Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511<sup>8)</sup>

**C20**

Dye penetration test, results confirmed via a 3.1 certificate/instrument (EN 10204)<sup>8)</sup>

**C13**

X-ray test + 3.1 certificate/instrument<sup>8)</sup>

**C14**

Positive material identification test + 3.1 certificate/instrument<sup>8)</sup>

**C16**

Roughness test + 3.1 certificate/instrument<sup>8)</sup>

**C18**

3.1-Inspection Certificate for instrument with test data (EN 10204)<sup>8)</sup>

**C25**

Quality and test plan

**C26**

Pressure test + 3.1 certificate/instrument<sup>8)</sup>

**C31**

Helium leak test + 3.1 certificate/instrument<sup>8)</sup>

**C32**

Ferrite measuring accuracy to DIN 32514-1 + 3.1 certificate/instrument<sup>8)</sup>

**C60**

Pressure test according to Norsok + 3.1 certificate/instrument<sup>8)</sup>

**C61**

##### 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

Article No.

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-.....-....**

##### LVL200 Threaded Welded Socket

- G $\frac{3}{4}$ " A/316L with FKM Seal
- G1" A/316L with FKM Seal
- M27 x 1.5/316L with FKM Seal
- G $\frac{3}{4}$ " A/316L with EPDM Seal
- G1" A/316L with EPDM Seal
- M27 x 1.5/316L with EPDM Seal

**7ML1930-1EE**

**7ML1930-1EF**

**7ML1930-1EG**

**7ML1930-1EH**

**7ML1930-1EJ**

**7ML1930-1EK**

- 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.
- 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, W, J1A, J1D, and J1E.
- 25) Not available with Approval options C, E, G, H, N, V, W, J1A, J1D, and J1E.
- 26) Available only with Electronic option 4.
- 27) Not available with EAC approval options.
- 28) Not available with Electronic option 6.

Selection and ordering data	Article No.	Article No.	
<p><b>SITRANS LVL200 Vibrating point level switch, rigid extension design</b></p> <p>Detects level and material in liquids and slurries. Top mount, with extension options to 6 m (19.69 ft). Ideal for hazardous applications.</p> <p>➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>	7ML5747-	7ML5747-	
<p><b>Electronics</b></p> <p>Contactless electronic switch 20 ... 250 V AC/DC<sup>19)14)</sup></p> <p>Double relay (DPDT) 20 ... 72 V DC/20 ... 250 V AC<sup>14)</sup></p> <p>NAMUR signal<sup>9)</sup></p> <p>Transistor (NPN/PNP) 10 ... 55 V DC<sup>1)15)</sup></p> <p>Two-wire (8/16 mA) 12 ... 36 V DC<sup>25)</sup></p>	1 2 4 5 6		
<p><b>Approvals</b></p> <p>Without approvals</p> <p>Overfill protection (WHG)<sup>9)</sup></p> <p>ATEX II 1G, ½G, 2G Ex ia IIC T6<sup>6)</sup></p> <p>ATEX II 1G, ½G, 2G Ex ia IIC T6 + WHG<sup>6)9)</sup></p> <p>ATEX II ½G, 2G Ex d IIC T6 + WHG<sup>5)7)16)</sup></p> <p>ATEX II 1G, ½G, 2G Ex ia IIC T6 + shipping approvals<sup>5)17)</sup></p> <p>ATEX II ½G, 2G Ex d IIC T6 + shipping approvals<sup>5)7)16)</sup></p> <p>ATEX II 1G, ½G, 2G Ex ia IIC T6 + ATEX II ½D IP6X T<sup>6)8)18)</sup></p> <p>IECEx Ex ia IIC T6<sup>6)19)</sup></p> <p>Shipping approvals<sup>17)</sup></p> <p>ATEX II 3G Ex nA II T5 ... T1 X</p> <p>FM (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G<sup>6)20)</sup></p> <p>FM (XP) Class I, Div. 1, Groups A, B, C, D; (DIP) Class II, III, Div. 1, Groups E, F, G<sup>2)5)</sup></p> <p>FM (NI) Class I, Div. 2, Groups A, B, C, D<sup>21)</sup></p> <p>IECEx d IIC T6 ... T2 Ga/Gb<sup>5)7)16)</sup></p> <p>CSA (XP) Class I, II, III Div. 1, Groups A, B, C, D, E, F, G<sup>2)5)7)</sup></p> <p>CSA (NI) Class I, II, III, Div. 2, Groups A, B, C, D, E, F, G<sup>22)</sup></p> <p>BR-Ex d IIC T6 ... T2<sup>5)18)</sup></p> <p>CSA (IS) Class I, II, III Div. 1, Groups A, B, C, D, E, F, G<sup>6)9)</sup></p> <p>ATEX II ½D, 2D ExtD A20/21, A21 IP6 T...<sup>23)24)</sup></p> <p>GOST-R/EAC + ATEX II 1G, ½G, 2G Ex ia IIC T6 + WHG<sup>9)24)</sup></p> <p>GOST-R/EAC + ATEX II ½G, Ex d IIC T2 ... T6 + WHG<sup>5)7)16)26)</sup></p> <p>GOST-R/EAC + ATEX II ½G, Ex d IIC T2 ... T6 + Ship approval<sup>5)7)16)26)</sup></p> <p>GOST-R/EAC + ATEX II 1G, ½G, 2G Ex ia IIC T6 + II ½D, 2D ExtD<sup>18)24)</sup></p> <p>GOST-R/EAC + ATEX II ½D, 2D ExtD A20/21, A21 IP6 T...<sup>18)24)</sup></p>	A B W C D E F G H K L N P Q R S T U V X Z Z Z Z Z		
<p><b>NOTE:</b></p> <p><b>When selecting a Process connection option, process connection coating must match the extension coating and the material and surface roughness type.</b></p>			
<p><b>Process connection</b></p> <p>Thread G¾" A, PN 64/316L</p> <p>Thread G¾" A, PN 64/316L Ra &lt; 0.8 µm</p> <p>Thread ¾" NPT, PN 64/316L</p> <p>Thread ¾" NPT, PN 64/316L Ra &lt; 0.8 µm</p> <p>Thread ¾" NPT, PN 64/Alloy 400 (2.4360)</p> <p>Thread G¾" A, PN 64/Alloy C22 (2.4602)</p> <p>Thread ¾" NPT, PN 64/Alloy C22 (2.4602)</p> <p>Thread G1" A, PN 64/316L</p> <p>Thread G1" A, PN 64/316L</p> <p>ECTFE coated MB1982<sup>4)</sup></p> <p>Thread G1" A, PN 64/316L PFA coated<sup>4)</sup></p> <p>Thread G1" A, PN 64/Alloy 400 (2.4360)</p> <p>Thread G1" A, PN 64/316L Ra &lt; 0.8 µm</p>	A 0 0 A 0 1 A 0 2 A 0 3 A 0 4 A 0 5 A 0 6 A 0 7 A 0 8 A 1 0 A 1 1 A 1 3	<p><b>SITRANS LVL200 Vibrating point level switch, rigid extension design</b></p> <p>Detects level and material in liquids and slurries. Top mount, with extension options to 6 m (19.69 ft). Ideal for hazardous applications.</p> <p>Thread 1" NPT, PN 64/316L</p> <p>Thread 1" NPT, PN 64/316L ECTFE coated MB1982<sup>4)</sup></p> <p>Thread 1" NPT, PN 64/316L PFA coated<sup>4)</sup></p> <p>Thread 1" NPT, PN 64/Alloy 400 (2.4360)</p> <p>Thread 1" NPT, PN 64/316L Ra &lt; 0.8 µm</p> <p>Thread G1" A, PN 64/Alloy C22 (2.4602)</p> <p>Thread G1½" A, PN 64/316L</p> <p>Thread G1½" A, PN 64/316L Ra &lt; 0.8 µm</p> <p>Thread G1½" A, PN 64/Alloy C22 (2.4602)</p> <p>Thread 1" NPT, PN 64/Alloy C22 (2.4602)</p> <p>Thread 1½" NPT, PN 64/316L</p> <p>Thread 1½" NPT, PN 64/316L Ra &lt; 0.8 µm</p> <p>Thread 1½" NPT, PN 64/Alloy C22 (2.4602)</p> <p>Thread G2" A, PN 64/316L</p> <p>Thread M27 x 1.5 PN 64/316L</p> <p>Cyl. socket/316Ti/1.4581 ECTFE coated ZB2984<sup>4)</sup></p> <p>Conus DN 25 PN 40/316L Ra &lt; 0.3 µm</p> <p>Conus DN 25 PN 40/316L Ra &lt; 0.8 µm</p> <p>Conus DN 25 PN 40/ECTFE (ZB3033)<sup>4)</sup></p> <p>Conus M52 PN 40/316L</p> <p>Conus M52 PN 40/316L Ra &lt; 0.3 µm</p> <p>Conus M52 PN 40/316L Ra &lt; 0.8 µm</p> <p>Tri-Clamp 1" PN 16/316L Ra &lt; 0.3 µm</p> <p>Tri-Clamp 1" PN 16/Alloy C22 (2.4602)</p> <p>Tri-Clamp 1" PN 16/316L Ra &lt; 0.8 µm</p> <p>Tri-Clamp 1½" PN 16/316L Ra &lt; 0.3 µm</p> <p>Tri-Clamp 1½" PN 16/Alloy C22 (2.4602)</p> <p>Tri-Clamp 1½" PN 16/316L Ra &lt; 0.8 µm</p> <p>Tri-Clamp 2" PN 16/316L Ra &lt; 0.3 µm</p> <p>Tri-Clamp 2" PN 16/Alloy C22 (2.4602)</p> <p>Tri-Clamp 2" PN 16/316L Ra &lt; 0.8 µm</p> <p>Tri-Clamp 2½" PN 10/316L Ra &lt; 0.3 µm</p> <p>Tri-Clamp 2½" PN 10/316L Ra &lt; 0.8 µm</p> <p>Tri-Clamp 3" PN 10/316L Ra &lt; 0.3 µm</p> <p>Clamp 3" PN16 (ø91 mm) DIN32676, ISO2852/ 316L (Ra &lt; 0.8 µm)</p> <p>Bolting DN 32 PN 40 DIN 11851/316L Ra &lt; 0.3 µm</p> <p>Bolting DN 32 PN 40 DIN 11851/316L Ra &lt; 0.8 µm</p> <p>Bolting DN 25 PN 40 DIN 11851/316L Ra &lt; 0.3 µm</p> <p>Bolting DN 25 PN 40 DIN 11851/316L Ra &lt; 0.8 µm</p> <p>Bolting DN 40 PN 40 DIN 11851/316L Ra &lt; 0.3 µm</p> <p>Bolting DN 40 PN 40 DIN 11851/316L Ra &lt; 0.8 µm</p> <p>Bolting DN 40 PN 40 DIN 11864-1 A/316L Ra &lt; 0.8 µm ZB3052</p> <p>Bolting DN 50 PN 25 DIN 11851/316L Ra &lt; 0.3 µm</p> <p>Bolting DN 50 PN 25 DIN 11851/316L Ra &lt; 0.8 µm</p> <p>Bolting DN 50 PN 25 DIN 11864- 1 A/316L Ra &lt; 0.8 µm ZB3052</p> <p>Hygienic w.compr.nut F40 PN 25/316L</p> <p>Hygienic w.compr.nut F40 PN 25/316L Ra &lt; 0.3 µm</p> <p>Hygienic w.compr.nut F40 PN 25/316L Ra &lt; 0.8 µm</p> <p>Varivent N50-40/316L Ra &lt; 0.3 µm</p> <p>Varivent N50-40/316L Ra &lt; 0.8 µm</p> <p>Varivent N125/100/316L Ra &lt; 0.8 µm</p> <p>DRD flange PN 40/316L ZB3007</p> <p>SMS DN 38/316L Ra &lt; 0.8 µm<sup>4)</sup></p> <p>SMS DN 51 PN 6/316L Ra &lt; 0.8 µm<sup>4)</sup></p> <p>Swagelok VCR screwing ZG2579 PN 64/316L</p>	A 1 4 A 1 5 A 1 6 A 1 7 A 1 8 A 2 0 A 2 1 A 2 2 A 2 3 A 2 4 A 2 5 A 2 6 A 2 7 A 2 8 A 3 0 A 3 1 A 3 2 A 3 3 A 3 4 A 3 5 A 3 6 A 3 7 A 3 8 A 4 0 A 4 1 A 4 2 A 4 3 A 4 4 A 4 5 A 4 6 A 4 7 A 4 8 A 5 0 A 5 1 A 5 2 A 5 3 A 5 4 A 5 5 A 5 6 A 5 7 A 5 8 A 6 0 A 6 1 A 6 2 A 6 3 A 6 4 A 6 5 A 6 6 A 6 7 A 6 8 A 7 0 A 7 1 A 7 2 A 7 3 A 7 4

## Level measurement

### Point level measurement

### Vibrating switches

#### SITRANS LVL200

#### Selection and ordering data

#### Article No.

#### Article No.

#### SITRANS LVL200 Vibrating point level switch, rigid extension design

Detects level and material in liquids and slurries. Top mount, with extension options to 6 m (19.69 ft). Ideal for hazardous applications.

	7ML5747-
Neumo biocontrol size 25 PN 16/316L Ra < 0.8 µm	A 7 5
Neumo biocontrol size 50 PN 16/316L Ra < 0.8 µm	A 7 6
SÜDMO DN 50 PN 10/316L Ra < 0.8 µm	A 8 0
Small flange DN 25 PN 1.5 DIN 28403/316L pol. Ra < 0.8 µm	A 8 1
Small flange DN 40 PN 1.5 DIN 28403/316L pol. Ra < 0.8 µm	A 8 2
Ingold connection PN 16/316L Ra < 0.8 µm	A 8 3
Collar clamp connection DN 33,7 PN 40 Form A, DIN 11864-3/1.4435 (BN2, Ra < 0.8 µm)	A 8 4
Collar flange DN 50 PN 16 Form A, DIN 11864-2/316L (Ra < 0.8 µm)	A 8 5
Flange DN 25 PN 6 Form C, DIN 2501/316L	A 8 6
Flange DN 25 PN 6 Form C, DIN 2501/PFA <sup>4)</sup>	A 8 7
Flange DN 25 PN 40 Form C, DIN 2501/316L	A 8 8
Flange DN 25 PN 40 Form C, DIN 2501/Alloy C22 (2.4602) plated	B 0 0
Flange DN 25 PN 40 Form C, DIN 2501/ECTFE <sup>4)</sup>	B 0 1
Flange DN 25 PN 40 Form C, DIN 2501/PFA <sup>4)</sup>	B 0 2
Flange DN 25 PN 40 Form D, DIN 2501/316L	B 0 3
Flange DN 25 PN 40 Form F, DIN 2501/316L	B 0 4
Flange DN 25 PN 40 Form N, DIN 2501/316L	B 0 5
Flange DN 25 PN 40 Form N, DIN 2501/Alloy 400 (2.4360) solid	B 0 7
Flange DN 25 PN 40 V13, DIN 2501/316L	B 0 8
Flange DN 32 PN 40 Form C, DIN 2501/316L	B 1 0
Flange DN 32 PN 40 Form C, DIN 2501/ECTFE <sup>4)</sup>	B 1 1
Flange DN 40 PN 6 Form C, DIN 2501/316L	B 1 2
Flange DN 40 PN 6 Form C, DIN 2501/ECTFE <sup>4)</sup>	B 1 3
Flange DN 40 PN 40 Form C, DIN 2501/316L	B 1 4
Flange DN 40 PN 40 Form C, DIN 2501/Alloy C22 (2.4602) plated	B 1 5
Flange DN 40 PN 40 Form C, DIN 2501/ECTFE <sup>4)</sup>	B 1 6
Flange DN 40 PN 40 Form C, DIN 2501/PFA <sup>4)</sup>	B 1 7
Flange DN 40 PN 40 Form C, DIN 2501/Enamelled <sup>3)</sup>	B 1 8
Flange DN 40 PN 40 Form F, DIN 2501/316L	B 2 0
Flange DN 40 PN 40 Form N, DIN 2501/316L	B 2 1
Flange DN 40 PN 40 Form E, DIN 2501/316L	B 2 2
Flange DN 40 PN 40 V13, DIN 2501/316L	B 2 3
Flange DN 50 PN 40 Form C, DIN 2501/316L	B 2 4
Flange DN 50 PN 40 Form C, DIN 2501/Alloy C22 (2.4602) plated	B 2 5
Flange DN 50 PN 40 Form C, DIN 2501/ECTFE <sup>4)</sup>	B 2 6
Flange DN 50 PN 40 Form C, DIN 2501/ECTFE (ZB3108) <sup>4)</sup>	B 2 7
Flange DN 50 PN 40 Form C, DIN 2501/PFA <sup>4)</sup>	B 2 8
Flange DN 50 PN 40 Form D, DIN 2501/316L	B 3 0
Flange DN 50 PN 40 Form D, DIN 2501/Alloy C22 (2.4602)	B 3 1
Flange DN 50 PN 40 Form F, DIN 2501/316L	B 3 2
Flange DN 50 PN 40 Form N, DIN 2501/316L	B 3 3
Flange DN 50 PN 40 Form N, DIN 2501/Alloy C22 (2.4602) solid	B 3 4
Flange DN 50 PN 40 Form E, DIN 2501/316L	B 3 5
Flange DN 50 PN 40 V13, DIN 2501/316L	B 3 6
Flange DN 50 PN 40 R13, DIN 2501/316L	B 3 7
Flange DN 50 PN 64 Form F, DIN 2501/316L	B 3 8
Flange DN 50 PN 64 Form C, DIN 2501/316L	B 4 1
Flange DN 50 PN 64 Form L, DIN 2501/316L	B 4 2

#### SITRANS LVL200 Vibrating point level switch, rigid extension design

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	7ML5747-
Flange DN 50 PN 100 Form E, DIN 2501/316L	B 4 3
Flange DN 50 PN 100 Form L, DIN 2501/316L	B 4 4
Flange DN 65 PN 40 Form C, DIN 2501/316L	B 4 5
Flange DN 65 PN 40 Form C, DIN 2501/ECTFE <sup>4)</sup>	B 4 7
Flange DN 65 PN 40 Form C, DIN 2501/PFA <sup>4)</sup>	B 4 8
Flange DN 65 PN 40 Form F, DIN 2501/316L	B 5 0
Flange DN 65 PN 64 Form E, DIN 2501/316L	B 5 1
Flange DN 80 PN 40 Form C, DIN 2501/316L	B 5 2
Flange DN 80 PN 40 Form C, DIN 2501/Alloy C22 (2.4602) plated	B 5 3
Flange DN 80 PN 40 Form C, DIN 2501/ECTFE <sup>4)</sup>	B 5 4
Flange DN 80 PN 40 Form C, DIN 2501/PFA <sup>4)</sup>	B 5 5
Flange DN 80 PN 40 Form F, DIN 2501/316L	B 5 6
Flange DN 80 PN 40 Form N, DIN 2501/316L	B 5 7
Flange DN 100 PN 16 Form C, DIN 2501/316L	B 6 0
Flange DN 100 PN 16 Form C, DIN 2501/Alloy C22 (2.4602) plated	B 6 1
Flange DN 100 PN 16 Form C, DIN 2501/ECTFE <sup>4)</sup>	B 6 2
Flange DN 100 PN 16 Form C, DIN 2501/PFA <sup>4)</sup>	B 6 3
Flange DN 100 PN 16 Form D, DIN 2501/316L	B 6 4
Flange DN 100 PN 16 Form F, DIN 2501/316L	B 6 5
Flange DN 100 PN 16 Form N, DIN 2501/316L	B 6 6
Flange DN 100 PN 40 Form C, DIN 2501/316L	B 6 7
Flange DN 100 PN 40 Form C, DIN 2501/ECTFE <sup>4)</sup>	B 6 8
Flange DN 100 PN 40 Form C, DIN 2501/PFA <sup>4)</sup>	B 7 0
Flange DN 100 PN 40 Form C, DIN 2501/Enamelled <sup>3)</sup>	B 7 1
Flange DN 100 PN 40 Form F, DIN 2501/316L	B 7 2
Flange DN 100 PN 40 Form N, DIN 2501/316L	B 7 3
Flange DN 100 PN 40 V13, DIN 2501/316L	B 7 4
Flange DN 100 PN 64 Form E, DIN 2501/316L	B 7 5
Flange DN 100 PN 100 Form E, DIN 2501/316L	B 7 6
Flange DN 100 PN 100 Form L, DIN 2501/316L	B 7 7
Flange DN 125 PN 16 Form F, DIN 2501/316L	B 7 8
Flange DN 125 PN 40 Form C, DIN 2501/316L	B 8 0
Flange DN 125 PN 40 Form N, DIN 2512/316L	B 8 1
Flange DN 150 PN 16 Form C, DIN 2501/316L	B 8 2
Flange DN 150 PN 16 Form C, DIN 2501/Alloy C22 (2.4602) plated	B 8 3
Flange DN 150 PN 16 Form C, DIN 2501/ECTFE <sup>4)</sup>	B 8 4
Flange DN 150 PN 16 Form C, DIN 2501/PFA <sup>4)</sup>	B 8 5
Flange DN 150 PN 16 Form D, DIN 2501/316L	B 8 6
Flange DN 150 PN 40 Form C, DIN 2501/316L	B 8 7
Flange DN 150 PN 40 Form C, DIN 2501/Alloy C22 (2.4602) plated	B 8 8

Selection and ordering data	Article No.	Article No.
<b>SITRANS LVL200 Vibrating point level switch, rigid extension design</b>	<b>7ML5747-</b>	<b>SITRANS LVL200 Vibrating point level switch, rigid extension design</b>
Detects level and material in liquids and slurries. Top mount, with extension options to 6 m (19.69 ft). Ideal for hazardous applications.		Detects level and material in liquids and slurries. Top mount, with extension options to 6 m (19.69 ft). Ideal for hazardous applications.
Flange DN 150 PN 40 Form F, DIN 2501/316L	<b>C 0 0</b>	Flange DN 150 PN 40 Form B1, EN 1092-1/316L
Flange DN 150 PN 40 Form N, DIN 2512/316L	<b>C 0 1</b>	Flange DN 150 PN 40 Form B1, EN 1092-1/ECTFE <sup>4</sup>
Flange DN 200 PN 10 Form C, DIN 2501/ECTFE <sup>4</sup>	<b>C 0 2</b>	Flange DN 150 PN 40 Form B2, EN 1092-1/316L
Flange DN 200 PN 16 Form C, DIN 2501/316L	<b>C 0 3</b>	Flange 1" 150 lb ASME B16.5/316L
Flange DN 25 PN 40 Form B1, EN 1092-1/316L	<b>C 0 4</b>	Flange 1" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) plated
Flange DN 25 PN 40 Form B1, EN 1092-1/Alloy C22 (2.4602) plated	<b>C 0 5</b>	Flange 1" 150 lb RF, ASME B16.5/ECTFE <sup>4</sup>
Flange DN 25 PN 40 Form B1, EN/316L/PFA <sup>4</sup>	<b>C 0 6</b>	Flange 1" 150 lb RF, ASME B16.5/PFA <sup>4</sup>
Flange DN 25 PN 40 Form B1, EN 1092-1/Enamelled <sup>3</sup>	<b>C 0 7</b>	Flange 1" 150 lb RF, ASME B16.5/Enamelled <sup>3</sup>
Flange DN 25 PN 40 Form B2, EN 1092-1/316L	<b>C 0 8</b>	Flange 1" 300 lb RF, ASME B16.5/316L
Flange DN 25 PN 40 Form F, EN 1092-1/316L	<b>C 1 0</b>	Flange 1" 300 lb RF, ASME B16.5/ECTFE <sup>4</sup>
Flange DN 25 PN 63 Form B1, EN 1092-1/316L	<b>C 1 1</b>	Flange 1" 600 lb RF, ASME B16.5/316L
Flange DN 25 PN 100 Form B2, EN 1092-1/316L	<b>C 1 2</b>	Flange 1½" 150 lb RF, ASME B16.5/316L
Flange DN 40 PN 40 Form B1, EN/316L	<b>C 1 3</b>	Flange 1½" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) plated
Flange DN 40 PN 40 Form B1, EN 1092-1/PFA <sup>4</sup>	<b>C 1 4</b>	Flange 1½" 150 lb RF, ASME B16.5/ECTFE <sup>4</sup>
Flange DN 40 PN 40 Form B2, EN/316L	<b>C 1 5</b>	Flange 1½" 150 lb RF, ASME B16.5/PFA <sup>4</sup>
Flange DN 50 PN 40 Form B1, EN/316L	<b>C 1 6</b>	Flange 1½" 150 lb RF, ASME B16.5/Enamelled <sup>3</sup>
Flange DN 50 PN 40 Form B1, EN 1092-1/Alloy C22 (2.4602) plated	<b>C 1 7</b>	Flange 1½" 150 lb FF, ASME B16.5/ECTFE <sup>4</sup>
Flange DN 50 PN 40 Form B1, EN 1092-1/Alloy 400 (2.4360) ZB2977	<b>C 1 8</b>	Flange 1½" 300 lb RF, ASME B16.5/316L
Flange DN 50 PN 40 Form B1, EN 1092-1/ECTFE <sup>4</sup>	<b>C 2 0</b>	Flange 1½" 300 lb RF, ASME B16.5/Alloy 400 (2.4360) ZB2977
Flange DN 50 PN 40 Form B1, EN/316L/PFA <sup>4</sup>	<b>C 2 1</b>	Flange 1½" 300 lb RF, ASME B16.5/ECTFE <sup>4</sup>
Flange DN 50 PN 40 Form B1, EN 1092-1/Enamelled <sup>3</sup>	<b>C 2 2</b>	Flange 1½" 600 lb RF, ASME B16.5/316L
Flange DN 50 PN 40 Form C, EN 1092-1/316L	<b>C 2 3</b>	Flange 2" 150 lb RF, ASME B16.5/316L
Flange DN 50 PN 40 Form D, EN/316L	<b>C 2 4</b>	Flange 2" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) plated
Flange DN 50 PN 40 Form B2, EN 1092-1/316L	<b>C 2 6</b>	Flange 2" 150 lb RF, ASME B16.5/Alloy 400 (2.4360) ZB2977
Flange DN 50 PN 40 Form E, EN 1092-1/316L	<b>C 2 7</b>	Flange 2" 150 lb RF, ASME B16.5/ECTFE <sup>4</sup>
Flange DN 80 PN 40 Form B1, EN 1092-1/316L	<b>C 2 8</b>	Flange 2" 150 lb RF, ASME B16.5/PFA <sup>4</sup>
Flange DN 80 PN 40 Form B1, EN 1092-1/Alloy C22 (2.4602) plated	<b>C 3 0</b>	Flange 2" 150 lb RF, ASME B16.5/Enamelled <sup>3</sup>
Flange DN 80 PN 40 Form B1, EN 1092-1/ECTFE <sup>4</sup>	<b>C 3 1</b>	Flange 2" 150 lb FF, ASME B16.5/316L
Flange DN 80 PN 40 Form B1, EN 1092-1/Enamelled <sup>3</sup>	<b>C 3 2</b>	Flange 2" 150 lb FF, ASME B16.5/ECTFE <sup>4</sup>
Flange DN 80 PN 40 Form B2, EN 1092-1/316L	<b>C 3 3</b>	Flange 2" 150 lb SG (small groove), ASME B16.5/316L
Flange DN 100 PN 16 Form B1, EN 1092-1/316L	<b>C 3 4</b>	Flange 2" 300 lb RF, ASME B16.5/316L
Flange DN 100 PN 16 Form B1, EN 1092-1/Alloy C22 (2.4602) plated	<b>C 3 5</b>	Flange 2" 300 lb RF, ASME B16.5/Alloy C22 (2.4602) plated
Flange DN 100 PN 16 Form B1, EN 1092-1/Enamelled <sup>3</sup>	<b>C 3 6</b>	Flange 2" 300 lb RF, ASME B16.5/ECTFE <sup>4</sup>
Flange DN 100 PN 40 Form B1, EN 1092-1/316L	<b>C 3 7</b>	Flange 2" 300 lb RF, ASME B16.5/PFA <sup>4</sup>
Flange DN 100 PN 40 Form B1, EN 1092-1/Enamelled <sup>3</sup>	<b>C 3 8</b>	Flange 2" 300 lb RJF, ASME B16.5/316L
Flange DN 100 PN 40 Form C, EN 1092-1/316L	<b>C 4 0</b>	Flange 2" 300 lb ST, ASME B16.5/316L
Flange DN 100 PN 63 Form B2, EN 1092-1/316L	<b>C 4 1</b>	Flange 2" 300 lb LG (large groove), ASME B16.5/316L
Flange DN 150 PN 16 Form B1, EN 1092-1/316L	<b>C 4 2</b>	Flange 2" 300 lb LT, ASME B16.5/316L
Flange DN 150 PN 16 Form B1, EN 1092-1/PFA <sup>4</sup>	<b>C 4 3</b>	Flange 2" 600 lb RF, ASME B16.5/316L
		Flange 2" 600 lb RF, ASME B16.5/Alloy 400 (2.4360) ZB2977
		Flange 2" 600 lb RF, ASME B16.5/ECTFE <sup>4</sup>
		Flange 2" 600 lb RJF, ASME B16.5/316L
		Flange 2" 600 lb LG, ASME B16.5/316L
		Flange 2" 900 lb RJF, ASME B16.5/316L
		Flange 2½" 150 lb RF, ASME B16.5/316L
		Flange 2½" 300 lb RF, ASME B16.5/316L
		Flange 3" 150 lb RF, ASME B16.5/316L
		Flange 3" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) plated
		Flange 3" 150 lb RF, ASME B16.5/Alloy 400 (2.4360) ZB2977
		Flange 3" 150 lb RF, ASME B16.5/ECTFE <sup>4</sup>
		Flange 3" 150 lb RF, ASME B16.5/PFA <sup>4</sup>

## Level measurement

Point level measurement

Vibrating switches

### SITRANS LVL200

#### Selection and ordering data

Article No.

Article No.

#### SITRANS LVL200 Vibrating point level switch, rigid extension design

Detects level and material in liquids and slurries. Top mount, with extension options to 6 m (19.69 ft). Ideal for hazardous applications.

Flange 3" 150 lb RF, ASME B16.5/Enamelled <sup>3)</sup>	D 1 4
Flange 3" 150 lb FF, ASME B16.5/316L	D 1 5
Flange 3" 150 lb FF, ASME B16.5/ECTFE <sup>4)</sup>	D 1 6
Flange 3" 150 lb FF, ASME B16.5/PFA <sup>4)</sup>	D 1 7
Flange 3" 300 lb RF, ASME B16.5/316L	D 1 8
Flange 3" 300 lb RF, ASME B16.5/Alloy C22 (2.4602) plated	D 2 0
Flange 3" 300 lb RF, ASME B16.5/ECTFE <sup>4)</sup>	D 2 1
Flange 3" 300 lb RF, ASME B16.5/PFA <sup>4)</sup>	D 2 2
Flange 3" 300 lb RF, ASME B16.5/Enamelled <sup>3)</sup>	D 2 3
Flange 3" 600 lb RF, ASME B16.5/316L	D 2 4
Flange 3½" 150 lb RF, ASME B16.5/316L	D 2 5
Flange 3½" 150 lb RF, ASME B16.5/ECTFE <sup>4)</sup>	D 2 6
Flange 4" 150 lb RF, ASME B16.5/316L	D 2 7
Flange 4" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) plated	D 2 8
Flange 4" 150 lb RF, ASME B16.5/ECTFE <sup>4)</sup>	D 3 0
Flange 4" 150 lb RF, ASME B16.5/PFA <sup>4)</sup>	D 3 1
Flange 4" 150 lb RF, ASME B16.5/Enamelled <sup>3)</sup>	D 3 2
Flange 4" 150 lb LT, ASME B16.5/316L	D 3 3
Flange 4" 300 lb RF, ASME B16.5/316L	D 3 4
Flange 4" 300 lb RF, ASME B16.5/Alloy C22 (2.4602) plated	D 3 5
Flange 4" 300 lb RF, ASME B16.5/ECTFE <sup>4)</sup>	D 3 6
Flange 4" 300 lb RJF, ASME B16.5/316L	D 3 7
Flange 4" 300 lb LG, ASME B16.5/316L	D 3 8
Flange 4" 300 lb LT, ASME B16.5/316L	D 4 0
Flange 4" 600 lb RF, ASME B16.5/316L	D 4 1
Flange 4" 600 lb RJF, ASME B16.5/316L	D 4 2
Flange 5" 150 lb RF, ASME B16.5/316L	D 4 3
Flange 6" 150 lb RF, ASME B16.5/316L	D 4 4
Flange 6" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) plated	D 4 5
Flange 6" 150 lb RF, ASME B16.5/ECTFE <sup>4)</sup>	D 4 6
Flange 6" 150 lb RF, ASME B16.5/PFA <sup>4)</sup>	D 4 7
Flange 6" 150 lb RJF, ASME B16.5/316L	D 4 8
Flange 6" 300 lb RF, ASME B16.5/316L	D 5 0
Flange 8" 150 lb RF, ASME B16.5/316L	D 5 1
Flange 8" 150 lb RF, ASME B16.5/ECTFE <sup>4)</sup>	D 5 2
Flange 1" BS.10 Table E/316L	D 5 3
Flange 1" BS.10 Table E/PFA <sup>4)</sup>	D 5 4
Flange 1½" BS.10 Table E/316L	D 5 5
Flange 3½" BS.10 Table E/316L	D 5 6
Flange 4" BS.10 Table E/ECTFE <sup>4)</sup>	D 5 7
Flange DN 40 10K, JIS/316L	D 5 8
Flange DN 50 10K, JIS/316L	D 6 0
Flange DN 80 10K, JIS/316L	D 6 1
Flange DN 100 10K, JIS/316L	D 6 2
Thread R1 PN 64, EN10226-1/316L <sup>11)</sup>	D 6 5
Flange 2" 900 lb RF, ASME B16.5/316L	D 7 0
Flange 4" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	D 7 1

#### Adapter/Process temperature

Without adapter/-50 ... +150 °C	1
With adapter/-50 ... +200 °C <sup>13)</sup>	2
With adapter/-50 ... +250 °C	3
With gas-tight leadthrough/-50 ... +150 °C	4
With gas-tight leadthrough/-50 ... +250 °C	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

#### SITRANS LVL200 Vibrating point level switch, rigid extension design

Detects level and material in liquids and slurries. Top mount, with extension options to 6 m (19.69 ft). Ideal for hazardous applications.

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 HAN 7D (bent) according to Tier One (ZB7555)	V

#### 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	A 0
501 ... 1 000 mm	A 1
1 001 ... 1 500 mm	A 2
1 501 ... 2 000 mm	A 3
2 001 ... 2 500 mm	A 4
2 501 ... 3 000 mm	A 5
3 001 ... 3 500 mm	A 6
3 501 ... 4 000 mm	A 7

#### Rigid Extension ECTFE coated

80 ... 500 mm	B 0
501 ... 1 000 mm	B 1
1 001 ... 1 500 mm	B 2
1 501 ... 2 000 mm	B 3
2 001 ... 2 500 mm	B 4
2 501 ... 3 000 mm	B 5

#### Rigid Extension PFA coated

80 ... 500 mm	C 0
501 ... 1 000 mm	C 1
1 001 ... 1 500 mm	C 2
1 501 ... 2 000 mm	C 3
2 001 ... 2 500 mm	C 4
2 501 ... 3 000 mm	C 5
3 001 ... 3 500 mm	C 6
3 501 ... 4 000 mm	C 7

#### Rigid Extension 316L Ra ≤ 0.8 µm

80 ... 500 mm	D 0
501 ... 1 000 mm	D 1
1 001 ... 1 500 mm	D 2
1 501 ... 2 000 mm	D 3
2 001 ... 2 500 mm	D 4
2 501 ... 3 000 mm	D 5
3 001 ... 3 500 mm	D 6
3 501 ... 4 000 mm	D 7

#### Rigid Extension 316L Ra ≤ 0.3 µm

80 ... 500 mm	E 0
501 ... 1 000 mm	E 1
1 001 ... 1 500 mm	E 2
1 501 ... 2 000 mm	E 3
2 001 ... 2 500 mm	E 4
2 501 ... 3 000 mm	E 5
3 001 ... 3 500 mm	E 6
3 501 ... 4 000 mm	E 7

#### Rigid Extension Enamelled version

80 ... 250 mm	F 0
251 ... 500 mm	F 1
501 ... 750 mm	F 2
751 ... 1 000 mm	F 3
1 001 ... 1 250 mm	F 4
1 251 ... 1 500 mm	F 5

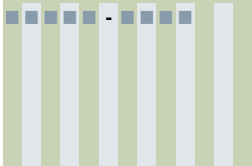
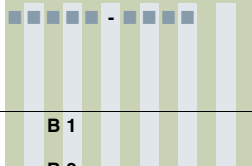


Selection and ordering data	Article No.	Article No.
<b>SITRANS LVL200 Vibrating point level switch, rigid extension design</b> Detects level and material in liquids and slurries. Top mount, with extension options to 6 m (19.69 ft). Ideal for hazardous applications.	7ML5747-	
<b>Rigid Extension Alloy C22 (2.4602)</b> 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		<b>G 0</b> <b>G 1</b> <b>G 2</b> <b>G 3</b> <b>G 4</b> <b>G 5</b> <b>G 6</b> <b>G 7</b>
<b>Rigid Extension Alloy 400 (2.4360)</b> 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		<b>H 0</b> <b>H 1</b> <b>H 2</b> <b>H 3</b> <b>H 4</b> <b>H 5</b>
<b>Further designs</b> Please add <b>"-Z"</b> to Article No. and specify Order code(s).	Order code	
Switching status indication with colors red-green <sup>2)</sup>	<b>A21</b>	
Cleaning including Certificate (oil, grease, and silicone free)	<b>W01</b>	
Enter the total insertion length in plain text description, max. 4 000 mm (157.48 inch)	<b>Y01</b>	
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.	<b>Y17</b>	
Identification label (measurement loop) foil: max. 40 characters add in plain text. To add more than one line, use a comma ",", for line break.	<b>Y18</b>	
NACE0175 to 3.1 Material Certificate for material (EN 10204 NACE MR 0175) <sup>8)</sup> Note: not available with Process connection and Rigid extension coatings PFA, ECTFE, and Enamel. NACE not available with Hygienic process connections.	<b>D07</b>	
Material Inspection certificate 3.1 of EN 10204	<b>C05</b>	
2.2-Factory certificate for material (EN 10204) <sup>8)</sup>	<b>C15</b>	
Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511 <sup>3)</sup>	<b>C20</b>	
Dye penetration test, results confirmed via a 3.1 certificate/instrument (EN 10204) <sup>8)</sup>	<b>C13</b>	
X-ray test + 3.1 certificate/instrument <sup>8)</sup>	<b>C14</b>	
Positive material identification test + 3.1 certificate/instrument <sup>8)</sup>	<b>C16</b>	
Roughness test + 3.1 certificate/instrument <sup>8)</sup>	<b>C18</b>	
3.1-Inspection Certificate for instrument with test data (EN 10204)	<b>C25</b>	
Quality and test plan	<b>C26</b>	
Pressure test + 3.1 certificate/instrument <sup>8)</sup>	<b>C31</b>	
Helium leak test + 3.1 certificate/instrument <sup>8)</sup>	<b>C32</b>	
Ferrite measuring accuracy to DIN 32514-1 + 3.1 certificate/instrument <sup>8)</sup>	<b>C60</b>	
Pressure test according to Norsok + 3.1 certificate/instrument <sup>9)</sup>	<b>C61</b>	
<b>Operating Instructions</b> All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>		
<b>Spare Parts and Accessories</b> 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 Lock fitting, unpressurized, G1" A/316L Lock fitting, unpressurized, 1" NPT/316L Lock fitting, unpressurized, G1 ... 1/2" A/316L Lock fitting, unpressurized, 1 ... 1/2" NPT/316L Lock fitting, -1 ... 16 bar, G1" A/316L Lock fitting, -1 ... 16 bar, 1" NPT/316L Lock fitting, -1 ... 16 bar, G1 1/2" A/316L Lock fitting, -1 ... 16 bar, 1 1/2" NPT/316L Lock fitting, -1 ... 64 bar, G1" A/316L Lock fitting, -1 ... 64 bar, 1" NPT/316L Lock fitting, -1 ... 64 bar, G1 1/2" A/316L Lock fitting, -1 ... 64 bar, 1 1/2" NPT/316L		<b>7ML1830-1NC</b> <b>7ML1930-6AA</b> <b>A5E35817107</b> <b>7ML5760-.....-.....</b> <b>7ML5761-.....-.....</b> <b>7ML1930-1DQ</b> <b>7ML1930-1DR</b> <b>7ML1930-1DS</b> <b>7ML1930-1DT</b> <b>7ML1930-1DU</b> <b>7ML1930-1DV</b> <b>7ML1930-1DW</b> <b>7ML1930-1DX</b> <b>7ML1930-1EA</b> <b>7ML1930-1EB</b> <b>7ML1930-1EC</b> <b>7ML1930-1ED</b>
		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. 23) Not available with Plastic Housing/Protection/Cable options. 24) Available only with Electronic option 4. 25) Not available with FM approval options.

**Level measurement**  
Point level measurement  
Vibrating switches

**SITRANS LVL200**

4

Selection and ordering data	Article No.		Article No.
<p><b>SITRANS LVL200 Vibrating point level switch, high temperature and pressure design</b></p> <p>Detects level and material in liquids and slurries in extreme environments. Extension options to 3 m (9.84 ft).</p> <p>➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>	<p><b>7ML5748-</b></p> 	<p><b>SITRANS LVL200 Vibrating point level switch, high temperature and pressure design</b></p> <p>Detects level and material in liquids and slurries in extreme environments. Extension options to 3 m (9.84 ft).</p>	<p><b>7ML5748-</b></p> 
<p><b>Version/Material</b></p> <p>Compact version/Inconel 718 (2.4668)<sup>1)2)</sup></p> <p>With tube extension/316L and Inconel 718 (2.4668)<sup>1)3)</sup></p> <p>With tube extension/Alloy C22 (2.4602) and Inconel 718 (2.4668)<sup>4)</sup></p>	<p><b>1</b></p> <p><b>2</b></p> <p><b>3</b></p>	<p>Flange DN 50 PN 64 Form E, DIN 2501/316/316L</p> <p>Flange DN 50 PN 100 Form C, DIN 2501/316/316L</p> <p>Flange DN 50 PN 100 Form F, DIN 2501/316/316L</p> <p>Flange DN 50 PN 100 Form V13, DIN 2501/316/316L</p> <p>Flange DN 50 PN 160 Form C, DIN 2501/316/316L</p> <p>Flange DN 50 PN 160 Form F, DIN 2501/316/316L</p> <p>Flange DN 65 PN 16 Form C, DIN 2501/316/316L</p> <p>Flange DN 65 PN 40 Form C, DIN 2501/316/316L</p> <p>Flange DN 65 PN 100 Form C, DIN 2501/316/316L</p> <p>Flange DN 80 PN 40 Form C, DIN 2501/316/316L</p> <p>Flange DN 80 PN 100 Form C, DIN 2501/316/316L</p> <p>Flange DN 80 PN 160 Form F, DIN 2501/316/316L</p> <p>Flange DN 80 PN 160 Form L, DIN 2501/316/316L</p> <p>Flange DN 80 PN 250 Form L, DIN 2501/316/316L</p> <p>Flange DN 80 PN 250 Form L, DIN 2501/Alloy C22 (2.4602) solid</p> <p>Flange DN 100 PN 16 Form C, DIN 2501/316/316L</p> <p>Flange DN 100 PN 40 Form C, DIN 2501/316/316L</p> <p>Flange DN 100 PN 100 Form E, DIN 2501/316/316L</p> <p>Flange DN 100 PN 160 Form L, DIN 2501/316/316L</p> <p>Flange DN 125 PN 16 Form C, DIN 2501/316/316L</p> <p>Flange DN 125 PN 40 Form C, DIN 2501/316/316L</p> <p>Flange DN 150 PN 16 Form C, DIN 2501/316/316L</p> <p>Flange DN 150 PN 16 Form C, DIN 2501/316/316L, with Alloy C22 (2.4602) coating</p> <p>Flange DN 150 PN 40 Form C, DIN 2501/316/316L</p> <p>Flange DN 150 PN 160 Form L, DIN 2501/316/316L</p> <p>Flange DN 200 PN 16 Form C, DIN 2501/316/316L</p> <p>Flange DN 200 PN 64 Form C, DIN 2501/316/316L</p> <p>Flange DN 250 PN 16 Form C, DIN 2501/316/316L</p> <p>Flange DN 250 PN 64 Form C, DIN 2501/316/316L</p> <p>Flange DN 50 PN 40 Form B1, EN 1092-1/1.4435</p> <p>Flange DN 50 PN 40 Form B1, EN 1092-1/316/316L</p> <p>Flange DN 50 PN 40 Form B1, EN 1092-1/316/316L, with Alloy C22 (2.4602) coating</p> <p>Flange DN 50 PN 40 Form B2, EN 1092-1/316/316L</p> <p>Flange DN 50 PN 40 Form C, EN 1092-1/316/316L</p> <p>Flange DN 50 PN 40 Form D, EN 1092-1/316/316L</p>	<p><b>B 1</b></p> <p><b>B 2</b></p> <p><b>B 3</b></p> <p><b>B 4</b></p> <p><b>B 5</b></p> <p><b>B 6</b></p> <p><b>B 7</b></p> <p><b>B 8</b></p> <p><b>C 0</b></p> <p><b>C 1</b></p> <p><b>C 2</b></p> <p><b>C 3</b></p> <p><b>C 4</b></p> <p><b>C 5</b></p> <p><b>C 6</b></p> <p><b>C 7</b></p> <p><b>C 8</b></p> <p><b>D 0</b></p> <p><b>D 1</b></p> <p><b>D 2</b></p> <p><b>D 3</b></p> <p><b>D 4</b></p> <p><b>D 5</b></p> <p><b>D 6</b></p> <p><b>D 7</b></p> <p><b>D 8</b></p> <p><b>E 0</b></p> <p><b>E 1</b></p> <p><b>E 2</b></p> <p><b>E 3</b></p> <p><b>E 4</b></p> <p><b>E 5</b></p> <p><b>E 6</b></p> <p><b>E 7</b></p> <p><b>E 8</b></p>
<p><b>Approvals</b></p> <p>Without approvals</p> <p>Ship approval</p> <p>Overfill protection WHG<sup>7)</sup></p> <p>ATEX II ½G, 2G Ex d IIC T6<sup>6)9)</sup></p> <p>ATEX II 1G, ½G, 2G Ex ia IIC T6<sup>5)9)</sup></p> <p>ATEX II 1G, ½G, 2G Ex ia IIC T6 + ship approval<sup>5)9)10)</sup></p> <p>ATEX II 1G, ½G, 2G Ex ia IIC T6 + Overfill protection (WHG)<sup>6)7)9)</sup></p> <p>ATEX II ½G, 2G Ex d IIC T6 + Overfill protection (WHG)<sup>6)7)9)</sup></p> <p>FM (NI) Class I, Div. 2, Groups A, B, C, D T6 ... T1<sup>9)11)</sup></p> <p>FM (NI) Class I, Div. 2, Groups A, B, C, D T6 ... T1 + Ship approval<sup>6)9)</sup></p> <p>FM (IS) Class I, Div. 1, Groups A, B, C, D Zone 0, 0/1, 1, AEx ia IIC T6 ... T1 Ga, Ga/Gb, Gb<sup>5)9)12)</sup></p> <p>FM (XP) Class I, Div. 1, Groups A, B, C, D T6 ... T1, Zone 0/1, 1, AEx d IIC T6 ... T1 Ga/Gb, Gb<sup>6)9)</sup></p> <p>FM (XP) Class I, Div. 1, Groups A, B, C, D T6 ... T1, Zone 0/1, 1, AEx d IIC T6 ... T1 Ga/Gb, Gb + Ship approval<sup>6)9)</sup></p> <p>IEC Ex d IIC T6<sup>6)9)</sup></p> <p>IEC Ex ia IIC T6 + Ship approval<sup>5)9)10)</sup></p> <p>IEC Ex ia IIC T6<sup>5)9)</sup></p> <p>cCSA<sub>US</sub> (NI) Class I, Div. 2, Groups A, B, C, D, (DIP) Class II, III, Div. 1, Groups E, F, G<sup>6)9)</sup></p> <p>cCSA<sub>US</sub> (NI) Class I, Div. 2, Groups A, B, C, D, (DIP) Class II, III, Div. 1, Groups E, F, G + Ship approval<sup>6)9)</sup></p> <p>cCSA<sub>US</sub> (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G<sup>5)9)12)</sup></p> <p>cCSA<sub>US</sub> (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G + Ship approval<sup>5)9)13)</sup></p> <p>cCSA<sub>US</sub> (XP) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G<sup>6)9)</sup></p> <p>cCSA<sub>US</sub> (XP) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G + Ship approval<sup>6)9)</sup></p>	<p><b>A</b></p> <p><b>B</b></p> <p><b>C</b></p> <p><b>D</b></p> <p><b>F</b></p> <p><b>G</b></p> <p><b>H</b></p> <p><b>J</b></p> <p><b>N</b></p> <p><b>P</b></p> <p><b>Q</b></p> <p><b>R</b></p> <p><b>S</b></p> <p><b>E</b></p> <p><b>U</b></p> <p><b>T</b></p> <p><b>V</b></p> <p><b>W</b></p> <p><b>X</b></p> <p><b>Y</b></p> <p><b>K</b></p> <p><b>L</b></p>		
<p><b>Process connection</b></p> <p>Thread G1 PN 100, DIN 3852-A/316L</p> <p>Thread G1 PN 160, DIN 3852-A/Inconel 718 (2.4668)</p> <p>Thread 1" NPT PN 100, ASME B1.20.1/316L</p> <p>Thread 1" NPT PN 160, ASME B1.20.1/Inconel 718 (2.4668)</p> <p>Flange DN 50 PN 40 Form C, DIN 2501/316/316</p> <p>Flange DN 50 PN 40 Form C, DIN 2501/316/316L, with Alloy C22 (2.4602) coating</p> <p>Flange DN 50 PN 40 Form N, DIN 2501/316/316L</p> <p>Flange DN 50 PN 40 Form V13, DIN 2501/316/316L</p> <p>Flange DN 50 PN 40 Form V13, DIN 2501/Alloy C22 (2.4602) solid</p> <p>Flange DN 50 PN 40 Form V13, DIN 2501/316/316L, with Alloy C22 (2.4602) coating</p>	<p><b>A 0</b></p> <p><b>A 1</b></p> <p><b>A 2</b></p> <p><b>A 3</b></p> <p><b>A 4</b></p> <p><b>A 5</b></p> <p><b>A 6</b></p> <p><b>A 7</b></p> <p><b>A 8</b></p> <p><b>B 0</b></p>		

## Selection and ordering data

## Article No.

## Article No.

**SITRANS LVL200 Vibrating point level switch, high temperature and pressure design**

7ML5748-

Detects level and material in liquids and slurries in extreme environments. Extension options to 3 m (9.84 ft).

Flange DN 50 PN 40 Form E, EN 1092-1/316/316L	F 0
Flange DN 50 PN 63 Form B2, EN 1092-1/316/316L	F 1
Flange DN 50 PN 63 Form B2, EN 1092-1/316/316L, with Alloy C22 (2.4602) coating	F 2
Flange DN 50 PN 63 Form C, EN 1092-1/316/316L	F 3
Flange DN 50 PN 63 Form D, EN 1092-1/316/316L	F 4
Flange DN 50 PN 100 Form B1, EN 1092-01/316/316L	F 5
Flange DN 50 PN 100 Form C, EN 1092-1/316/316L	F 6
Flange DN 50 PN 160 Form B1, EN 1092-1/316/316L	F 7
Flange DN 50 PN 160 Form B2, EN 1092-1/316/316L	F 8
Flange DN 50 PN 250 Form B1, EN 1092-1/316/316L	G 0
Flange DN 50 PN 250 Form B2, EN 1092-1/316/316L	G 1
Flange DN 65 PN 40 Form B1, EN 1092-1/316/316L	G 2
Flange DN 65 PN 63 Form C, EN 1092-1/316/316L	G 3
Flange DN 80 PN 40 Form B1, EN 1092-1/316/316L	G 4
Flange DN 80 PN 40 Form B2, EN 1092-1/316/316L	G 5
Flange DN 80 PN 40 Form C, EN 1092-1/316/316L	G 6
Flange DN 80 PN 40 Form D, EN 1092-1/316/316L	G 7
Flange DN 80 PN 63 Form B2, EN 1092-1/316/316L	G 8
Flange DN 80 PN 160 Form B2, EN 1092-1/316/316L	H 0
Flange DN 80 PN 250 Form B1, EN 1092-1/316/316L	H 1
Flange DN 100 PN 16 Form D, EN 1092-1/316/316L	H 2
Flange DN 100 PN 40 Form B1, EN 1092-1/316/316L	H 3
Flange DN 100 PN 40 Form B2, EN 1092-1/316/316L	H 4
Flange DN 100 PN 40 Form C, EN 1092-1/316/316L	H 5
Flange DN 100 PN 40 Form D, EN 1092-1/316/316L	H 6
Flange DN 100 PN 160 Form B2, EN 1092-1/316/316L	H 7
Flange DN 125 PN 63 Form C, EN 1092-1/316/316L	H 8
Flange DN 125 PN 160 Form B2, EN 1092-1/316/316L	K 0
Flange DN 150 PN 40 Form B1, EN 1092-1/316/316L	K 1
Flange DN 150 PN 40 Form C, EN 1092-1/316/316L	K 2
Flange DN 150 PN 40 Form D, EN 1092-1/316/316L	K 3
Flange DN 40 PN 100, GOST 12815-80.7/316/316L	K 4
Flange DN 50 PN 100, GOST 12815-80.7/316/316L	K 5
Flange DN 80 PN 100, GOST 12815-80.7/316/316L	K 6
Flange DN 100 PN 100, GOST 12815-80.7/316/316L	K 7

**SITRANS LVL200 Vibrating point level switch, high temperature and pressure design**

7ML5748-

Detects level and material in liquids and slurries in extreme environments. Extension options to 3 m (9.84 ft).

Flange 1½" 150 lb RJF, ASME B16.5/316/316L	K 8
Flange 1½" 300 lb RJF, ASME B16.5/316/316L	L 1
Flange 1½" 1 500 lb RJF, ASME B16.5/316/316L	L 2
Flange 2" 150 lb RF, ASME B16.5/316/316L	L 3
Flange 2" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	L 4
Flange 2" 300 lb RF, ASME B16.5/316/316L	L 5
Flange 2" 300 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	L 6
Flange 2" 300 lb RF, ASME B16.5/316/316L, with Alloy C22 (2.4602) coating	L 7
Flange 2" 300 lb ST (small tongue), ASME B16.5/316/316L	L 8
Flange 2" 300 lb RJF, ASME B16.5/316/316L	M 1
Flange 2" 300 lb LM (large male), ASME B16.5/316/316L	M 2
Flange 2" 300 lb SG, ASME B16.5/316/316L	M 3
Flange 2" 300 lb LG, ASME B16.5/316/316L	M 4
Flange 2" 600 lb RF, ASME B16.5/316/316L	M 5
Flange 2" 600 lb RF, ASME B16.5/316/316L, with Alloy C22 (2.4602) coating	M 6
Flange 2" 600 lb RJF, ASME B16.5/316/316L	M 7
Flange 2" 900 lb RF, ASME B16.5/316/316L	M 8
Flange 2" 900 lb RJF, ASME B16.5/316/316L	N 1
Flange 2" 1 500 lb RF, ASME B16.5/316/16L	N 2
Flange 2" 1 500 lb RJF, ASME B16.5/316/316L	N 3
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
Flange 2" 2 500 lb RJF, ASME B16.5/316/316L	N 6
Flange 2½" 150 lb RF, ASME B16.5/316/316L	N 7
Flange 2½" 300 lb RF, ASME B16.5/316/316L	N 8
Flange 2½" 600 lb RF, ASME B16.5/316/316L	P 1
Flange 2½" 900 lb RF, ASME B16.5/316/316L	P 2
Flange 2½" 2 500 lb RJF, ASME B16.5/316/316L	P 3
Flange 3" 150 lb RF, ASME B16.5/316/316L	P 4
Flange 3" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	P 5
Flange 3" 300 lb RF, ASME B16.5/316/316L	P 6
Flange 3" 300 lb RJF, ASME B16.5/316/316L	P 7
Flange 3" 300 lb LT, ASME B16.5/316/316L	P 8
Flange 3" 600 lb RF, ASME B16.5/316/316L	R 1
Flange 3" 600 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	R 2
Flange 3" 600 lb RF, ASME B16.5/316/316L, with Alloy C22 (2.4602) coating	R 3
Flange 3" 600 lb RJF, ASME B16.5/316/316L	R 4
Flange 3" 900 lb RF, ASME B16.5/316/316L	R 5
Flange 3" 900 lb RJF, ASME B16.5/316/316L	R 6
Flange 3" 1 500 lb RF, ASME B16.5/316/316L	R 7
Flange 3" 1 500 lb RJF, ASME B16.5/316/316L	R 8
Flange 3" 2 500 lb RF, ASME B16.5/316/316L	S 1
Flange 3" 2 500 lb RJF, ASME B16.5/316/316L	S 2
Flange 4" 150 lb RF, ASME B16.5/316/316L	S 3
Flange 4" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	S 4
Flange 4" 150 lb RJF, ASME B16.5/316/316L	S 5
Flange 4" 300 lb RF, ASME B16.5/316/316L	S 6
Flange 4" 300 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	S 7

# Level measurement

## Point level measurement

### Vibrating switches

#### SITRANS LVL200

#### Selection and ordering data

#### Article No.

#### Article No.

##### SITRANS LVL200 Vibrating point level switch, high temperature and pressure design

Detects level and material in liquids and slurries in extreme environments. Extension options to 3 m (9.84 ft).

- Flange 4" 300 lb LT, ASME B16.5/316/316L
- Flange 4" 600 lb RF, ASME B16.5/316/316L
- Flange 4" 600 lb RF, ASME B16.5/Alloy C22 (2.4602) solid
- Flange 4" 600 lb RJF, ASME B16.5/316/316L
- Flange 4" 900 lb RF, ASME B16.5/316/316L
- Flange 4" 900 lb RJF, ASME B16.5/316/316L
- Flange 4" 900 lb LT, ASME B16.5/316/316L
- Flange 4" 1 500 lb RF, ASME B16.5/316/316L
- Flange 4" 1 500 lb RJF, ASME B16.5/316/316L
- Flange 4" 1 500 lb LT, ASME B16.5/316/316L
- Flange 5" 150 lb RF, ASME B16.5/316/316L
- Flange 5" 300 lb RF, ASME B16.5/316/316L
- Flange 5" 600 lb RJF, ASME B16.5/316/316L
- Flange 6" 150 lb RF, ASME B16.5/316/316L
- Flange 6" 300 lb RF, ASME B16.5/316/316L
- Flange 6" 300 lb LT, ASME B16.5/316/316L
- Flange DN 50 30K RF, JIS/316/316L
- Flange DN 50 40K RF, JIS/316/316L
- Flange DN 65 40 K RF, JIS/316/316L
- Mobrey flange PN 16 Form A/316/316L
- Mobrey flange PN 16 Form E/316/316L
- Thread R1 PN 160, EN 10226-1/Inconel 718 (2.4668)
- Thread R1 PN 100, EN 10226-1/316L

##### Gas-tight seal/Process temperature

- With gas-tight seal/-196 ... +450 °C (-321 ... +842 °F)
- Without/-196 ... +450 °C (-321 ... +842 °F)

##### Electronics

- Relay (2 x SPDT)
- 20 ... 72 V DC/20 ... 253 V AC (5A)
- Transistor (NPN/PNP) 9.6 ... 55 V DC
- Two-wire (8/16 mA) 9.6 ... 35 V DC
- Relay (2 x SPDT)
- 20 ... 72 V DC/20 ... 253 V AC (5A), with SIL qualification
- Transistor (NPN/PNP) 9.6 ... 55 V DC, with SIL qualification
- Two-wire (8/16 mA) 9.6 ... 35 V DC, with SIL qualification

Article No.	Options
7ML5748-	-
S 8	
T 1	
T 2	
T 3	
T 4	
T 5	
T 6	
T 7	
T 8	
U 1	
U 2	
U 3	
U 4	
U 5	
U 6	
U 7	
U 8	
V 1	
V 2	
V 3	
V 4	
W 1	
W 2	
	1
	2
	1
	2
	3
	4
	5
	6

##### SITRANS LVL200 Vibrating point level switch, high temperature and pressure design

Detects level and material in liquids and slurries in extreme environments. Extension options to 3 m (9.84 ft).

##### Housing/Cable entry

- Plastic single chamber/IP66/IP67/M20 x 1.5 gland PA black (ø5 ... 9 mm)
- Plastic single chamber/IP66/IP67/½" NPT gland PA black (ø5 ... 9 mm)
- Aluminum IP66/IP67/M20 x 1.5 gland PA black (ø5 ... 9 mm)
- Aluminum IP66/IP67/½" NPT gland PA black (ø5 ... 9 mm)
- Stainless steel single chamber (precision casting)/ IP66/IP67/M20 x 1.5 gland PA black (ø5 ... 9 mm)
- Stainless steel single chamber (precision casting)/ IP66/IP67/½" NPT gland PA black (ø5 ... 9 mm)
- Stainless steel single chamber (electropolished)/ IP66/IP67/M20 x 1.5 gland PA black (ø5 ... 9 mm)
- Stainless steel single chamber (electropolished)/ IP66/IP67/½" NPT gland PA black (ø5 ... 9 mm)
- Aluminium IP66/IP67/M20 x 1.5 blind plug
- Aluminium IP66/IP67/½" NPT blind plug
- Stainless steel single chamber (precision casting)/IP66/IP67/M20 x 1.5 blind plug
- Stainless steel single chamber (precision casting)/ IP66/IP67/½" NPT blind plug
- Stainless steel single chamber (electropolished)/ IP66/IP67/M20 x 1.5 blind plug
- Stainless steel single chamber (electropolished)/ IP66/IP67/½" NPT blind plug

##### Rigid Extension 316L

- 200 ... 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 Alloy C22

- 200 ... 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
- 75 mm compact version

Article No.	Options
7ML5748-	-
A	
B	
C	
D	
E	
F	
G	
H	
J	
K	
L	
M	
N	
P	
	A 0
	A 1
	A 2
	A 3
	A 4
	A 5
	B 0
	B 1
	B 2
	B 3
	B 4
	B 5
	C 1

Selection and ordering data	Order code	Article No.
<b>Further designs</b>		
Please add <b>"-Z"</b> to Article No. and specify Order code(s).		
Cleaning including Certificate(oil, grease, and silicone free).	<b>W01</b>	
Enter the total insertion length in plain text description.	<b>Y01</b>	
Identification label (measurement loop) stainless steel.	<b>Y17</b>	
Identification Label (measurement loop) foil.	<b>Y18</b>	
Output switching delay (1 ... 60 s)/default is 1 s	<b>Y36</b>	
NACE0175 to 3.1 Material Certificate for material (EN 10204 NACE MR 0175) Note: not available with some Process connection options.	<b>D07</b>	
Material Inspection 3.1-Inspection certificate for material (EN 10204)	<b>C05</b>	
Acceptance test Certificate 2.2 for material (EN 10204)	<b>C15</b>	
Dye penetration test, results confirmed via a 3.1 certificate/instrument (EN 10204)	<b>C13</b>	
3.1-Inspection certificate for instrument with test data (EN 10204)	<b>C25</b>	
Quality and test plan	<b>C26</b>	
Helium leak test + 3.1 certificate/instrument	<b>C32</b>	
<b>Spare Parts and Accessories</b>	Article No.	
SITRANS SCSC single channel signal conditioner and remote test	<b>7ML5760-.....-.....</b>	
SITRANS TCSC two channel signal conditioner and remote test	<b>7ML5761-.....-.....</b>	
<b>Operating Instructions</b>		
All literature is available to download for free, in a range of languages, at		
<a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>		
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.		
5) Available only with Electronic options 3 and 6.		
6) Available only with Housing/Cable entry options J, K, L, M.		
7) Available only with Electronic option 6.		
8) Available only with Electronic options 1, 2, and 4.		
9) Available only with Gas tight seal/Process temperature option 1.		
10) Not available with Housing/Cable entry options G, H, N, P.		
11) Available only with Housing/Cable entry options J, K, L, M, N, P.		
12) Not available with Housing/Cable entry options A and B.		
13) Not available with Housing/Cable entry options A, B, G, H, N, P.		
<b>SITRANS SCSC, single channel, signal conditioner</b>		<b>7ML5760-</b>
Provides power and relay output for one LVL200 vibrating switch, 8/16 mA electronics design. Provides remote test of any LVL200 device.		<b>A 1 -</b>
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
<b>Approvals</b>		
For Ex-free area		<b>1 A</b>
ATEX II (1) G/D [Ex ia Ga/Da] IIC/IIIC, I (M1) [Ex ia Ma] I		<b>1 D</b>
ATEX II (1) G/D (Ex ia Ga/Da) IIC/IIIC, I (M1) (Ex ia Ma) I + WHG		<b>1 E</b>
IEC [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I		<b>1 H</b>
IEC (Ex ia Ga) IIC, (Ex ia Da) IIIC, (Ex ia Ma) I + WHG		<b>1 J</b>
Ex-free area (incl. EAC approval)		<b>2 A</b>
<b>SIL qualification</b>		
Without		<b>1</b>
With		<b>2</b>
<b>Version</b>		
Single-channel (8/16 mA) for level detection		<b>1</b>
Single channel (8/16 mA), level detection with fail safe relay		<b>2</b>
<b>Housing/cable entry</b>		
Plastic/IP20		<b>A</b>
<b>Terminal block connection</b>		
Detachable 2.5 mm <sup>2</sup> / Ex sensor: 2 x blue; output and operating voltage: 2 x black		<b>A</b>
Detachable 2.5 mm <sup>2</sup> / sensor: 2 x black; output and operating voltage: 2 x black		<b>B</b>
<b>Language</b>		
English		<b>0</b>
German		<b>1</b>
<b>Operating Instructions</b>		
All literature is available to download for free, in a range of languages, at		
<a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>		

## Level measurement

Point level measurement

Vibrating switches

### SITRANS LVL200

#### Selection and ordering data

##### SITRANS TCSC, dual channel, signal conditioner

Provides power and relay output for two LVL200 vibrating switch, 8/16 mA electronics design. Provides remote test of any LVL200 device.

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

##### Approvals

For Ex-free area<sup>1)</sup>

ATEX II (1) G/D [Ex ia Ga/Da] IIC/IIIC, I (M1) [Ex ia Ma] <sup>2)</sup>

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

IEC [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] <sup>2)</sup>

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

Ex-free area (incl. EAC approval)

##### SIL qualification

Without

With

#### Article No.

7ML5761-	
A	1
1	A
1	D
1	E
1	H
1	J
2	A
1	
2	

#### Article No.

##### SITRANS TCSC, dual channel, signal conditioner

Provides power and relay output for two LVL200 vibrating switch, 8/16 mA electronics design. Provides remote test of any LVL200 device.

##### Version

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

##### Housing/cable entry

Plastic/IP20

##### Terminal block connection

Detachable 2.5 mm<sup>2</sup>/ Ex sensor: 2 x blue; output and operating voltage: 2 x black  
 Detachable 2.5 mm<sup>2</sup>/ sensor: 2 x black; output and operating voltage: 2 x black

##### Language

English

German

7ML5761-	
A	1
1	A
1	A
1	B
1	
0	
1	

##### Operating Instructions

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/processinstrumentation/documentation>

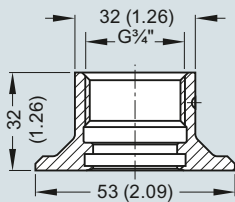
<sup>1)</sup> Available only with terminal block connection option B.

<sup>2)</sup> Available only with terminal block connection option A.

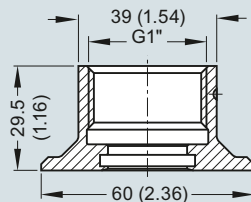
#### Options

##### LVL200 threaded welded socket

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

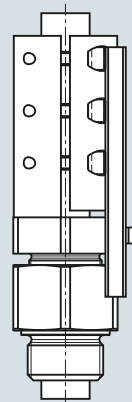


G1" A/316L

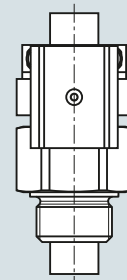


##### Lock fitting

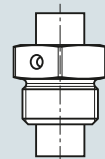
LVL200 extended 64 bar



LVL200 extended 16 bar



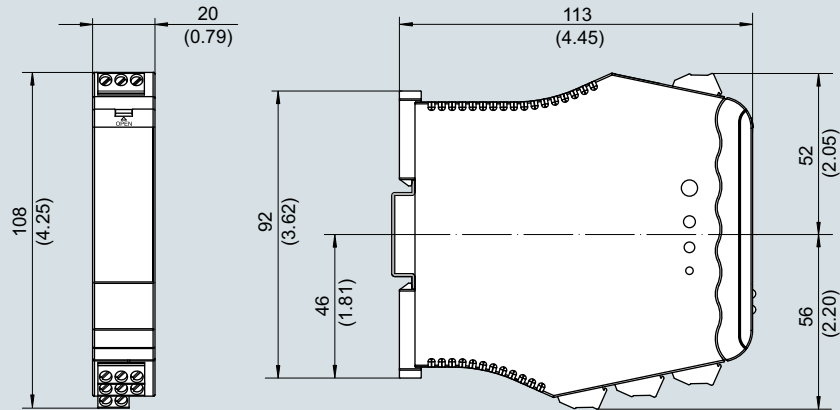
LVL200 extended unpressurized



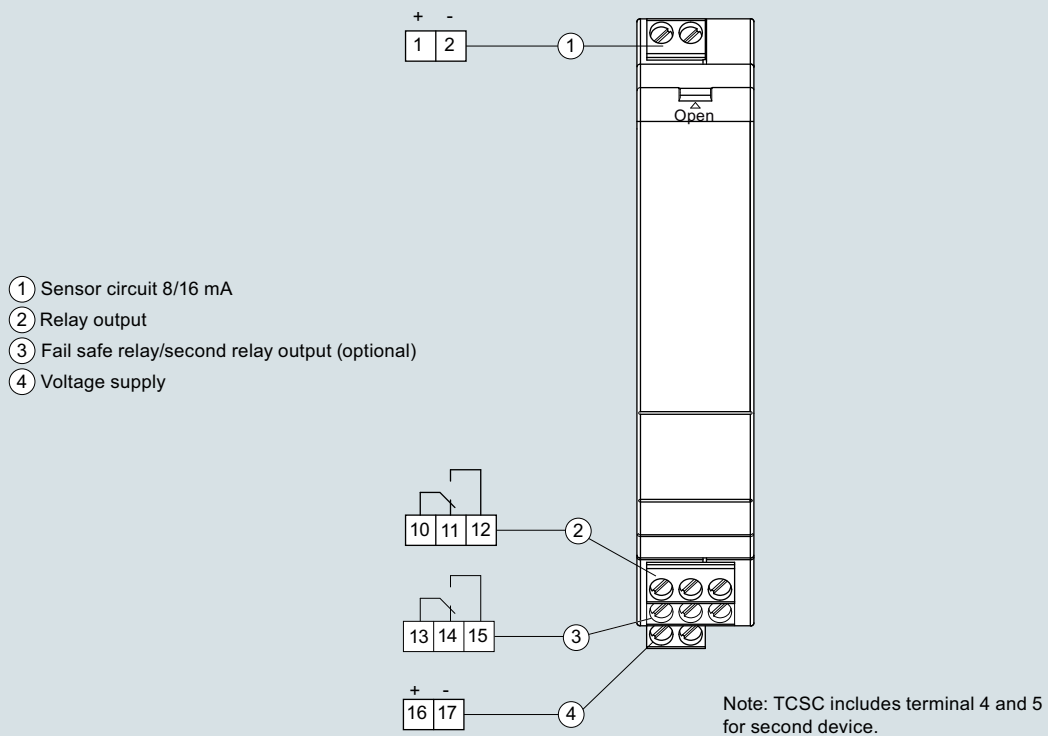
SITRANS LVL200 welded socket and lock fitting, dimensions in mm (inch)

## Options (continued)

## SITRANS SCSC and TCSC LVL test conditioner



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



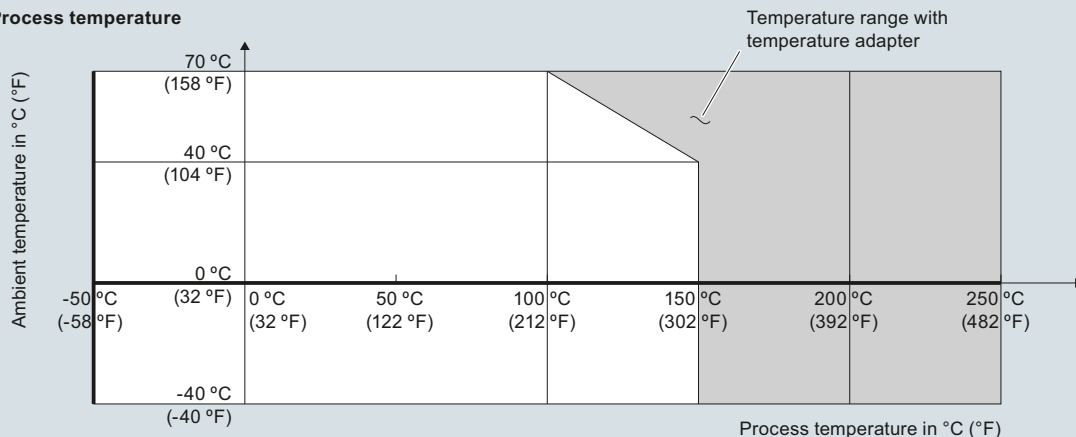
SITRANS SCSC and SITRANS TCSC LVL Test Conditioner connections

**Level measurement**  
 Point level measurement  
 Vibrating switches

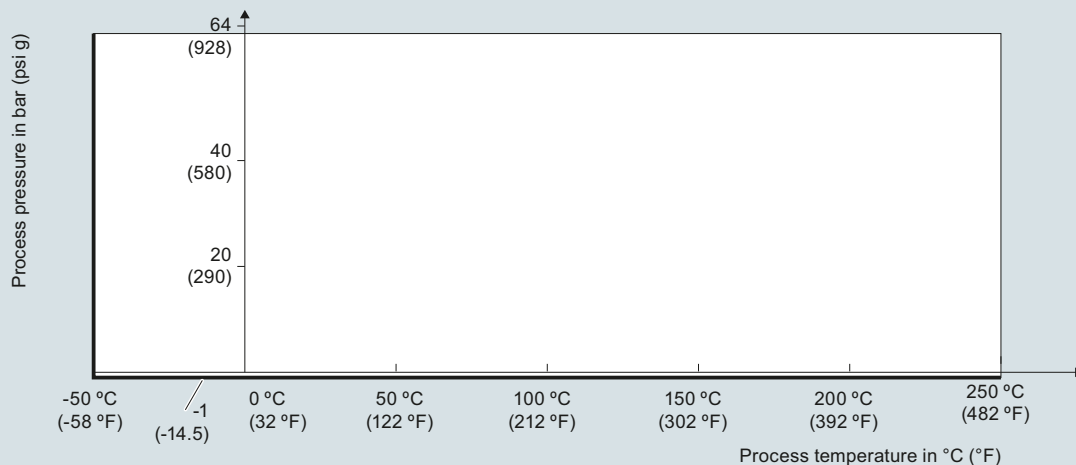
**SITRANS LVL200**

**Characteristic curves**

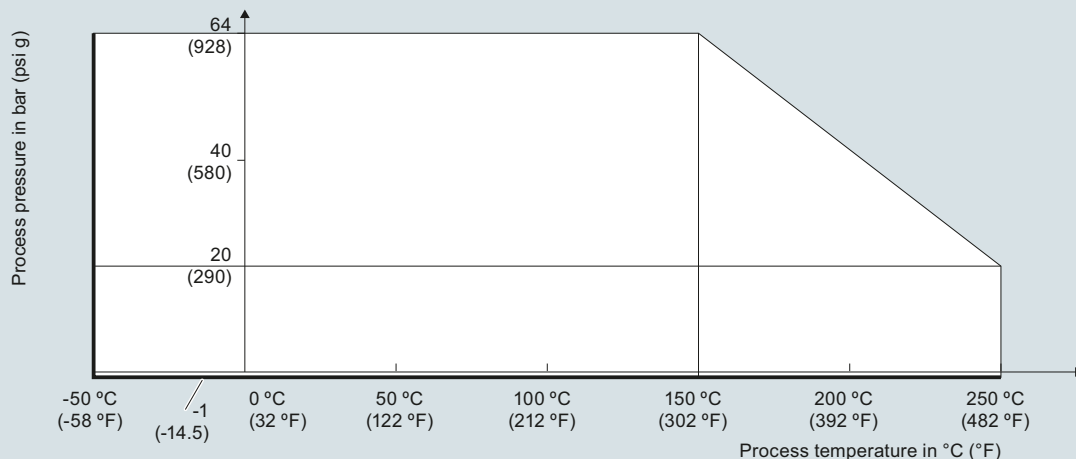
**Ambient/Process temperature**



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



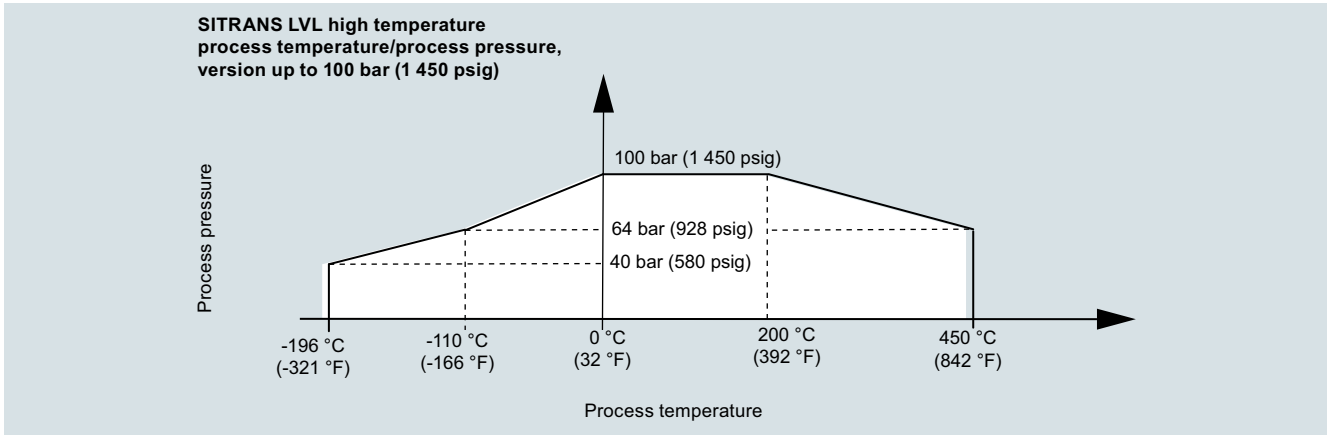
**Process pressure with switch position 0.5 g/cm³ (mode switch)**



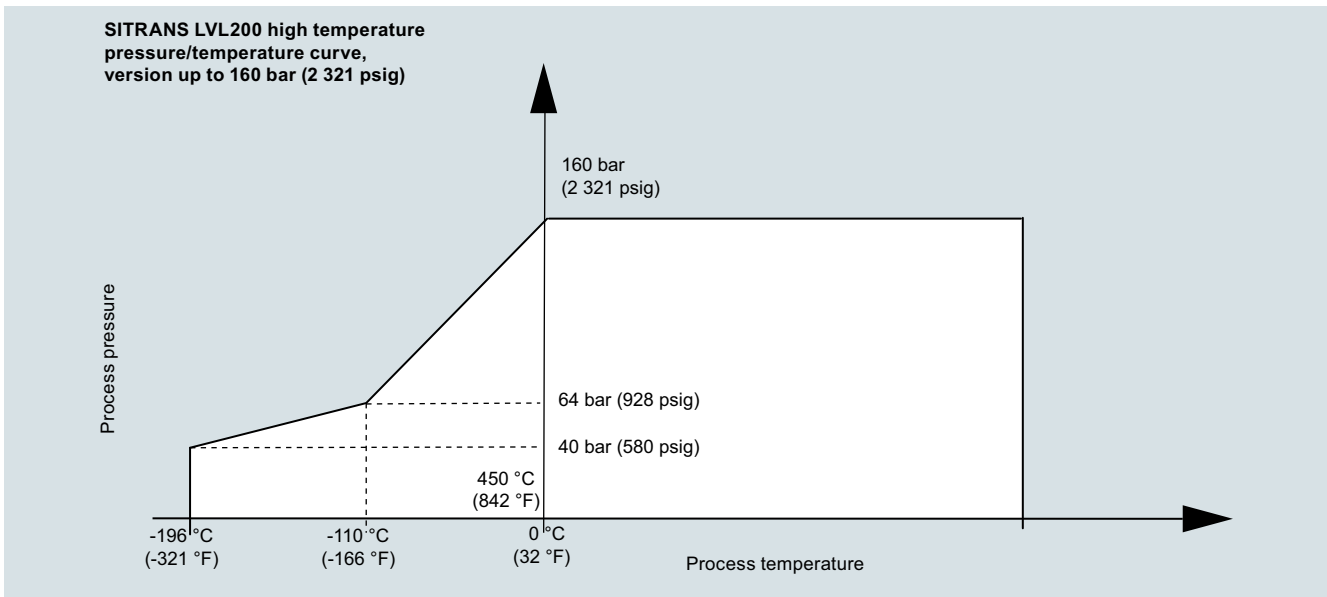
SITRANS LVL200 process pressure/process temperature/ambient temperature derating curves



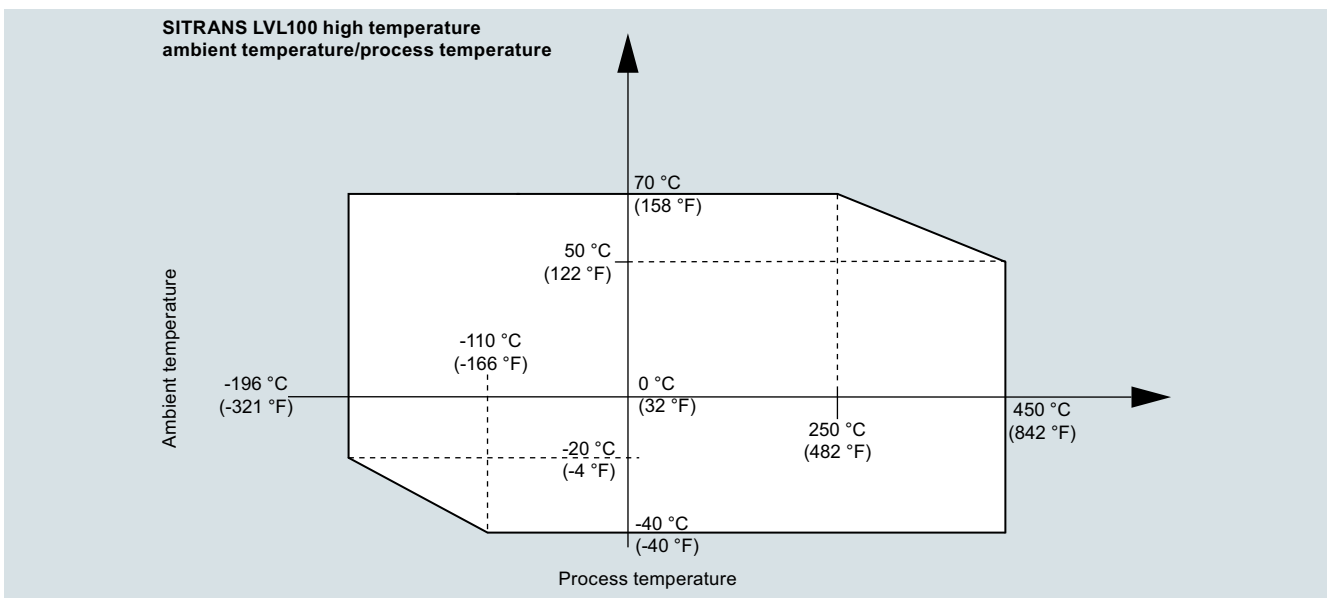
**Characteristic curves (continued)**



SITRANS LVL200 high temperature process temperature/process pressure curve, 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 ambient temperature/process temperature

## Level measurement

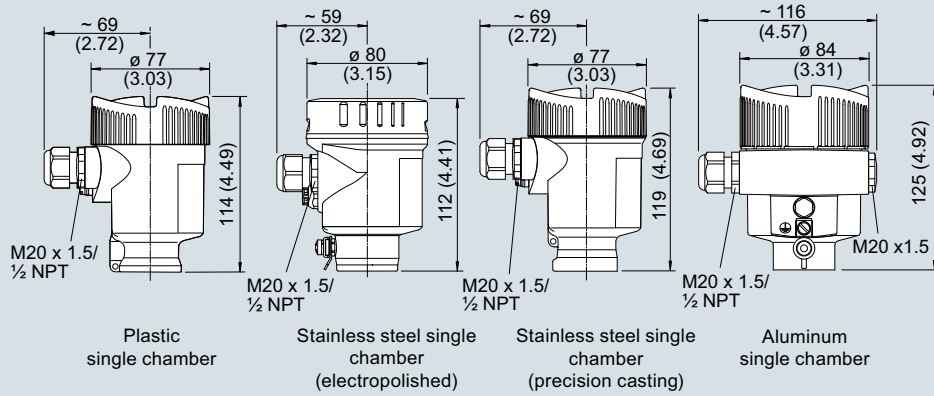
Point level measurement

Vibrating switches

### SITRANS LVL200

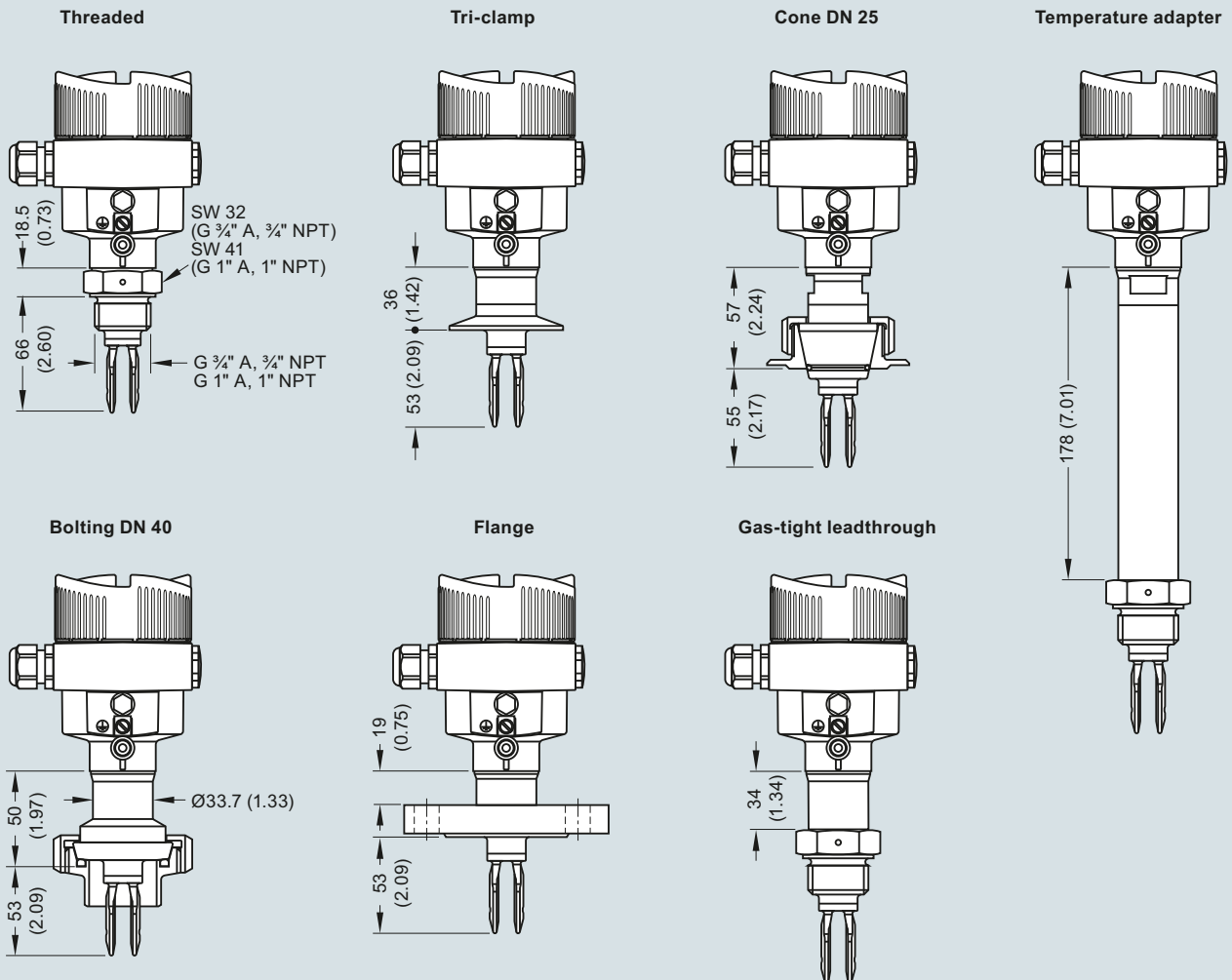
#### Dimensional drawings

##### SITRANS LVL200, housing



SITRANS LVL200 housing, dimensions in mm (inch)

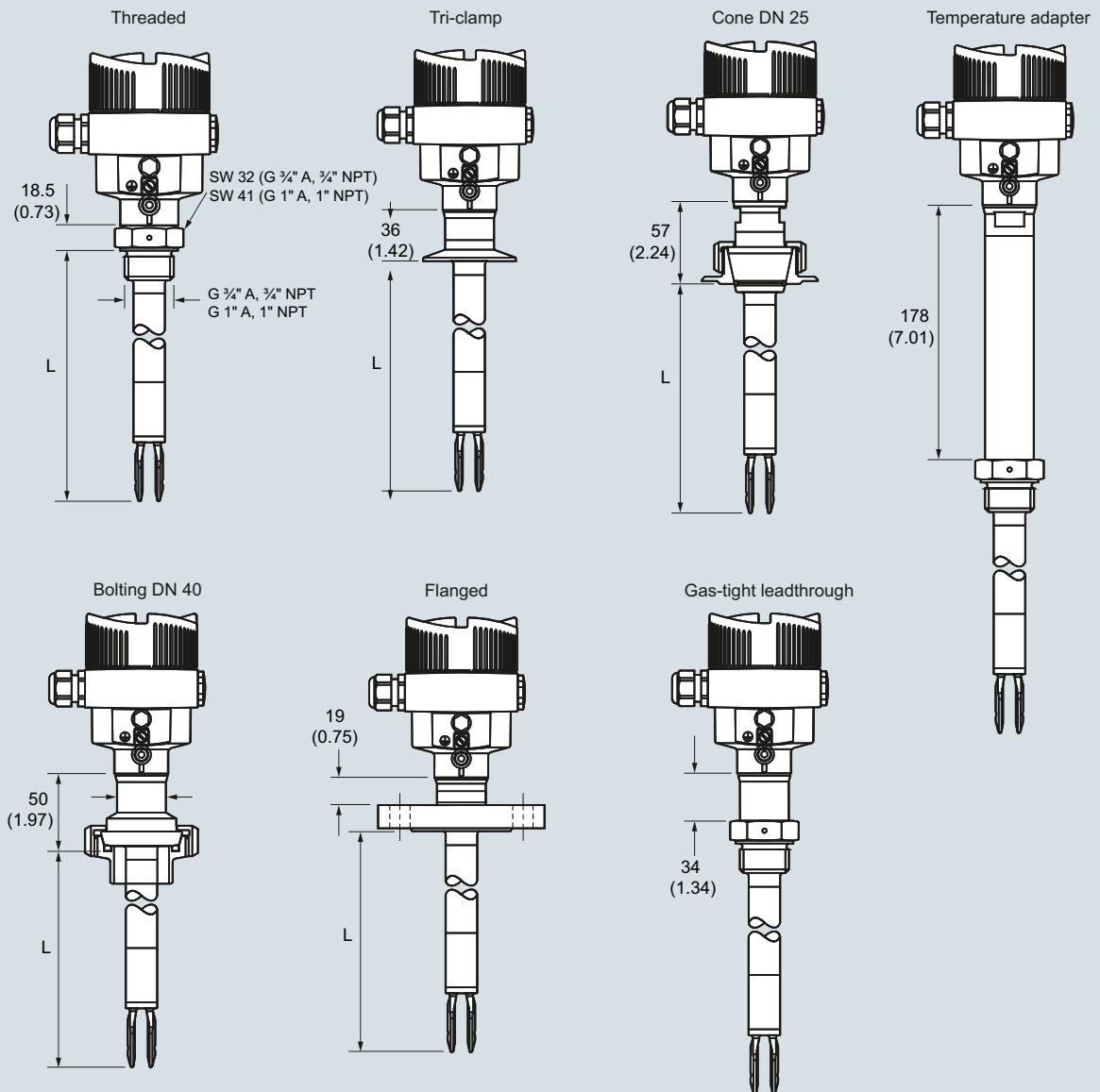
##### SITRANS LVL200 standard



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

**Dimensional drawings** (continued)

**SITRANS LVL200 extended**



**Sensor length (L)**

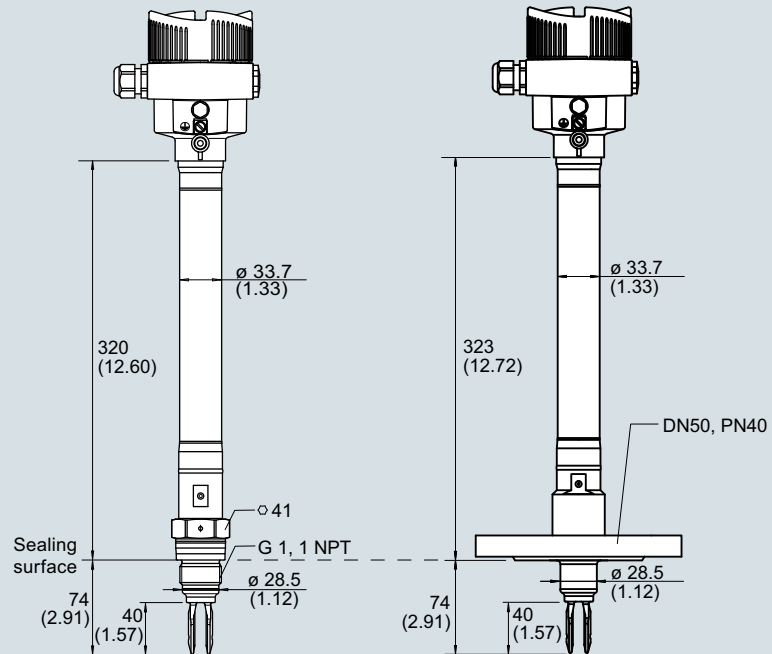
316L, Alloy C22 (2.4602)	80 ... 6 000 mm (3.15 ... 236.2 inch)
Enamelled	80 ... 1 500 mm (3.15 ... 59.06 inch)
316L, ECTFE coated	80 ... 3 000 mm (3.15 ... 118.1 inch)
316L, PFA coated	80 ... 4 000 mm (3.15 ... 157.5 inch)

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

**Level measurement**

Point level measurement

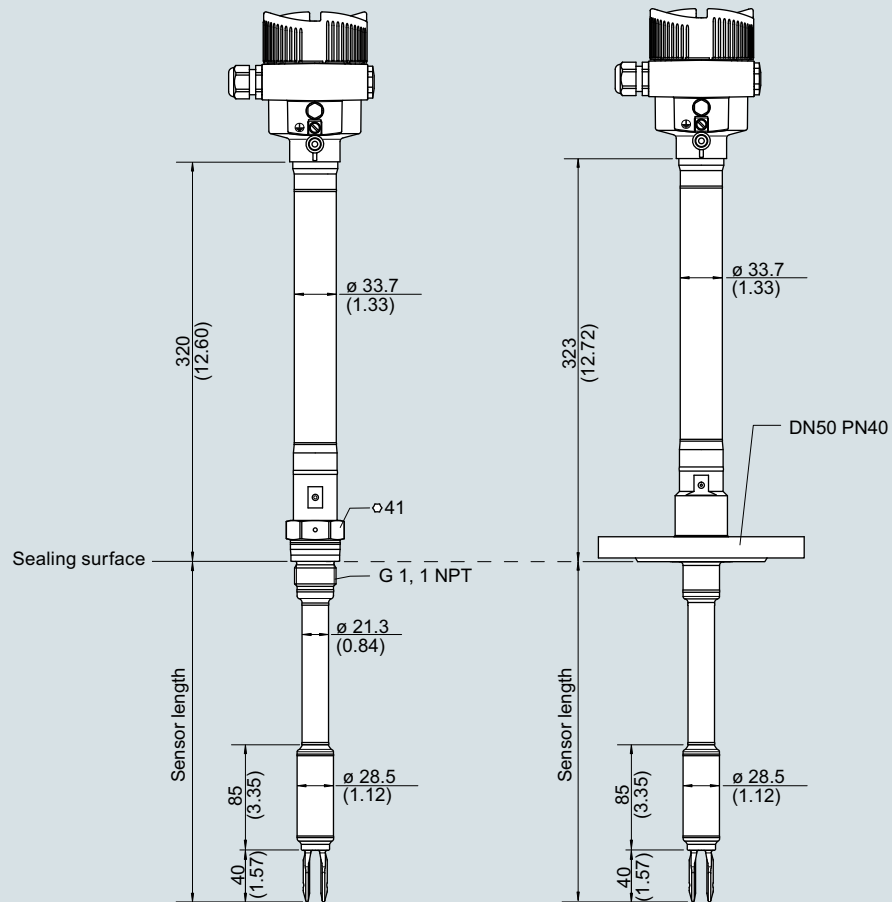
Vibrating switches

**SITRANS LVL200****Dimensional drawings** (continued)**SITRANS LVL200 high temperature, compact version**

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

**Dimensional drawings** (continued)

**SITRANS LVL200 high temperature, tube version**



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

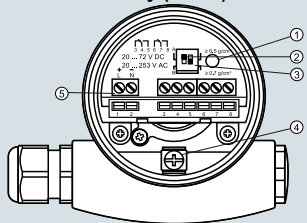
# Level measurement

Point level measurement  
Vibrating switches

## SITRANS LVL200

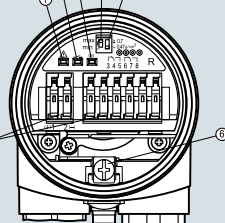
### Circuit diagrams

#### SITRANS LVL200S, LVL200E Relay (DPDT)

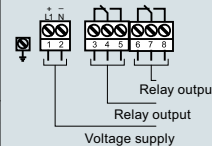


- ① Control lamp
- ② DIL switch for characteristics reversal
- ③ DIL switch for sensitivity adjustment
- ④ Ground terminal
- ⑤ Connection terminals

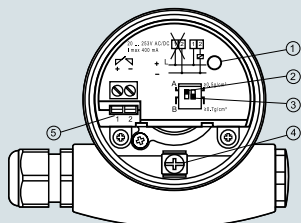
#### SITRANS LVL200H Relay (DPDT)



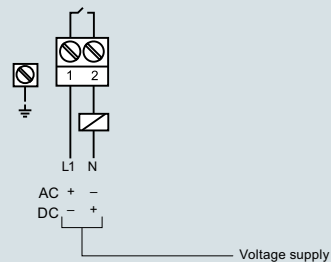
- ① Control lamp - fault indication (red)
- ② Control lamp - Switching status (yellow)
- ③ Control lamp - Operating status (green)
- ④ Mode switch for selecting the switching behaviour (min./max.)
- ⑤ DIL switch for sensitivity adjustment
- ⑥ Ground terminal
- ⑦ Connection terminals



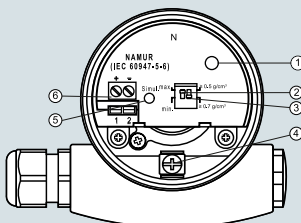
#### Contactless



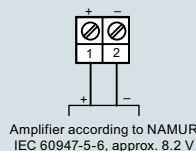
- ① Control lamp
- ② DIL switch for mode adjustment
- ③ DIL switch for switching point adaptation
- ④ Ground terminal
- ⑤ Connection terminals



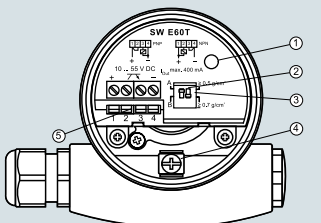
#### NAMUR



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

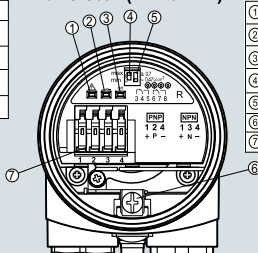


#### SITRANS LVL200S, LVL200E Transistor (NPN/PNP)

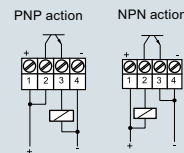


- ① Control lamp
- ② DIL switch for mode adjustment
- ③ DIL switch for switching point
- ④ Ground terminal
- ⑤ Connection terminals

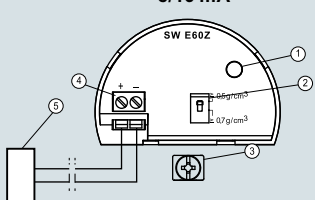
#### SITRANS LVL200H, Transistor (NPN/PNP)



- 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

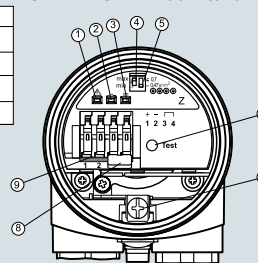


#### SITRANS LVL200S, LVL200E 8/16 mA

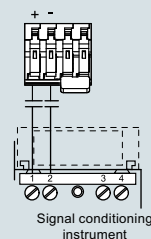


- ① Control lamp
- ② DIL switch for sensitivity adjustment
- ③ Ground terminal
- ④ Connection terminals
- ⑤ Processing system or PLC

#### 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

## 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/ft<sup>3</sup>)
- Customer desired extensions up to 4 000 mm (157.48 inch)

## Application

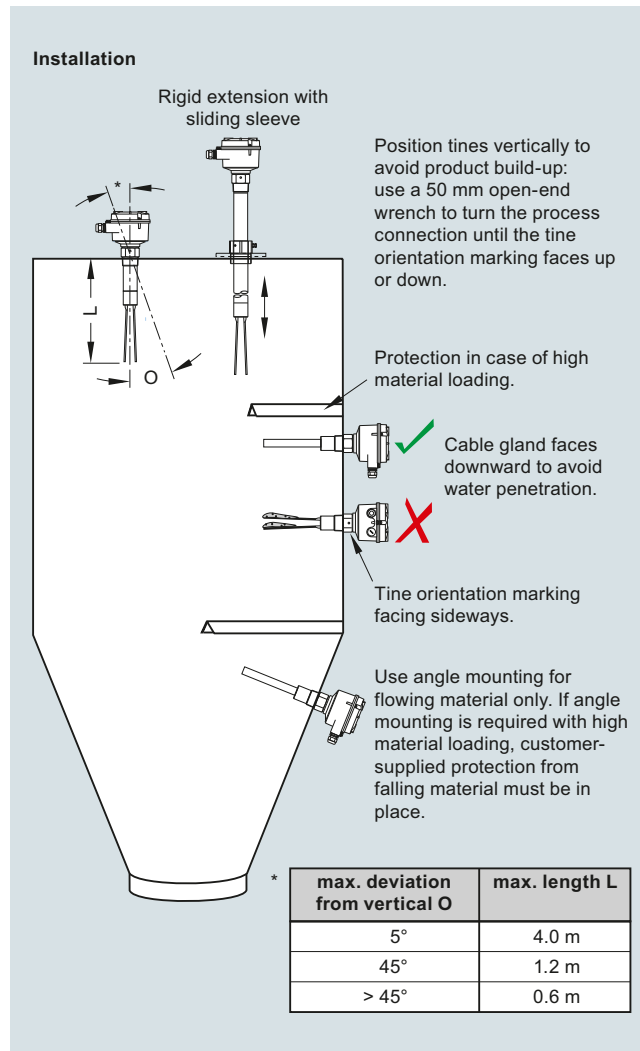
SITRANS LVS100 detects high, low or demand levels of dry bulk solids in bins, silos or hoppers.

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)

## Level measurement

### Point level measurement

### Vibrating switches


#### SITRANS LVS100

#### Technical specifications

<b>Mode of Operation</b>	
Measuring principle	Vibrating point level switch
<b>Input</b>	
Measured variable	High, low and demand
Measuring frequency	200 Hz
<b>Output</b>	
Relays	DPDT relay
Relay delay	From loss of vibration: approximately 1 second From resumption of vibration: approximately 1 ... 2 s
Signal delay	Probe uncovered to covered: approximately 1 s Probe covered to uncovered: approximately 1 ... 2 s
Relay fail-safe	High or low, switch selectable
Alarm output	Relay 8 A at 250 V AC, non-inductive Relay 5 A at 30 V DC, non-inductive
<b>Sensitivity</b>	
	High or low, switch selectable
<b>Rated operating conditions</b>	
Installation conditions	
• Location	Indoor/outdoor
Ambient conditions	
• Ambient temperature	-40 ... +60 °C (-40 ... +140 °F)
• Storage temperature	-40 ... +80 °C (-40 ... +176 °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/ft <sup>3</sup> )

<b>Design</b>	
Material	Epoxy coated aluminum
• Enclosure	
Process connection	<ul style="list-style-type: none"> <li>• Thread 1¼" NPT [(Taper), ANSI/ASME B1.20.1], R 1½" [(BSPT), EN 10226]</li> <li>• Thread R 1½" [(BSPT), EN 10226], ½" NPT [(Taper), ANSI/ASME B1.20.1], sliding sleeve [min. length 500 mm (19.69 inch)]</li> <li>• Thread material: stainless steel 304 (1.4301) or 316L (1.4404) depending on configuration</li> </ul>
Tine material	Stainless steel 316L (1.4404)
Degree of protection	IP66/Type 4/NEMA 4
Conduit entry	2 x M20 x 1.5 or 2 x ½" NPT (For FM and CSA approved versions only.)
Weight	Standard version, no extensions: approx. 1.7 kg (3.7 lb)
<b>Power supply</b>	
	<ul style="list-style-type: none"> <li>• 19 ... 230 V AC, +10 %, 50 ... 60 Hz, 8 VA</li> <li>• 19 ... 40 V DC, +10 %, 1.5 W</li> </ul>
<b>Certificates and approvals</b>	
	<ul style="list-style-type: none"> <li>• CSA/FM General Purpose</li> <li>• CE</li> <li>• CSA/FM Dust Ignition Proof</li> <li>• RCM</li> <li>• ATEX II 1/2 D</li> <li>• IECex</li> </ul>



Selection and ordering data	Article No.		Order code
<b>SITRANS LVS100 Vibrating fork point level switch</b> Level and material detection for dry bulk solids. Extension options to 4 m (13.12 ft). ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	<b>7ML5735-</b> 	<b>Further Designs</b> 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 gland <sup>1)</sup> Factory test certificate - M to DIN 55350, Part 18	Y01 A20 C11
<b>Input Voltage</b> DPDT Relay: 19 ... 230 V AC, 19 ... 40 V DC DPDT Relay: 19 ... 230 V AC, 19 ... 40 V DC (stocked version) <sup>1)3)</sup>	1 2	<b>Operating Instructions</b> All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>	
<b>Process temperature</b> 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)] <sup>2)</sup> 1½" NPT [(Taper), ANSI/ASME B1.20.1], sliding sleeve [min. length 500 mm (19.69 inch)] <sup>2)</sup>	A A B C D	<b>Spare Parts</b> 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)]	Article No. <b>7ML1830-1NS</b>  <b>7ML1830-1NT</b>  <b>7ML1830-1NU</b>
<b>Extension length</b> <u>Stainless steel 316L (1.4404)</u> Standard length, 170 mm (6.69 inch) Add Order code Y01 and plain text: "Insertion length ... mm" <u>Stainless steel 304 (1.4301)</u> 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) <sup>2)</sup> 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)	1 1  1 2 1 3 1 4 1 5 1 6 1 7 1 8 2 0	<sup>1)</sup> Available only with Approval option A.	
<b>Approvals</b> CSA/FM General Purpose, CE, RCM CSA/FM Class II, Div. 1, Groups E, F, G, Class III, ATEX II ½ D, RCM IEC-Ex Ex t IIIC T-- Da/Db IP6X EAC Ex ta/tb IIIC Da/Db	A B  C D		

<sup>1)</sup> Only available with the following configurations 7ML5735-2AA11-0AA0 or 7ML5735-2AB11-0AA0.

<sup>2)</sup> Not available with extension length options 11 and 12.

<sup>3)</sup> Input voltage 2 not allowed with extension length 16, 17, 18 or 20.

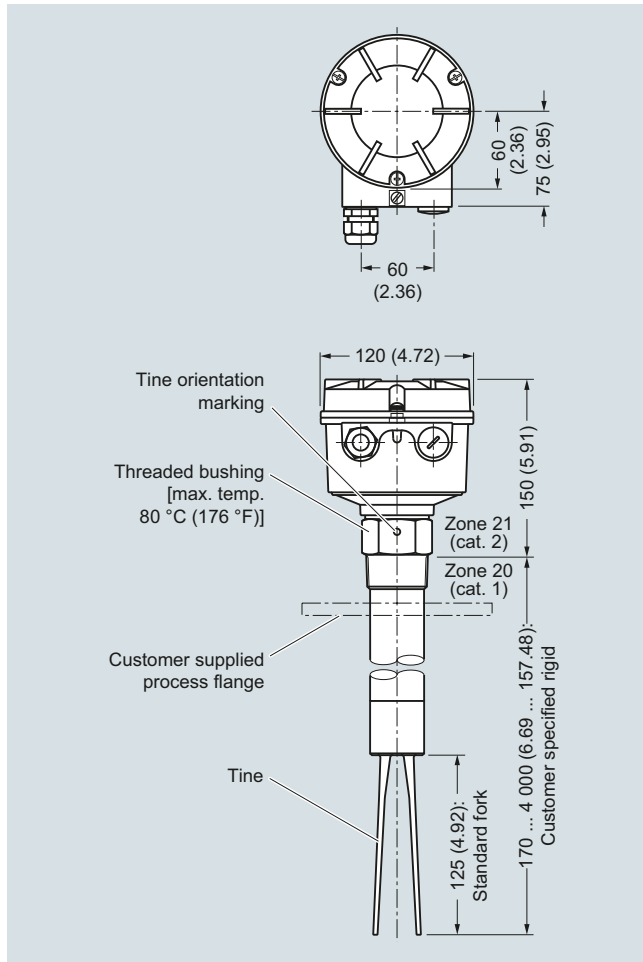
## Level measurement

Point level measurement

Vibrating switches

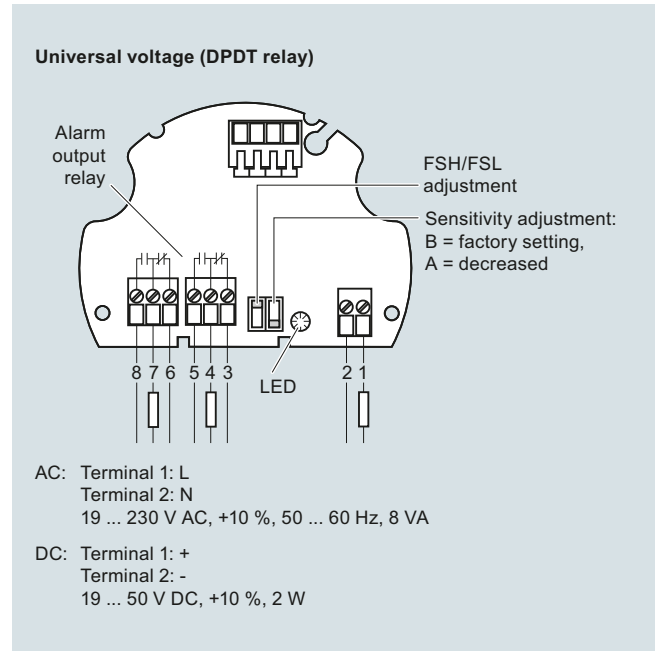
### SITRANS LVS100

#### Dimensional drawings



SITRANS LVS100, dimensions in mm (inch)

#### Circuit diagrams



SITRANS LVS100 connections

#### 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/ft<sup>3</sup>); liquid/solid interface version, 50 g/l (3 lb/ft<sup>3</sup>) and low density option min. 5 g/l (0.3 lb/ft<sup>3</sup>)
- 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)

# Level measurement

## Point level measurement

### Vibrating switches

#### SITRANS LVS200

#### Technical specifications

Mode of operation	
Measuring principle	Vibrating point level switch
Input	
Measured variable	High, low, and demand
Measuring frequency	
• Standard	125 Hz
• Liquid/solid interface and short fork version	350 Hz
Output	
PNP	Open collector: Permanent load max. 0.4 A, short-circuit and overload protected Turn-on voltage: max. 50 V (reverse protection)
2-wire without contact	Load current: • 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
Relays	SPDT relay DPDT relay
• Version with 1 relay • Version with 2 relays	
Relay delay	• From loss of vibration: approximately 1 second • From resumption of vibration: approximately 1 ... 2 seconds
Signal delay	• Probe uncovered to covered: approximately 1 second • Probe covered to uncovered: approximately 1 ... 2 seconds
Relay fail-safe	High or low, switch selectable
Alarm output	• Relay 8 A at 250 V AC, non-inductive • Relay 5 A at 30 V DC, non-inductive
mA output	8/16 mA or 4 ... 20 mA
• Resolution	4 ... 20 mA ± 0.1 mA
Sensitivity	
	High or low, switch selectable

Rated operating conditions	
Installation conditions	
• Location	Indoor/outdoor
Ambient conditions	
• Ambient temperature	-40 ... +60 °C (-40 ... +140 °F)
• Storage temperature	-40 ... +80 °C (-40 ... +176 °F)
• Installation category	III
• Pollution degree	2
Medium conditions	
• Process temperature	• 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
• 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. 30 bar g (435 psi g) European Pressure Directive 2014/68/EU: Category 1
• Minimum material density	• Standard version: approx. 20 g/l (1.2 lb/ft <sup>3</sup> ) • Liquid/solid interface version: approx. 50 g/l (3 lb/ft <sup>3</sup> ) • Optional low density version: approx. 5 g/l (0.3 lb/ft <sup>3</sup> )
Design	
Material	
• Enclosure	Epoxy coated aluminum
Process connection	• 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)
Tine material	Stainless steel 316L (1.4404), PTFE-coated tines are available upon special request
Degree of protection	IP65/Type 4/NEMA 4
Conduit entry	2 x M20 x 1.5 or 2 x ½" NPT (For FM and CSA approved versions only.)
Weight	• Standard version, no extensions: approx. 2.0 kg (4.4 lb) • Solids/liquids version, no extensions: approx. 1.9 kg (4.2 lb)
Power supply	
	• 19 ... 230 V AC, +10 %, 50 ... 60 Hz, 8 VA • 19 ... 55 V DC, +10 %, 1.5 W
Certificates and approvals	
	• 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

Selection and ordering data	Article No.	Article No.
<p><b>SITRANS LVS200 Vibrating fork point level switch, standard design</b></p> <p>Level and material detection in dry bulk solids. Extension options to 4 m (13.12 ft). With advanced testing, output, and durability options, including low bulk densities.</p> <p>➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>	7ML5731- - A 0	<p><b>SITRANS LVS200 Vibrating fork point level switch, standard design</b></p> <p>Level and material detection in dry bulk solids. Extension options to 4 m (13.12 ft). With advanced testing, output, and durability options, including low bulk densities.</p>
<p><b>Power supply</b></p> <p>19 ... 230 V AC, 19 ... 55 V DC, one relay output (SPDT)<sup>1)</sup></p> <p>19 ... 230 V AC, 19 ... 55 V DC, two relay outputs (DPDT)<sup>1)</sup></p> <p>18 ... 50 V DC PNP<sup>1)</sup></p> <p>19 ... 230 V AC/DC without contact, 2-wire loop powered<sup>1)</sup></p> <p>7 ... 9 V DC (requires NAMUR switch amplifier) NAMUR IEC 60947-5-6, 2-wire<sup>2)</sup></p> <p>8/16 mA or 4 ... 20 mA; 12.5 ... 35 V DC, 2-wire<sup>3)</sup></p> <p>19 ... 230 V AC, 19 ... 55 V DC, one relay output (SPDT) basic version<sup>4)5)</sup></p>	1 2 3 4 5 6 7	<p>Stainless steel 316L (1.4404) Standard length, 235 mm (9.25 inch)</p> <p><b>3 1</b></p> <p>Add Order code Y01 and plain text: "Insertion length ... mm"</p> <p>300 ... 500 mm (11.81 ... 19.69 inch)</p> <p>501 ... 750 mm (19.72 ... 29.53 inch)</p> <p>751 ... 1 000 mm (29.57 ... 39.37 inch)</p> <p>1 001 ... 1 250 mm (39.41 ... 49.21 inch)</p> <p>1 251 ... 1 500 mm (49.25 ... 59.06 inch)</p> <p>1 501 ... 1 750 mm (59.09 ... 68.90 inch)</p> <p>1 751 ... 2 000 mm (68.94 ... 78.74 inch)</p> <p>2 001 ... 2 250 mm (78.78 ... 88.58 inch)</p> <p>2 251 ... 2 500 mm (88.62 ... 98.43 inch)</p> <p>2 501 ... 2 750 mm (98.46 ... 108.27 inch)</p> <p>2 751 ... 3 000 mm (108.31 ... 118.11 inch)</p> <p>3 001 ... 3 250 mm (118.15 ... 127.95 inch)</p> <p>3 251 ... 3 500 mm (127.99 ... 137.80 inch)</p> <p>3 501 ... 3 750 mm (137.83 ... 147.64 inch)</p> <p>3 751 ... 4 000 mm (147.68 ... 157.48 inch)</p>
<p><b>Process temperature</b></p> <p>Without temperature isolator</p> <p>With temperature isolator</p> <p>Separated enclosure - cable length 1.5 m (4.92 ft) [max. temperature process 150 °C (302 °F)/max. temperature electronics 60 °C (140 °F)]</p> <p>Separated enclosure - cable length 4.0 m (13.12 ft) [max. temperature process 150 °C (302 °F)/max. temperature electronics 60 °C (140 °F)]</p>	A B C D	<p><b>Material process connection/extension</b></p> <p>Stainless steel threads 304 (1.4301), flanges 321 (1.4541), Tri-clamp 304 (1.4301)<sup>8)</sup></p> <p>Stainless steel 316L (1.4404)<sup>9)</sup></p>
<p><b>Process connection</b></p> <p><u>Threaded</u></p> <p>R 1½" [(BSPT), EN 10226]</p> <p>1½" NPT [(Taper), ANSI/ASME B1.20.1]</p> <p>G 2" [(BSPP), EN ISO 228-1], sliding sleeve [min. length 500 mm (19.69 inch)]<sup>6)</sup></p> <p>2" NPT [(Taper), ANSI/ASME B1.20.1], sliding sleeve [min. length 500 mm (19.69 inch)]<sup>6)</sup></p> <p><u>Flanged</u></p> <p>DN 100 PN 6, EN 1092-1, flat face<sup>7)</sup></p> <p>DN 100 PN 16, EN 1092-1, flat face</p> <p>2" ASME 150 lb B16.5, raised face</p> <p>3" ASME 150 lb B16.5, raised face</p> <p>4" ASME 150 lb B16.5, raised face</p> <p>2" Tri-clamp (DN 50) ISO 2852</p>	A B C D E F G H J K	<p><b>Approvals</b></p> <p>CSA/FM Dust Ignition Proof, RCM</p> <p>ATEX II ½ D, RCM</p> <p>CSA/FM General Purpose, RCM, CE</p> <p>CE, RCM</p> <p>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</p> <p>ATEX II 1G and ½G Eex ia IIC; ATEX II 1D and ½D, RCM</p> <p>IEC-Ex t IIIC Da/Db</p> <p>EAC Ex ta/tb IIIC Da/Db, Ex ta IIIC Da</p> <p>EAC Ex Ga/Gb Ex ia IIC, 0Ex ia IIC Ga; Ex ta/tb IIIC Da/Db, Ex ta IIIC Da</p>
<p><b>Extension length</b></p> <p>Stainless steel 304 (1.4301)</p> <p>Standard length, 235 mm (9.25 inch)</p> <p><b>1 1</b></p> <p>Add Order code Y01 and plain text: "Insertion length ... mm"</p> <p>300 ... 500 mm (11.81 ... 19.69 inch)</p> <p>501 ... 750 mm (19.72 ... 29.53 inch)</p> <p>751 ... 1 000 mm (29.57 ... 39.37 inch)</p> <p>1 001 ... 1 250 mm (39.41 ... 49.21 inch)</p> <p>1 251 ... 1 500 mm (49.25 ... 59.06 inch)</p> <p>1 501 ... 1 750 mm (59.09 ... 68.90 inch)</p> <p>1 751 ... 2 000 mm (68.94 ... 78.74 inch)</p> <p>2 001 ... 2 250 mm (78.78 ... 88.58 inch)</p> <p>2 251 ... 2 500 mm (88.62 ... 98.43 inch)</p> <p>2 501 ... 2 750 mm (98.46 ... 108.27 inch)</p> <p>2 751 ... 3 000 mm (108.31 ... 118.11 inch)</p> <p>3 001 ... 3 250 mm (118.15 ... 127.95 inch)</p> <p>3 251 ... 3 500 mm (127.99 ... 137.80 inch)</p> <p>3 501 ... 3 750 mm (137.83 ... 147.64 inch)</p> <p>3 751 ... 4 000 mm (147.68 ... 157.48 inch)</p>	1 1 1 2 1 3 1 4 1 5 1 6 1 7 1 8 2 1 2 2 2 3 2 4 2 5 2 6 2 7 2 8	<p>1) Available with Approval options A ... D, G only.</p> <p>2) Available with Approval options D, E, F only.</p> <p>3) Available with Approval options B, D, G only.</p> <p>4) Available with configurations 7ML5731-7AA11-1BA0 or 7ML5731-7AB11-1AA0 only.</p> <p>5) Basic version is cost effective and offers fast delivery.</p> <p>6) Not available with extension length options 11, 12, 31, 32.</p> <p>7) Max. 6 bar (87 psi).</p> <p>8) Available with option extension length 11 ... 28.</p> <p>9) Available with option extension length 31 ... 48.</p>

## Level measurement

### Point level measurement

### Vibrating switches

#### SITRANS LVS200

#### Selection and ordering data

#### Order code

#### Article No.

##### Further Designs

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

Factory test certificate - M to DIN 55350, Part 18

**C11**

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**

Enhanced sensitivity > 5 g/l via electronics and increased insertion length of 25 mm (0.98 inch)<sup>3)</sup>

**K05**

Enhanced sensitivity < 5 g/l via electronics, increased insertion length of 25 mm (0.98 inch), and increased aluminum fork width<sup>1)3)</sup>

**G01**

Signal bulb inserted in M20 cable gland<sup>2)</sup>

**A20**

NAMUR 8/16 mA switch amplifiers available, contact factory for pricing

##### Operating Instructions

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/processinstrumentation/documentation>

##### Spare Parts

Article No.

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**

Sliding sleeve, 2" BSP (ISO 228)

**7ML1830-1JM**

Sliding sleeve, 2" NPT (ASME B1.20.1)

**7ML1830-1JN**

Namur Isolator switch amplifier relay output KFD2-SR2-Ex1.W

**A5E35667901**

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**

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**

<sup>1)</sup> Available only with power supply option 1 and Approval options C, D and with Process connection flange options E ... J.

<sup>2)</sup> Available with Approval option D only.

<sup>3)</sup> K05 and G01 are not available together.

#### SITRANS LVS200 Vibrating fork point level switch, short fork and interface design

Level and material detection in dry bulk solids or solids interface within a liquid. Extension options to 4 m (13.12 ft). With advanced testing, output, and durability options.

➤ 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)<sup>6)</sup>

**1**

19 ... 230 V AC, 19 ... 55 V DC, two relay outputs (DPDT)<sup>6)</sup>

**2**

18 ... 50 V DC PNP<sup>6)</sup>

**3**

19 ... 230 V AC/DC without contact, 2-wire loop powered<sup>6)</sup>

**4**

8/16 mA or 4 ... 20 mA; 12.5 ... 35 V DC, 2-wire<sup>1)</sup>

**5**

##### 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)]

**A**  
**B**  
**C**

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**

##### 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)]<sup>2)</sup>

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

**A**  
**B**  
**C**

**D**

Flanged

DN 100 PN 6, EN 1092-1, flat face<sup>3)</sup>

DN 100 PN 16, EN 1092-1, flat face

2" ASME 150 lb B16.5, raised face

3" ASME 150 lb B16.5, raised face

4" ASME 150 lb B16.5, raised face

2" Tri-clamp (DN 50) ISO 2852

**E**  
**F**  
**G**  
**H**  
**J**  
**K**

##### Extension length

Stainless steel 304 (1.4301)

Standard length, 165 mm (6.50 inch)

**1 1**

Add Order code Y01 and plain text:

"Insertion length ... mm"

200 ... 500 mm (7.87 ... 19.69 inch)

**1 2**

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

**1 3**

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

**1 4**

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

**1 5**

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

**1 6**

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

**1 7**

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

**1 8**

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

**2 1**

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

**2 2**

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

**2 3**

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

**2 4**

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

**2 5**

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

**2 6**

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

**2 7**

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

**2 8**

Selection and ordering data	Article No.	Further Designs	Article No.
<b>SITRANS LVS200 Vibrating fork point level switch, short fork and interface design</b> Level and material detection in dry bulk solids or solids interface within a liquid. Extension options to 4 m (13.12 ft). With advanced testing, output, and durability options.	<b>7ML5732-</b> 	<b>Order code</b> Please add "-Z" to Article No. and specify Order code(s).	
Stainless steel 316L (1.4404) Standard length, 165 mm (6.50 inch)	<b>3 1</b>	Factory test certificate - M to DIN 55350, Part 18  Total insertion length: Enter the total insertion length in plain text description, max. 4 000 mm (147.48 inch)	<b>C11</b>  <b>Y01</b>
Add Order code Y01 and plain text: <u>"Insertion length ... mm"</u>		Stainless steel tag [100 x 45 mm (3.94 x 1.77 inch)]; Measuring-point number/identification (max. 27 characters); specify in plain text  Signal bulb inserted in M20 cable gland <sup>1)3)</sup>	<b>Y14</b>  <b>A20</b>
200 ... 500 mm (7.87 ... 19.69 inch)	<b>3 2</b>	<b>Note: G02 must be ordered for solids/liquids interface detection.</b>	
501 ... 750 mm (19.72 ... 29.53 inch)	<b>3 3</b>	Adjustable sensitivity (by potentiometer) for solids/liquids interface detection <sup>1)2)4)</sup>	<b>G02</b>
751 ... 1 000 mm (29.57 ... 39.37 inch)	<b>3 4</b>	<b>Operating Instructions</b>  All literature is available to download for free, in a range of languages, at  <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>	
1 001 ... 1 250 mm (39.41 ... 49.21 inch)	<b>3 5</b>	<b>Spare Parts</b>	Article No.
1 251 ... 1 500 mm (49.25 ... 59.06 inch)	<b>3 6</b>	Replacement Electronics Module (125 Hz) [19 ... 230 V AC, 19 ... 55 V DC, two relay output (DPDT)]	<b>A5E35525363</b>
1 501 ... 1 750 mm (59.09 ... 68.90 inch)	<b>3 7</b>	Replacement Electronics Module (350 Hz) [19 ... 230 V AC, 19 ... 55 V DC, one relay output (SPDT)]	<b>7ML1830-1KM</b>
1 751 ... 2 000 mm (68.94 ... 78.74 inch)	<b>3 8</b>	Sliding sleeve, 2" BSP (ISO 228)	<b>7ML1830-1JM</b>
2 001 ... 2 250 mm (78.78 ... 88.58 inch)	<b>4 1</b>	Sliding sleeve, 2" NPT (ASME B1.20.1)	<b>7ML1830-1JN</b>
2 251 ... 2 500 mm (88.62 ... 98.43 inch)	<b>4 2</b>	Material process connection/extension	
2 501 ... 2 750 mm (98.46 ... 108.27 inch)	<b>4 3</b>	Stainless steel threads 304 (1.4301), flanges 321 (1.4541), Tri-clamp 304 (1.4301) <sup>4)</sup>	
2 751 ... 3 000 mm (108.31 ... 118.11 inch)	<b>4 4</b>	Stainless steel 316L (1.4404) <sup>5)</sup>	
3 001 ... 3 250 mm (118.15 ... 127.95 inch)	<b>4 5</b>	<b>Approvals</b>	
3 251 ... 3 500 mm (127.99 ... 137.80 inch)	<b>4 6</b>	CSA/FM Dust Ignition Proof, RCM	
3 501 ... 3 750 mm (137.83 ... 147.64 inch)	<b>4 7</b>	ATEX II ½ D, RCM	
3 751 ... 4 000 mm (147.68 ... 157.48 inch)	<b>4 8</b>	CSA/FM General Purpose, RCM, CE	
<b>Material process connection/extension</b>	<b>1</b>	CE, RCM	
Stainless steel threads 304 (1.4301), flanges 321 (1.4541), Tri-clamp 304 (1.4301) <sup>4)</sup>	<b>2</b>	IEC-Ex t IIIC Da/Db	
Stainless steel 316L (1.4404) <sup>5)</sup>	<b>A</b>	ATEX II 1G and ½G Eex ia IIC; ATEX II 1D and ½D, CE, RCM	
<b>Approvals</b>	<b>B</b>	EAC Ex ta/tb IIIC Da/Db, Ex ta IIIC Da	
CSA/FM Dust Ignition Proof, RCM	<b>C</b>	EAC Ex Ga/Gb Ex ia IIC, 0Ex ia IIC Ga; Ex ta/tb IIIC Da/Db, Ex ta IIIC Da	
ATEX II ½ D, RCM	<b>D</b>	<sup>1)</sup> Available with Approval options B, D, E only.	
CSA/FM General Purpose, RCM, CE	<b>E</b>	<sup>2)</sup> Not available with extension length options 11, 12, 31, 32.	
CE, RCM	<b>F</b>	<sup>3)</sup> Max. 6 bar (87 psi).	
IEC-Ex t IIIC Da/Db	<b>G</b>	<sup>4)</sup> Available with extension length options 11 ... 28.	
ATEX II 1G and ½G Eex ia IIC; ATEX II 1D and ½D, CE, RCM	<b>H</b>	<sup>5)</sup> Available with extension length options 31 ... 48.	
EAC Ex ta/tb IIIC Da/Db, Ex ta IIIC Da		<sup>6)</sup> Power supply options 1, 2, 3, 4 not allowed with Approvals options F and H.	
EAC Ex Ga/Gb Ex ia IIC, 0Ex ia IIC Ga; Ex ta/tb IIIC Da/Db, Ex ta IIIC Da			

## Level measurement

### Point level measurement

### Vibrating switches

#### SITRANS LVS200

#### Selection and ordering data

#### Article No.

#### Order code

##### SITRANS LVS200 Vibrating fork point level switch, pipe extension design

Level and material detection in dry bulk solids. Requires customer supplied pipe extension with insertion to 3.8 m (12.47 ft). With advanced testing, output, and durability options.

➤ 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)<sup>1)</sup>

19 ... 230 V AC, 19 ... 55 V DC, two relay outputs (DPDT)<sup>1)</sup>

18 ... 50 V DC PNP<sup>1)</sup>

19 ... 230 V AC/DC without contact, 2-wire loop powered<sup>1)</sup>

7 ... 9 V DC (requires NAMUR switch amplifier) NAMUR IEC 60947-5-6, 2-wire<sup>2)</sup>

8/16 mA or 4 ... 20 mA; 12.5 ... 35 V DC, 2-wire<sup>3)</sup>

##### Process temperature

Up to 150 °C (302 °F)

##### Process connection

###### Threaded

R 1½" [(BSPT), EN 10226]

1½" NPT [(Taper), ANSI/ASME B1.20.1]

###### Flanged

DN 100 PN 6, EN 1092-1, flat face<sup>4)</sup>

DN 100 PN 16, EN 1092-1, flat face

2" ASME 150 lb B16.5, raised face

3" ASME 150 lb B16.5, raised face

4" ASME 150 lb B16.5, raised face

2" Tri-clamp (DN 50) ISO 2852

##### Process connection material

Stainless steel threads 304 (1.4301), flanges 321(1.4541), Tri-clamp 304 (1.4301)

Stainless steel 316L (1.4404)

##### Extension length

Customer supplied 1" pipe extension Length: 300 ... 3 800 mm (11.81 ... 149.61 inch)

##### Application type

Dry bulk solids (125 Hz)

Liquids/solids interface (350 Hz)

##### Approvals

CSA/FM Dust Ignition Proof, RCM

ATEX II ½D, 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 ½G Eex ia IIC; ATEX II 1D and ½D, 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

<sup>1)</sup> Available with Approval options A, B, C, D, G only.

<sup>2)</sup> Available with Approval options D, E, F, J and application type 1 only.

<sup>3)</sup> Available with Approval options B, D, F, G, H only.

<sup>4)</sup> Max. 6 bar (87 psi).

7ML5733-  
- A 0

1	A
2	B
3	C
4	D
5	E
6	F
	G
	K
1	1
2	2
1	1
	1
	2
	A
	B
	C
	D
	E
	F
	G
	H
	J

#### Further Designs

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

Factory test certificate - M to DIN 55350, Part 18

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)<sup>5)</sup>

Enhanced sensitivity < 5 g/l via electronics, increased insertion length of 25 mm (0.98 inch) and increased aluminum fork width<sup>1)4)5)</sup>

Adjustable sensitivity (by potentiometer) for solids/liquids interface detection<sup>2)3)4)</sup>

Signal bulb inserted in M20 cable gland<sup>2)6)</sup>

#### Operating Instructions

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)]

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

<sup>1)</sup> Available only with power supply option 1 and Approvals options C, D, and with Process connection flange options C ... G.

<sup>2)</sup> Available with Approval options D only.

<sup>3)</sup> Available with Power supply option 1 only and application type option 2.

<sup>4)</sup> Not available with option K05.

<sup>5)</sup> Available with Application type option 1 only.

<sup>6)</sup> A20 not allowed with Power supply options 4, 5, and 6.

#### Article No.

7ML1830-1KL

A5E35525363

7ML1830-1KM

A5E35667901



Selection and ordering data	Article No.	Article No.
<p><b>SITRANS LVS200 Vibrating fork point level switch, cable extended design</b></p> <p>Level and material detection in dry bulk solids. Extension options to 20 m (65.62 ft). With advanced testing, output, and durability options. Measures bulk densities less than 5 g/l (0.3 lb/ft<sup>3</sup>).</p> <p>➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>	7ML5734- - A 0	7ML5734- - A 0
<p><b>Power supply</b></p> <p>19 ... 230 V AC, 19 ... 55 V DC, one relay output (SPDT)<sup>1)</sup></p> <p>19 ... 230 V AC, 19 ... 55 V DC, two relay outputs (DPDT)<sup>1)</sup></p> <p>18 ... 50 V DC PNP<sup>1)</sup></p> <p>19 ... 230 V AC/DC without contact, 2-wire loop powered<sup>1)</sup></p> <p>7 ... 9 V DC (requires NAMUR switch amplifier)</p> <p>NAMUR IEC 60947-5-6, 2-wire<sup>2)5)</sup></p> <p>8/16 mA or 4 ... 20 mA; 12.5 ... 35 V DC, 2-wire<sup>3)</sup></p>	1 2 3 4 5 6	A B C D E F G H J
<p><b>Process temperature</b></p> <p>Up to 80 °C (176 °F)</p>	A	
<p><b>Process connection</b></p> <p><u>Threaded</u></p> <p>R 1½" [(BSPT), EN 10226] (1.4301/304)</p> <p>1½" NPT [(Taper), ANSI/ASME B1.20.1] (1.4301/304)</p> <p><u>Flanged</u></p> <p>DN 100 PN 6, EN 1092-1 (1.4541/321), flat face<sup>4)</sup></p> <p>DN 100 PN 16, EN 1092-1 (1.4541/321), flat face</p> <p>2" ASME 150 lb B16.5 (1.4541/321), raised face</p> <p>3" ASME 150 lb B16.5 (1.4541/321), raised face</p> <p>4" ASME 150 lb B16.5 (1.4541/321), raised face</p>	A B C D E F G	
<p><b>Extension length</b></p> <p>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)]<sup>8)</sup></p> <p>Add Order code Y01 and plain text: "Insertion length ... mm"</p> <p>1 001 ... 2 000 mm (39.41 ... 78.74 inch) 1 1</p> <p>2 001 ... 3 000 mm (78.78 ... 118.11 inch) 1 2</p> <p>3 001 ... 4 000 mm (118.15 ... 157.48 inch) 1 3</p> <p>4 001 ... 5 000 mm (157.52 ... 196.85 inch) 1 4</p> <p>5 001 ... 6 000 mm (196.89 ... 236.22 inch) 1 5</p> <p>6 001 ... 7 000 mm (236.26 ... 275.59 inch) 1 6</p> <p>7 001 ... 8 000 mm (275.63 ... 314.96 inch)<sup>5)</sup> 1 7</p> <p>8 001 ... 9 000 mm (315 ... 354.33 inch)<sup>5)</sup> 1 8</p> <p>9 001 ... 10 000 mm (354.37 ... 393.70 inch)<sup>5)</sup> 2 0</p> <p>10 001 ... 11 000 mm (393.74 ... 433.07 inch)<sup>5)6)</sup> 2 1</p> <p>11 001 ... 12 000 mm (433.11 ... 472.44 inch)<sup>5)6)</sup> 2 2</p> <p>12 001 ... 13 000 mm (472.48 ... 511.81 inch)<sup>5)6)</sup> 2 3</p> <p>13 001 ... 14 000 mm (511.85 ... 551.18 inch)<sup>5)6)</sup> 2 4</p> <p>14 001 ... 15 000 mm (551.22 ... 590.55 inch)<sup>5)6)</sup> 2 5</p> <p>15 001 ... 16 000 mm (590.59 ... 629.92 inch)<sup>5)6)</sup> 2 6</p> <p>16 001 ... 17 000 mm (629.96 ... 669.29 inch)<sup>5)6)</sup> 2 7</p> <p>17 001 ... 18 000 mm (669.33 ... 708.66 inch)<sup>5)6)</sup> 2 8</p> <p>18 001 ... 19 000 mm (708.70 ... 748.03 inch)<sup>5)6)</sup> 3 0</p> <p>19 001 ... 20 000 mm (748.07 ... 787.40 inch)<sup>5)6)</sup> 3 1</p>	1 0 1 1 1 2 1 3 1 4 1 5 1 6 1 7 1 8 2 0 2 1 2 2 2 3 2 4 2 5 2 6 2 7 2 8 3 0 3 1	
<p><b>Application type</b></p> <p>Dry bulk solids (125 Hz) 1</p> <p>Liquids/solids interface detection, short insertion or heavier materials (350 Hz)<sup>7)</sup> 2</p>	1 2	
<p><b>Approvals</b></p> <p>CSA/FM Dust Ignition Proof, RCM</p> <p>ATEX II ½D, RCM</p> <p>CSA/FM General Purpose, RCM, CE</p> <p>CE, RCM</p> <p>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</p> <p>ATEX II 1G and ½G Eex ia IIC; ATEX II 1D and ½D, RCM<sup>6)</sup></p> <p>IEC-Ex t IIIC Da/Db</p> <p>EAC Ex ta/tb IIIC Da/Db, Ex ta IIIC Da</p> <p>EAC Ex Ga/Gb Ex ia IIC, 0Ex ia IIC Ga; Ex ta/tb IIIC Da/Db, Ex ta IIIC Da</p>		
<p>1) Available with Approval options A, B, C, D, G only.</p> <p>2) Available with Approval options D, E, and F only. Not available for Application type option 2.</p> <p>3) Available with Approval option D only.</p> <p>4) Max. 6 bar (87 psi).</p> <p>5) Not available with Application type option 2.</p> <p>6) Not available with Power supply option 5.</p> <p>7) Cable length is limited to 7 000 mm (275.59 inch).</p> <p>8) Available with Power supply options 1 ... 4, and 6.</p>		

**Level measurement**

Point level measurement

Vibrating switches

**SITRANS LVS200****Selection and ordering data****Order code****Article No.***Further Designs*

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

Factory test certificate - M to DIN 55350, Part 18

**C11**

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)<sup>5)</sup>

**K05**

Enhanced sensitivity < 5 g/l via electronics and increased insertion length of 25 mm (0.98 inch) and increased aluminum fork width<sup>1)4)</sup>

**G01**

Adjustable sensitivity (by potentiometer) for solids/liquids interface detection<sup>2)3)4)</sup>

**G02**

Signal bulb inserted in M20 cable gland<sup>2)6)</sup>

**A20***Operating Instructions*

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)]

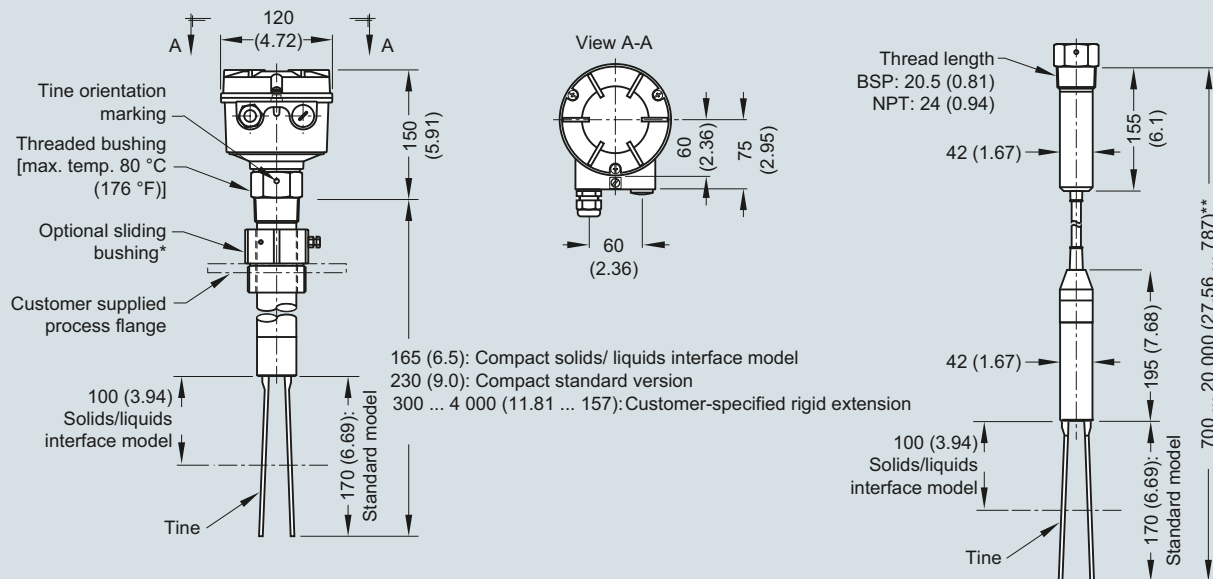
**7ML1830-1KM**

NAMUR Isolated switch amplifier Relay output KFD2-SR2-Ex1.W

**A5E35667901**

- 1) Available only with power supply option 1 and Approvals C, D, and with process connection flange options C ... G.
- 2) Available with Approval options D only.
- 3) Available with Power supply option 1 and Application type 2 option only.
- 4) Not available with option K05.
- 5) Available with Application type option 1 only.
- 6) A20 not allowed with Power supply options 4, 5, or 6.

### 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)

# Level measurement

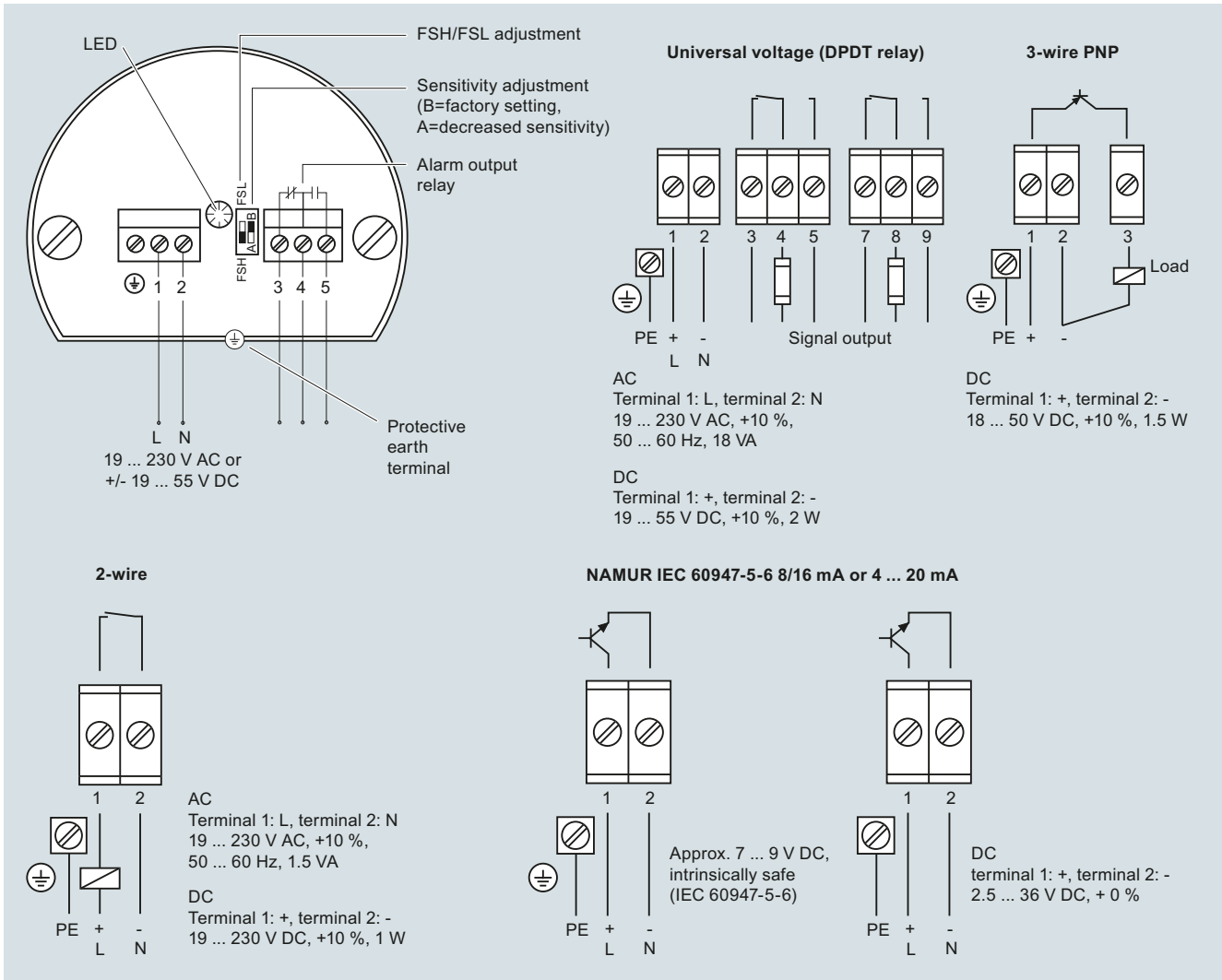
Point level measurement

Vibrating switches

## SITRANS LVS200

### Circuit diagrams

4



SITRANS LVS200 connections

## Overview



SITRANS LVS300 is a vibrating rod point level switch for high, low, or demand level detection of bulk solids.

## Benefits

- High resistance to mechanical forces.
- Adjustable sensitivity for varied applications including build-up.
- Rotatable enclosure for convenient wiring.
- Suitable for low density material: standard version, 20 g/l (1.3 lb/ft<sup>3</sup>).
- Customer desired extensions up to 4 000 mm (157 inch).
- 160 mm (6.3 inch) insertion length.
- Flexible, customer supplied, rods to 4 meters.
- Process connections starting at 1 inch.

## Application

The standard LVS300 detects high, low, or demand levels of dry bulk solids in bins, silos, or hoppers.

A pipe extension version is available, separated by a customer supplied 1 inch pipe.

The LVS300 has a compact design and can be top, side or angle mounted. The vibrating rod design ensures the product will not be impacted by bridging of traditional forks in applications with buildup potential. A durable probe design ensures the product will withstand heavier materials without damage or bending.

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

- Key Applications: dry or bulk solids with buildup potential, in bins, silos, or hoppers, such as lime, molding sand, milk powder, flour, salt, and plastic granules.

## Level measurement

### Point level measurement

### Vibrating switches

#### SITRANS LVS300

#### Technical specifications

<b>Mode of operation</b>		<b>Rated operating conditions</b>	
Measuring principle	Vibrating point level switch	Installation conditions	
<b>Input</b>		• Location	Indoor/outdoor
Measured variable	High, low, and demand	Ambient conditions	
Measuring frequency		• Ambient temperature	-40 ... +60 °C (-40 ... +140 °F)
• Standard	330 Hz	• Storage temperature	-40 ... +80 °C (-40 ... +176 °F)
<b>Output</b>		• Installation category	II
PNP	Open collector: Permanent load max. 0.4 A, short-circuit and over-load protected (reverse protection)	• Pollution degree	2
Relay	DPDT relay	Medium conditions	
Signal delay	<ul style="list-style-type: none"> <li>• Probe uncovered to covered: approximately 1 second</li> <li>• Probe covered to uncovered: approximately 1 ... 2 seconds</li> </ul>	• Process temperature	-40 ... +150 °C (-40 ... +302 °F)
Relay fail-safe	High or low, switch selectable	• Pressure (vessel)	Max. 16 bar g (232 psi g) European Pressure Directive 2014/68/EU: Category 1
Alarm output	<ul style="list-style-type: none"> <li>• Relay 8 A at 250 V AC, non-inductive</li> <li>• Relay 5 A at 30 V DC, non-inductive</li> </ul>	• Minimum material density	Approx. 20 g/l (1.2 lb/ft <sup>3</sup> )
<b>Sensitivity</b>	Four sensitivity settings, switch selectable	<b>Design</b>	
		Material	Aluminum powder coat
		• Enclosure	
		Process connection	<ul style="list-style-type: none"> <li>• G 1", G 1 1/4", G 1 1/2" DIN 228; NPT 1", NPT 1 1/4", NPT 1 1/2" ANSI B 1.20.1</li> <li>• Flange: according to selection 1.4541 (321) or 1.4404 (316L)</li> <li>• Tri-clamp: stainless steel 1.4301 (304) or 1.4404 (316L)</li> <li>• 2" (DN 50) ISO 2852</li> </ul>
		Probe material	<ul style="list-style-type: none"> <li>• Oscillator material: stainless steel 1.4404 (316L)</li> <li>• Stainless steel 1.4301 (304)/1.4541 (321) or 1.4404 (316L) (process connection and tube extension)</li> </ul>
		Degree of protection	IP67 (EN 60529), NEMA Type 4X
		Conduit entry	2 x M20 x 1.5 or 2 x 1/2" NPT
		Weight	<ul style="list-style-type: none"> <li>• Standard version: 1.3 kg (2.9 lb) + 1.3 kg/m (+2.9 lb per 39.3 inch) extension</li> <li>• Customer supplied pipe: 1.8 kg (4.0 lb) + 1.3 kg/m (+2.9 lb per 39.3 inch) extension</li> </ul>
		<b>Power supply</b>	<ul style="list-style-type: none"> <li>• Relay DPDT 21 ... 230 V, 50 ... 60 Hz, ± 10 %* 22 VA, 22 ... 45 V DC, ± 10 %* 2W *incl. ± 10 % of EN 61010</li> <li>• 3-wire PNP 20 ... 40 V DC, ± 10 %* *incl. ± 10 % of EN 61010</li> </ul>
		<b>Certificates and approvals</b>	CE, ATEX, FM

Selection and ordering data	Article No.	Order code
<b>SITRANS LVS300 Vibrating rod point level switch, compact design</b> Level and material detection in solids. Compact, with 160 mm (6.30 inch) insertion. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5736-	
<b>Power supply</b> Relays DPDT 21 ... 230 V AC 22 ... 45 V DC PNP 20 ... 40 V DC	1 2	
<b>Process temperature</b> Without temperature isolator [up to T <sub>process</sub> = 150 °C (302 °F) at T <sub>amb</sub> < 40 °C (104 °F)] With temperature isolator [up to T <sub>process</sub> = 150 °C (302 °F) at T <sub>amb</sub> > 40 °C (104 °F)]	A B	
<b>Process connection</b> <u>Threaded</u> Thread G 1½" (BSPP) EN ISO 228-1 Thread G 1¼" (BSPP) EN ISO 228-1 Thread G 1" (BSPP) EN ISO 228-1 Thread NPT 1½" (Taper) ANSI B1.20.1 Thread NPT 1¼" (Taper) ANSI B1.20.1 Thread NPT 1" (Taper) ANSI B1.20.1 Tri-clamp 2" (DN50) ISO 2852 <u>Flanged</u> Flange DN 100 PN6, EN1092-1 <sup>1)</sup> Flange DN 100 PN16, EN1092-1 2" ASME 150 lb B16.5 3" ASME 150 lb B16.5 4" ASME 150 lb B16.5	A B C D E F G  H J K L M	
<b>Extension length</b> Standard length, 160 mm (6.3 inch)	1 1	
<b>Material process connection/extension</b> Stainless steel threads 304 (1.4301), flanges 321 (1.4541), Tri-clamp 304 (1.4301) Stainless steel 316 L (1.4404)	1 2	
<b>Approvals</b> CE ATEX II 1/2D Ex ta/tb IIIC TI Da/Db IP6X FM <sub>US</sub> and FM <sub>C</sub> General Purpose FM <sub>US</sub> and FM <sub>C</sub> DIP Class II, III Div.1 Groups E, F, G	A B C D	
		<b>Further designs</b> Please add "-Z" to Article No. and specify Order code(s). Stainless steel tag [(70 mm x 13 mm (2.76 x 0.51 inch))]: Measuring-point number/identification (max. 27 characters) specify in plain text Signal bulb inserted in M20 cable gland <sup>2)</sup> Factory test certificate - M to DIN 55350, Part 18
		<b>Operating Instructions</b> All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a> 1) Max. 6 bar (87 psi). 2) Available only with Approval option A.
		<b>Order code</b> Y14 A20 C11

# Level measurement

## Point level measurement

### Vibrating switches

#### SITRANS LVS300

#### Selection and ordering data

#### Article No.

#### Order code

<b>SITRANS LVS300 Vibrating rod point level switch, pipe extended design</b> Level and material detection in solids. Extension options up to 4 m (13.12 ft). ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	<b>7ML5737-</b> 	
<b>Power supply</b> Relays DPDT 21 ... 230 V AC 22 ... 45 V DC PNP 20 ... 40 V DC	<b>1</b> <b>2</b>	
<b>Process temperature</b> Without temperature isolator [up to T <sub>process</sub> = 150 °C (302 °F) at Tamb < 40 °C (104 °F)] With temperature isolator [up to T <sub>process</sub> = 150 °C (302 °F) at Tamb > 40 °C (104 °F)]	<b>A</b> <b>B</b>	
<b>Process connection</b> <u>Threaded</u> Thread G 1½" (BSP) EN ISO 228-1 Thread G 1¼" (BSP) EN ISO 228-1 Thread G 1" (BSP) EN ISO 228-1 Thread NPT 1½" (Taper) ANSI B1.20.1 Thread NPT 1¼" (Taper) ANSI B1.20.1 Thread NPT 1" (Taper) ANSI B1.20.1 Tri-clamp 2" (DN50) ISO 2852 <u>Flanged</u> Flange DN 100 PN6, EN1092-1 <sup>1)</sup> Flange DN 100 PN16, EN1092-1 2" ASME 150 lb B16.5 3" ASME 150 lb B16.5 4" ASME 150 lb B16.5	<b>A</b> <b>B</b> <b>C</b> <b>D</b> <b>E</b> <b>F</b> <b>G</b>  <b>H</b> <b>J</b> <b>K</b> <b>L</b> <b>M</b>	
<b>Extension length</b> <u>Extension length Stainless steel threads 304 (1.4301), flanges 321 (1.4541)</u> 200 ... 500 mm (7.87 ... 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) <u>Extension length Stainless steel 316 L (1.4404)</u> 200 ... 500 mm (7.87 ... 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)	<b>1 2</b> <b>1 3</b> <b>1 4</b> <b>1 5</b> <b>1 6</b> <b>1 7</b> <b>1 8</b> <b>2 1</b> <b>2 2</b> <b>2 3</b> <b>2 4</b> <b>2 5</b> <b>2 6</b> <b>2 7</b> <b>2 8</b>  <b>4 2</b> <b>4 3</b> <b>4 4</b> <b>4 5</b> <b>4 6</b> <b>4 7</b> <b>4 8</b> <b>5 1</b> <b>5 2</b> <b>5 3</b> <b>5 4</b> <b>5 5</b> <b>5 6</b> <b>5 7</b> <b>5 8</b>	
<b>Material process connection/extension</b> Stainless steel threads 304 (1.4301), flanges 321 (1.4541), Tri-clamp 304 (1.4301) <sup>2)</sup> Stainless steel 316 L (1.4404) <sup>3)</sup>	<b>1</b> <b>2</b>	
<b>Approvals</b> CE ATEX II 1/2D Ex ta/tb IIIC T! Da/Db IP6X FM <sub>US</sub> and FM <sub>C</sub> General Purpose FM <sub>US</sub> and FM <sub>C</sub> DIP Class II, III Div.1, Groups E, F, G	<b>A</b> <b>B</b> <b>C</b> <b>D</b>	

#### Further designs

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

Enter the total insertion length in plain text description, max. 4 000 mm (157.48 inch)

**Y01**

Stainless steel tag [(70 mm x 13 mm (2.76 x 0.51 inch))]:  
 Measuring-point number/identification (max. 27 characters) specify in plain text

**Y14**

Signal bulb inserted in M20 cable gland<sup>4)</sup>

**A20**

Sliding sleeve, for application without overpressure max. 150 °C (302 °F), min. length 501 mm (19.72 inch)<sup>5)6)7)</sup>

**P12**

Sliding sleeve, for application with overpressure, max. 16 bar (232 psi), max. 150 °C (302 °F), min. length 501 mm (19.72 inch)<sup>6)</sup>

**P13**

Factory test certificate - M to DIN 55350, Part 18

**C11**

#### Operating Instructions

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/processinstrumentation/documentation>

#### Spare parts

Replacement Electronics Modules are available. Contact factory for pricing.

<sup>1)</sup> Max. 6 bar (87 psi).

<sup>2)</sup> Available with extension length 12.

<sup>3)</sup> Available with extension length 42.

<sup>4)</sup> Available only with Approval option A.

<sup>5)</sup> Available only with Approval options A and C.

<sup>6)</sup> Available only with Process connection options A, D, H, J, K, L, M, not available with extension length 12 and 42.

<sup>7)</sup> Available only with Material Process connection/extension option 1.



Selection and ordering data	Article No.	Order code	
<b>SITRANS LVS300 Vibrating rod point level switch, customer supplied tube</b> Level and material detection in solids. Requires flexible, customer supplied, pipe extensions with insertion to 4 m (13.12 ft). <a href="#">Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</a>	7ML5738-		
<b>Power supply</b> Relays DPDT 21 ... 230 V AC 22 ... 45 V DC PNP 20 ... 40 V DC	1 2		
<b>Process temperature</b> Without temperature isolator [up to T <sub>process</sub> = 150 °C (302 °F) at Tamb < 40 °C (104 °F)]	A		
<b>Process connection</b> <u>Threaded</u> Thread G 1½" (BSPP) EN ISO 228-1 Thread NPT 1½" (Taper) ANSI B1.20.1 Tri-clamp 2" (DN50) ISO 2852 <u>Flanged</u> Flange DN 100 PN6, EN1092-1 <sup>1)</sup> Flange DN 100 PN16, EN1092-1 2" ASME 150 lb B16.5 3" ASME 150 lb B16.5 4" ASME 150 lb B16.5	A D G  H J K L M		
<b>Extension length</b> 1 500 mm (59 inch), adjustable cable length 4 000 mm (157 inch), adjustable cable length	1 1 1 2		
<b>Material process connection/extension</b> Stainless steel threads 304 (1.4301), flanges 321 (1.4541), Tri-clamp 304 (1.4301) Stainless steel 316 L (1.4404)		1 2	
<b>Approvals</b> CE ATEX II 1/2D Ex ta/tb IIIC T! Da/Db IP6X FM <sub>US</sub> and FM <sub>C</sub> General Purpose FM <sub>US</sub> and FM <sub>C</sub> DIP Class II, III Div.1, Groups E, F, G		A B C D	
		<b>Further designs</b> Please add "-Z" to Article No. and specify Order code(s). Stainless steel tag [(70 mm x 13 mm (2.76 x 0.51 inch))]: Measuring-point number/identification (max. 27 characters) specify in plain text Signal bulb inserted in M20 cable gland <sup>2)</sup> Factory test certificate - M to DIN 55350, Part 18	Y14 A20 C11
		<b>Operating Instructions</b> All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>	
		<b>Spare parts</b> Replacement Electronics Modules are available. Contact factory for pricing. 1) Max. 6 bar (87 psi). 2) Available only with Approval option A.	

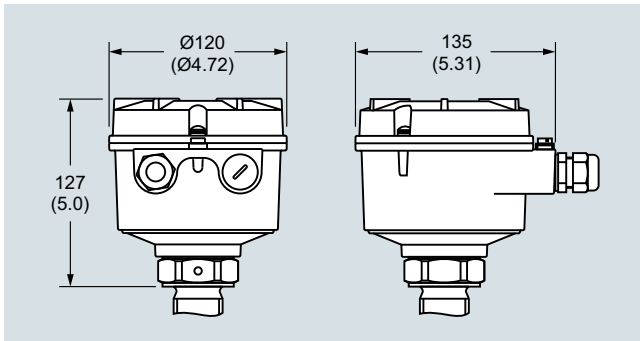
## Level measurement

Point level measurement

Vibrating switches

### SITRANS LVS300

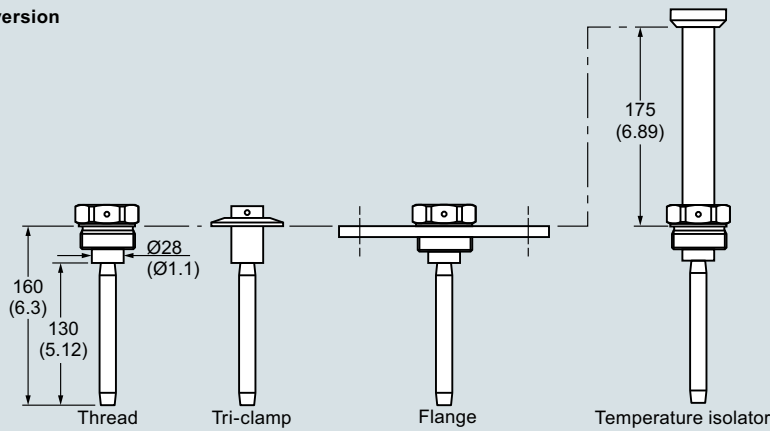
#### Dimensional drawings



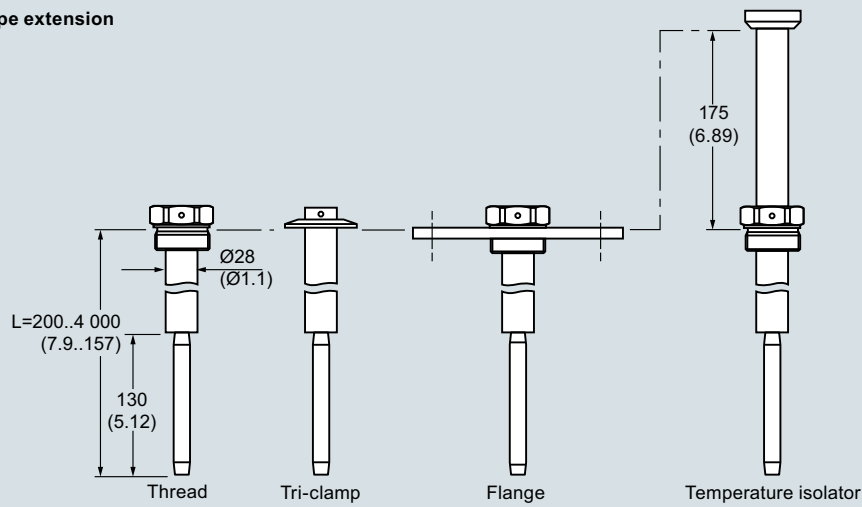
SITRANS LVS300 enclosure, dimensions in mm (inch)

**Dimensional drawings**

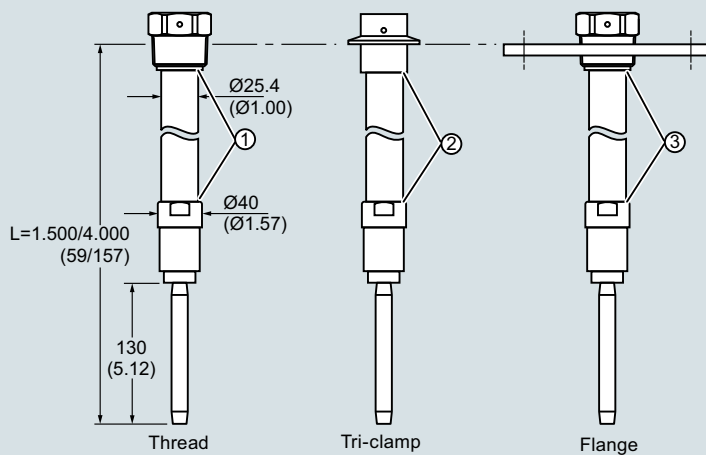
**Compact version**



**Pipe extension**



**Pipe extension - customer mounted**



	Approval	Process connection	Thread on extension pipe
①	CE, ATEX	G 1½"	R 1"
	FM	NPT 1½"	NPT 1"
②	Approval	Thread on extension pipe	
	CE, ATEX	R 1"	
	FM	NPT 1"	
③	Approval	Process connection	Thread on extension pipe
	CE, ATEX	Flange DN	R 1"
		Flange ANSI	NPT 1"
FM	Flange DN Flange ANSI	NPT 1"	

SITRANS LVS300, dimensions in mm (inch)

# Level measurement

Point level measurement

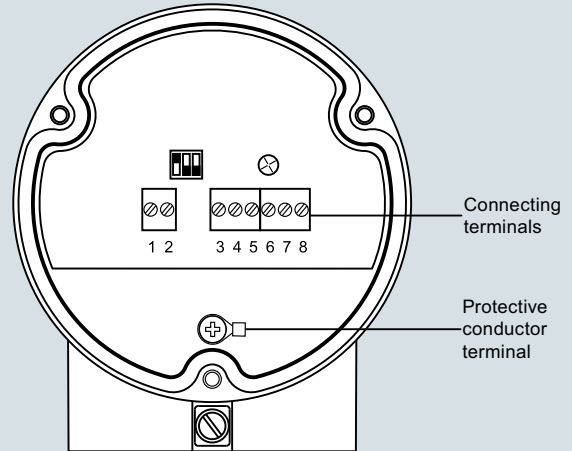
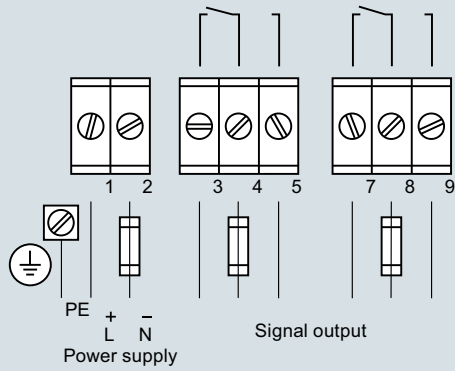
Vibrating switches

## SITRANS LVS300

### Circuit diagrams

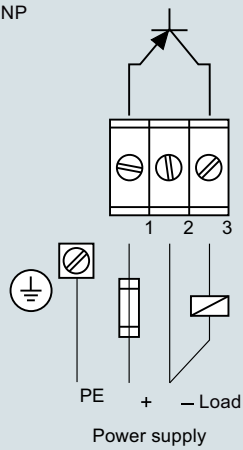
#### Universal voltage

Relay DPDT



#### 3-wire

PNP



SITRANS LVS300 connections

4

## 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/ft<sup>3</sup>) with the optional rectangular vane or 100 g/l (6.25 lb/ft<sup>3</sup>) 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

<b>Mode of operation</b>	
Measuring principle	Rotating point level switch
<b>Input</b>	
Measured variable	High and low and demand
<b>Output</b>	
Output signal	
• Alarm output	Microswitch 5 A at 250 V AC, non-inductive
	Microswitch SPDT contact 4 A at 30 V DC, non-inductive
• Pickup delay	Standard (1 rpm model): approx. 1.3 seconds
	Optional process applications (5 rpm model): approx. 0.26 seconds
<b>Sensitivity</b>	
	Adjustable via reset force of spring or geometry of measuring vane
<b>Rated operating conditions</b>	
Installation conditions	
• Location	Indoor/outdoor
Ambient conditions	
• Ambient temperature	-25 ... +60 °C (-13 ... +140 °F)
• Storage temperature	-40 ... +80 °C (-40 ... +176 °F)
• Installation category	III
• Pollution degree	2
Medium conditions	Bulk solids
• Temperature	
- Standard	-25 ... +80 °C (-13 ... +176 °F)
- Optional	-25 ... +600 °C (-13 ... +1 112 °F)
	Higher temperature version is available. Consult a local sales person for details. For more information, please visit <a href="http://www.usa.siemens.com/level">http://www.usa.siemens.com/level</a> .
• Pressure (vessel)	
- Standard	Max. 0.5 bar g (7.25 psi g)
- Optional	Max. 10 bar g (145 psi g)
• Minimum material density	
- Standard measuring vane	Can detect down to 100 g/l (6.25 lb/ft <sup>3</sup> )
- Optional measuring vane	Can detect down to 15.06 g/l (0.94 lb/ft <sup>3</sup> )
<b>Design</b>	
Material	
• Enclosure	Epoxy coated aluminum
• Process connection, measuring shaft and vane	Stainless steel or aluminum
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 1/2" NPT (For FM and CSA approved versions only)
<b>Power supply</b>	
AC or DC versions	115 V AC, ± 15 %, 50 ... 60 Hz, 4 VA or 230 V AC, ± 15 %, 50 Hz, 6 VA, $\overline{or}$ 48 V AC, or 24 V AC, $\overline{or}$ 24 V DC, ± 15 %, 2.5 W
Universal voltage (DPDT replay)	24 V DC ± 15 % 50 ... 60 Hz, 22 ... 230 V AC, ± 10 %, max. 10 VA
<b>Certificates and approvals</b>	
	<ul style="list-style-type: none"> <li>• CSA/FM General Purpose</li> <li>• CE</li> <li>• CSA/FM Dust Ignition Proof</li> <li>• ATEX II 1/2 D</li> <li>• RCM</li> <li>• IECex</li> </ul>

# Level measurement

Point level measurement

Rotation paddle switches

## SITRANS LPS200

### Selection and ordering data

Article No.

Article No.

#### SITRANS LPS200 Rotary paddle point level switch, compact design

7ML5725-  
Ord. code

Level detection in solids. Compact, side or top mount with extension options to 300 mm (11.81 inch).

➤ 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)<sup>1)2)</sup> **4**
- Up to 80 °C (176 °F) basic version aluminum<sup>1)3)</sup> **5**
- Up to 80 °C (176 °F) basic version stainless steel<sup>1)4)</sup> **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**
- 24 V AC, 5 rev/min. **Z**
- Universal Voltage, 1 rev/min. **Z**
- Universal Voltage, 1 rev/min., fail-safe **Z**
- Universal Voltage, 5 rev/min. **Z**
- Universal Voltage, 5 rev/min. fail-safe **Z**

#### 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, flat face<sup>5)</sup> **G**
- DN 100 PN 6, EN 1092-1, flat face<sup>5)</sup> **H**
- DN 100 PN 16, EN 1092-1, flat face **J**
- 2" ASME 150 lb B16.5, raised face **K**
- 3" ASME 150 lb B16.5, raised face **L**
- 4" ASME 150 lb B16.5, raised face **M**
- 2" Tri-clamp (DN 50) ISO 2852<sup>6)</sup> **N**

#### SITRANS LPS200 Rotary paddle point level switch, compact design

7ML5725-  
Ord. code

Level detection in solids. Compact, side or top mount with extension options to 300 mm (11.81 inch).

#### 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<sup>7)</sup> **1**
- Stainless steel, threads 303 (1.4305), flanges 321 (1.4541), Tri-clamp 304 (1.4301) **2**
- Stainless steel 316L (1.4404)<sup>8)</sup> **3**

#### Extension length

- 100 mm (3.94 inch)<sup>9)</sup> **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)<sup>10)</sup> **A**
- Hinged vane, 65 x 200 mm (2.56 x 7.87 inch)<sup>10)11)</sup> **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)<sup>12)</sup> **D**
- Rectangular, 50 x 250 mm (1.97 x 9.84 inch)<sup>12)</sup> **E**
- Rectangular, 98 x 150 mm (3.86 x 5.91 inch)<sup>11)12)</sup> **F**
- Rectangular, 98 x 250 mm (3.86 x 9.84 inch)<sup>11)12)</sup> **G**
- Rectangular, 50 x 98 mm (1.97 x 3.86 inch)<sup>12)</sup> **H**

#### Approvals

- CSA/FM Dust Ignition Proof, RCM **A**
- ATEX II ½ 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**

4

Selection and ordering data	Order code	Article No.
<b>Further Designs</b>		
Please add <b>"-Z"</b> to Article No. and specify Order code(s).		
Heating of enclosure <sup>13)14)</sup>	<b>A35</b>	
Signal bulb inserted in M20 cable gland <sup>13)</sup>	<b>A20</b>	
Food grade materials (in contact with process), according to 1935/2004/EC, with FDA conform shaft sealing <sup>15)</sup>	<b>K01</b>	
Stainless steel tag [100 x 45 mm (3.94 x 1.77 inch)]: Measuring-point number/identification (max. 27 characters); specify in plain text	<b>Y14</b>	
Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511 <sup>17)18)</sup>	<b>C20</b>	
Factory test certificate - M to DIN 55350, Part 18	<b>C11</b>	
<b>Operating Instructions</b>		
All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>		
<b>Spare Parts</b>		
Replacement vane, boot shape, 35 x 106 mm (1.38 x 4.17 inch)		<b>7ML1830-1KH</b>
Hinged vane, 98 x 200 mm (3.86 x 7.87 inch)		<b>7ML1830-1KJ</b>
<b>Rigid extension kit</b>		
(Includes spring coupling, rigid tube extension, and required pins)		
Extension: 500, 400, 300 mm (19.7, 15.8, 11.8 inch) <sup>16)</sup>		<b>7ML5711-0AA</b>
Extension: 1 000, 900, 800, 700, 600 mm (39.4, 35.4, 31.5, 27.6, 23.6 inch) <sup>16)</sup>		<b>7ML5711-1AA</b>
Extension: 1 500, 1 400, 1 300, 1 200, 1 100 mm (59.1, 55.1, 51.2, 47.2, 43.3 inch) <sup>16)</sup>		<b>7ML5711-2AA</b>
Rope extension kit, 2 m (6.56 ft)		<b>7ML1830-1KK</b>
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		<b>7ML5725-5EE11-2AC0</b>
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		<b>7ML5725-6ZC12-2AB0 J2A</b>
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		<b>7ML5725-6ZE12-2AA0 J2A</b>
<sup>1)</sup> Available with approval options C and D only, up to 0.5 bar. <sup>2)</sup> Not available with process connections A, B, D, E, and G. <sup>3)</sup> Only available with the following configurations 7ML5725-5AC11-2AD0 or 7ML5725-5EE11-2AC0. <sup>4)</sup> Only available with the following configurations 7ML5725-6ZC12-2AB0 J2A or 7ML5725-6ZE12-2AA0 J2A. <sup>5)</sup> Available with process pressure options 1 and 2 only. <sup>6)</sup> Available with process temperature option 1 only. <sup>7)</sup> Available with process connection options A ... F only, process pressure option 1 and process temperature options 1 and 5 only. <sup>8)</sup> Available with process connection options C, F, H ... N and Measuring vane options A and B. <sup>9)</sup> Available with measuring vane options A, C, D, E, H only. <sup>10)</sup> Add 16 mm (0.63 inch) to extension length. <sup>11)</sup> Available with extension lengths 2, 3, 4, 5. <sup>12)</sup> Available with process connection options H ... M only. <sup>13)</sup> Available with approval option D only. <sup>14)</sup> Available with power supply options A, C, E, G, J, K, L, N, J1B, J1D, J1E, J2A, J2C only. <sup>15)</sup> Available up to 250 °C (482 °F). This option does not automatically implement a food conform design. <sup>16)</sup> 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. <sup>17)</sup> Available with Power supply options J2A and J2C only. <sup>18)</sup> 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.

#### Article No.

##### SITRANS LPS200 Rotary paddle point level switch, shaft protected design

7ML5726-

Ord.  
code

Level detection in aggressive solids. Compact, side or top mount, with enhanced shaft protection. Extension options to 300 mm (11.81 inch).

➤ 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)<sup>1)2)</sup> **4**  
Up to 80 °C (176 °F) basic version<sup>3)</sup> **5**

##### 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**  
24 V AC, 5 rev/min. **Z**  
Universal voltage, 1 rev/min. **Z**  
Universal voltage, 1 rev/min., fail-safe **Z**  
Universal voltage, 5 rev/min. **Z**  
Universal voltage, 5 rev/min., fail-safe **Z**

**J 1 B**  
**J 1 E**  
**J 2 A**  
**J 2 B**  
**J 2 C**  
**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 1092-1, flat face<sup>4)</sup> **E**  
DN 100 PN 6, EN 1092-1, flat face<sup>4)</sup> **F**  
DN 100 PN 16, EN 1092-1, flat face **G**  
2" ASME 150 lb B16.5, raised face **H**  
3" ASME 150 lb B16.5, raised face **J**  
4" ASME 150 lb B16.5, raised face **K**  
2" Tri-clamp (DN 50) ISO 2852<sup>5)</sup> **L**

##### SITRANS LPS200 Rotary paddle point level switch, shaft protected design

7ML5726-

Ord.  
code

Level detection in aggressive solids. Compact, side or top mount, with enhanced shaft protection. Extension options to 300 mm (11.81 inch).

##### 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<sup>6)</sup> **1**  
Stainless steel, threads 303 (1.4305), flanges 321 (1.4541), Tri-clamp 304 (1.4301)<sup>8)</sup> **2**  
Stainless steel 316L (1.4404)<sup>7)</sup> **3**

##### Extension length

150 mm (5.91 inch)<sup>8)</sup> **1**  
200 mm (7.87 inch) **2**  
250 mm (9.84 inch) **3**  
300 mm (11.81 inch) **4**

##### Extension material (protection tube)

Aluminum<sup>9)</sup> **A**  
Stainless steel 303 (1.4305) **B**  
Stainless steel 316L (1.4404)<sup>10)</sup> **C**

##### Measuring vane

Boot shaped, 35 x 106 mm (1.38 x 4.17 inch)<sup>11)</sup> **A**  
Hinged vane, 65 x 200 mm (2.56 x 7.87 inch)<sup>11)12)</sup> **B**  
Rectangular, 50 x 150 mm (1.97 x 5.91 inch)<sup>13)</sup> **D**  
Rectangular, 50 x 250 mm (1.97 x 9.84 inch)<sup>13)</sup> **E**  
Rectangular, 98 x 150 mm (3.86 x 5.91 inch)<sup>12)13)</sup> **F**  
Rectangular, 98 x 250 mm (3.86 x 9.84 inch)<sup>12)13)</sup> **G**  
Rectangular, 50 x 98 mm (1.97 x 3.86 inch)<sup>13)</sup> **H**

##### Approvals

CSA/FM Dust Ignition Proof, RCM **1**  
ATEX II ½ D, RCM **2**  
CSA/FM General Purpose, RCM, CE **3**  
CE, RCM **4**  
IEC Ex ta/tb IIIC **5**  
EAC Ex ta/tb IIIC Da/Db **6**



Selection and ordering data	Order code	Article No.
<b>Further Designs</b>		
Please add <b>"-Z"</b> to Article No. and specify Order code(s).		
Heating of enclosure <sup>14)15)</sup>	<b>A35</b>	
Signal bulb inserted in M20 cable gland <sup>14)</sup>	<b>A20</b>	
Food grade materials (in contact with process), according to 1935/2004/EC, with FDA conform shaft sealing <sup>16)</sup>	<b>K01</b>	
Stainless steel tag [100 x 45 mm (3.94 x 1.77 inch)]: Measuring-point number/identification (max. 27 characters); specify in plain text	<b>Y14</b>	
Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511. <sup>17)19)</sup>	<b>C20</b>	
Factory test certificate - M to DIN 55350, Part 18	<b>C11</b>	
<b>Operating Instructions</b>		
All literature is available to download for free, in a range of languages, at		
<a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>		
<b>Spare Parts</b>		
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)		
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		
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		
<p>1) Available with approval options 3 and 4 only and up to max 0.5 bar.</p> <p>2) Not available with process connection options A, C, E.</p> <p>3) Only available with the following configurations 7ML5726-5ZB12-2BA2 J2A or 7ML5726-5ZC12-2BA1 J2A.</p> <p>4) Available with process pressure options 1 and 2 only.</p> <p>5) Available with process temperature option 1 only.</p> <p>6) Available with process connection options A ... E only, available with process pressure option 1 only, and process temperature option 1 only.</p> <p>7) Extension and vane will also change to 316L, only for process connection options B, D, F ... L and vane A.</p> <p>8) Available with measuring vane options A, D, E, H only.</p> <p>9) Available with process pressure option 1 and process temperature option 1 only.</p> <p>10) Available with process connection options B, D, F ... L and vane A.</p> <p>11) Add 16 mm (0.63 inch) to extension length.</p> <p>12) Available with extension length options 2 ... 4 only.</p> <p>13) Available with process connection options F, G, H, J, K only.</p> <p>14) Available with approval option 4 only.</p> <p>15) Available with power supply options A, C, E, G, J, K, L, N, J1B, J1D, J1E, J2A, J2C only.</p> <p>16) Available up to 250 °C (482 °F). This option does not automatically implement a food conform design.</p> <p>17) Available with Power supply options J2A and J2C only.</p> <p>18) Available with Extension material Stainless steel, threads 303 option B only.</p> <p>19) Available with Approval options 1, 2, 3, 4, and 5 only. Approvals 1 and 3 with FM only.</p>		

# Level measurement

## Point level measurement

### Rotation paddle switches

#### SITRANS LPS200

#### Selection and ordering data

#### Article No.

#### Article No.

SITRANS LPS200 Rotary paddle point level switch, cable extension design	7ML5727-										Ord. code	
Level detection in solids. Top mount, with extension options to 10 m (32.80 ft).												0
➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.												
<b>Process temperature</b>												
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) <sup>1)2)</sup>	4											
Up to 80 °C (176 °F) basic version <sup>3)</sup>	5											
<b>Power supply</b>												
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	
<b>Process connection</b>												
<b>Threaded</b>												
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										
<b>Flanged</b>												
DN 32 PN 6, EN 1092-1, flat face <sup>4)</sup>		E										
DN 100 PN 6, EN 1092-1, flat face <sup>4)</sup>		F										
DN 100 PN 16, EN 1092-1, flat face		G										
2" ASME 150 lb B16.5, raised face		H										
3" ASME 150 lb B16.5, raised face		J										
4" ASME 150 lb B16.5, raised face		K										

SITRANS LPS200 Rotary paddle point level switch, cable extension design	7ML5727-										Ord. code	
Level detection in solids. Top mount, with extension options to 10 m (32.80 ft).												0
<b>Process pressure</b>												
Up to 0.5 bar (7.25 psi)		1										
Up to 5 bar (72.5 psi)		2										
Up to 10 bar (145 psi)		3										
<b>Process connection material</b>												
Aluminum <sup>5)</sup>		1										
Stainless steel, threads 303 (1.4305), flanges 321 (1.4541)		2										
<b>Cable extension length</b>												
Standard cable length, 2 000 mm (78.74 inch)												0
<b>Add Order code Y01 and plain text:</b>												
<b>Insertion length ... mm</b>												
500 ... 1 000 mm (19.69 ... 39.37 inch)												1
Cable length 1 001 ... 2 000 mm (39.41 ... 78.74 inch)												2
Cable length 2 001 ... 3 000 mm (78.78 ... 118.11 inch)												3
Cable length 3 001 ... 4 000 mm (118.15 ... 157.48 inch)												4
Cable length 4 001 ... 5 000 mm (157.52 ... 196.85 inch)												5
Cable length 5 001 ... 6 000 mm (196.89 ... 236.22 inch)												6
Cable length 6 001 ... 7 000 mm (236.26 ... 275.59 inch)												7
Cable length 7 001 ... 10 000 mm (275.63 ... 393.70 inch)												8
Without extension <sup>1)2)</sup>												9
<b>Measuring vane</b>												
Boot shaped, 35 x 106 mm (1.38 x 4.17 inch) <sup>6)</sup>												A
Hinged vane, 65 x 200 mm (2.56 x 7.87 inch) <sup>6)</sup>												B
Boot shaped, 28 x 98 mm (1.10 x 3.86 inch) <sup>7)</sup>												C
Rectangular, 50 x 150 mm (1.97 x 5.91 inch) <sup>7)</sup>												D
Rectangular, 50 x 250 mm (1.97 x 9.84 inch) <sup>7)</sup>												E
Rectangular, 98 x 150 mm (3.86 x 5.91 inch) <sup>7)</sup>												F
Rectangular, 50 x 98 mm (1.97 x 3.86 inch) <sup>7)</sup>												G
<b>Approvals</b>												
CSA/FM Dust Ignition Proof, RCM												A
ATEX II ½ 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

4

Selection and ordering data	Order code	Article No.
<b>Further Designs</b>		
Please add <b>"-Z"</b> to Article No. and specify Order code(s).		
Total insertion length:	<b>Y01</b>	
Stainless steel tag [100 x 45 mm (3.94 x 1.77 inch)]: Measuring-point number/identification (max. 27 characters); specify in plain text	<b>Y14</b>	
Reinforced cable (max. 28 kN pulling force) <sup>8)</sup>	<b>P01</b>	
Heating of enclosure <sup>9)</sup> <sup>10)</sup>	<b>A35</b>	
Signal bulb inserted in M20 cable gland <sup>9)</sup>	<b>A20</b>	
Food grade materials (in contact with process), according to 1935/2004/EC, with FDA conform shaft sealing <sup>11)</sup>	<b>K01</b>	
Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511. <sup>13)</sup> <sup>14)</sup>	<b>C20</b>	
Factory test certificate - M to DIN 55350, Part 18	<b>C11</b>	
		<b>Operating Instructions</b>
		All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>
		<b>Spare Parts</b>
		Replacement vane, boot shape, 35 x 106 mm (1.38 x 4.17 inch) <b>7ML1830-1KH</b>
		Hinged vane, 98 x 200 mm (3.86 x 7.87 inch) <b>7ML1830-1KJ</b>
		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 <b>7ML5727-5ZB12-0AB0 J2A</b>
		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 <b>7ML5727-5ZC12-0AA0 J2A</b>
		<ol style="list-style-type: none"> <li>1) Available with approval options C and D up to max. 0.5 bar.</li> <li>2) Not available with process connections A, C, E.</li> <li>3) Only available with the following configurations 7ML5727-5ZC12-0AA0 J2A or 7ML5727-5ZB12-0AB0 J2A.</li> <li>4) Available with process pressure options 1 and 2 only.</li> <li>5) Available with process connections A ... E only, process pressure option 1 only and process temperature options 1 and 5 only.</li> <li>6) Add 16 mm (0.63 inch) to extension length.</li> <li>7) Available with process connections F ... K only.</li> <li>8) Available only for process temperature up to 80 °C (176 °F) and process connection material 2.</li> <li>9) Available with approval option D.</li> <li>10) Available with power supply options A, C, E, G, J, K, L, N, J1B, J1D, J1E, J2A, J2C only.</li> <li>11) Available up to 250 °C (482 °F). This option does not automatically implement a food conform design (food conform gaps and radius).</li> <li>12) Not available with P01 and available with Approval D, mounting kit for rope extension included.</li> <li>13) Available with Power supply options J2A and J2C only.</li> <li>14) Available with Approval options A, B, C, D, and E only. Approvals A and C with FM only.</li> </ol>

## Level measurement

Point level measurement

Rotation paddle switches

### SITRANS LPS200

#### Selection and ordering data

#### Article No.

#### Order code

##### SITRANS LPS200 Rotary paddle point level switch, angled extension design

Level detection in aggressive applications. Bottom or side mount with enhanced shaft protection. Extension options to 300 mm (11.81 inch).

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

##### Process temperature

Up to 80 °C (176 °F)

Up to 150 °C (302 °F)

Up to 250 °C (482 °F)

##### Power supply

230 V AC, 1 rev/min.

230 V AC, 5 rev/min.

115 V AC, 1 rev/min.

115 V AC, 5 rev/min.

48 V AC, 1 rev/min.

24 V AC, 1 rev/min.

24 V DC, 1 rev/min.

24 V DC, 5 rev/min.

48 V AC, 5 rev/min.

24 V AC, 5 rev/min.

Universal voltage, 1 rev/min.

Universal voltage, 1 rev/min., fail-safe

Universal voltage, 5 rev/min.

Universal voltage, 5 rev/min., fail-safe

##### Process connection

###### Flanged

DN 100 PN 6, EN 1092-1, flat face<sup>1)</sup>

DN 100 PN 16, EN 1092-1, flat face

4" ASME 150 lb B16.5, raised face

##### Process pressure

Up to 0.5 bar (7.25 psi)

Up to 5 bar (72.5 psi)

Up to 10 bar (145 psi)

##### Process connection material

Stainless steel 303/321 (1.4305/1.4541)

##### Extension length

125 mm (4.92 inch)

150 mm (5.91 inch)

200 mm (7.87 inch)

250 mm (9.84 inch)

300 mm (11.81 inch)

##### Measuring vane

Rectangular vane, 50 x 98 mm (1.97 x 3.86 inch)

Rectangular vane, 50 x 150 mm (1.97 x 5.91 inch)

Rectangular vane, 50 x 250 mm (1.97 x 9.84 inch)

Rectangular vane, 98 x 150 mm (3.86 x 5.91 inch)

Rectangular vane, 98 x 250 mm (3.86 x 9.84 inch)

Hinged vane, 65 x 200 mm (2.56 x 7.87 inch)

##### Approvals

CSA/FM Dust Ignition Proof, RCM

ATEX II ½ D, RCM

CSA/FM General Purpose, RCM, CE

CE, RCM

IEC Ex ta/tb IIIC

EAC Ex ta/tb IIIC Da/Db

Article No.	Ord. code
7ML5728-	
1	
2	
3	
A	
C	
E	
G	
J	
K	
L	
N	
Z	J 1 B
Z	J 1 E
Z	J 2 A
Z	J 2 B
Z	J 2 C
Z	J 2 D
A	
B	
C	
1	
2	
3	
1	
2	
3	
4	
5	
A	
B	
C	
D	
E	
F	
A	
B	
C	
D	
E	
F	

#### Further Designs

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

Heating of enclosure<sup>2)3)</sup>

A35

Signal bulb inserted in M20 cable gland<sup>2)</sup>

A20

Food grade materials (in contact with process), according to 1935/2004/EC, with FDA conform shaft sealing<sup>4)</sup>

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.<sup>5)6)</sup>

C20

Factory test certificate - M to DIN 55350, Part 18

C11

#### Operating Instructions

Article No.

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

<sup>1)</sup> Available with process pressure options 1 and 2 only.

<sup>2)</sup> Available with Approval option D only.

<sup>3)</sup> Available with Power supply options A, C, E, G, J, K, L, N, J1B, J1D, J1E, J2A, J2C only.

<sup>4)</sup> This option does not automatically implement a food conform design.

<sup>5)</sup> Available with Power supply options J2A and J2C only.

<sup>6)</sup> Available with Approval options A, B, C, D, and E only. Approvals A and C with FM only.

Selection and ordering data	Article No.	Article No.
<b>SITRANS LPS200 Rotary paddle point level switch, rigid extension design</b> Level detection in solids. Top mount, with extension options to 4 m (13.12 ft). <a href="#">Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</a>	7ML5730-	7ML5730-
<b>Process temperature</b> Up to 80 °C (176 °F) Up to 150 °C (302 °F) Up to 250 °C (482 °F) Up to 600 °C (1 112 °F) <sup>1)2)</sup>	1 2 3 4	
<b>Power supply</b> 230 V AC, 1 rev/min. 230 V AC, 5 rev/min. 115 V AC, 1 rev/min. 115 V AC, 5 rev/min. 48 V AC, 1 rev/min. 24 V AC, 1 rev/min. 24 V DC, 1 rev/min. 24 V DC, 5 rev/min. 48 V AC, 5 rev/min. 24 V AC, 5 rev/min. Universal voltage, 1 rev/min. Universal voltage, 1 rev/min., fail-safe Universal voltage, 5 rev/min. Universal voltage, 5 rev/min., fail-safe	A C E G J K L N Z Z Z Z Z	
<b>Process connection</b> <b>Threaded</b> G 1¼" [(BSPP), EN ISO 228-1] G 1½" [(BSPP), EN ISO 228-1] 1¼" NPT [(Taper), ANSI/ASME B1.20.1] 1½" NPT [(Taper), ANSI/ASME B1.20.1] <b>Flanged</b> DN 32 PN 6, EN 1092-1, flat face <sup>3)</sup> DN 100 PN 6, EN 1092-1, flat face <sup>3)</sup> DN 100 PN 16, EN 1092-1, flat face 2" ASME 150 lb B16.5, raised face 3" ASME 150 lb B16.5, raised face 4" ASME 150 lb B16.5, raised face 2" Tri-clamp 2 (DN 50) ISO 2852 <sup>4)</sup>	A B C D  E F G H J K L	
<b>Process pressure</b> Up to 0.5 bar (7.25 psi) Up to 5 bar (72.5 psi) Up to 10 bar (145 psi)	1 2 3	
<b>Process connection material</b> Aluminum <sup>5)</sup> Stainless steel, threads 303 (1.4305), flanges 321 (1.4541), Tri-clamp 304 (1.4301) Stainless steel 316L (1.4404) <sup>6)</sup>	1 2 3	
<b>Extension material (protection tube)</b> Aluminum <sup>7)8)</sup> Stainless steel 303 (1.4305) <sup>9)</sup> Stainless steel 316L (1.4404) <sup>10)11)22)</sup>	0 1 2	
<b>SITRANS LPS200 Rotary paddle point level switch, rigid extension design</b> Level detection in solids. Top mount, with extension options to 4 m (13.12 ft). <b>Extension length</b> <b>Aluminum</b> 250 ... 500 mm (9.84 ... 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 ... 42.21 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 (147.67 ... 157.48 inch) <b>Stainless steel 303 (1.4305)</b> 250 ... 500 mm (9.84 ... 19.69 inch) 501 ... 750 mm (19.72 ... 29.53 inch) 751 ... 1 000 mm (29.57 ... 39.37 inch) 1 001 ... 1 500 mm (39.41 ... 59.05 inch) 1 501 ... 2 000 mm (59.09 ... 78.74 inch) 2 001 ... 2 500 mm (78.78 ... 98.42 inch) 2 501 ... 3 000 mm (98.46 ... 118.11 inch) 3 001 ... 4 000 mm (118.15 ... 157.48 inch) <b>Stainless steel 316L (1.4404)</b> 250 ... 500 mm (9.84 ... 19.69 inch) 501 ... 750 mm (19.72 ... 29.53 inch) 751 ... 1 000 mm (29.57 ... 39.37 inch) 1 001 ... 1 500 mm (39.41 ... 59.05 inch) 1 501 ... 2 000 mm (59.09 ... 78.74 inch) 2 001 ... 2 500 mm (78.78 ... 98.42 inch) 2 501 ... 3 000 mm (98.46 ... 118.11 inch) 3 001 ... 4 000 mm (118.5 ... 157.48 inch) <b>Measuring vane</b> Boot shaped, 35 x 106 mm (1.34 x 4.17 inch) <sup>12)</sup> Hinged vane, 65 x 200 mm (2.56 x 7.87 inch) <sup>12)</sup> Rectangular, 50 x 150 mm (1.97 x 5.91 inch) <sup>13)</sup> Rectangular, 50 x 250 mm (1.97 x 9.84 inch) <sup>13)</sup> Rectangular, 98 x 150 mm (3.86 x 5.91 inch) <sup>13)</sup> Rectangular, 98 x 250 mm (3.86 x 9.84 inch) <sup>13)</sup> Rectangular, 50 x 98 mm (1.97 x 3.86 inch) <sup>13)</sup> <b>Approvals</b> CSA/FM Dust Ignition Proof, RCM ATEX II ½ D, RCM CSA/FM General Purpose, RCM, CE CE, RCM IEC Ex ta/tb IIIC EAC Ex ta/tb IIIC Da/Db	J 1 B J 1 E J 2 A J 2 B J 2 C J 2 D  R S T U V W X Y  Z Z Z Z Z Z Z Z Z Z  A B C D E F G  1 2 3 4 5 6	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

#### Order code

#### Article No.

##### 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**

Heating of enclosure<sup>14)15)</sup>

**A35**

Signal bulb inserted in M20 cable gland<sup>14)</sup>

**A20**

Food grade materials (in contact with process), according to 1935/2004/EC, with FDA conform shaft sealing<sup>16)17)</sup>

**K01**

Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511.<sup>20)21)</sup>

**C20**

Factory test certificate - M to DIN 55350, Part 18

**C11**

##### 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<sup>14)18)</sup>

**P12**

Sliding sleeve: pressure tight, for over-pressure application, dependent on pressure option ordered<sup>19)</sup>

**P13**

##### Operating Instructions

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**

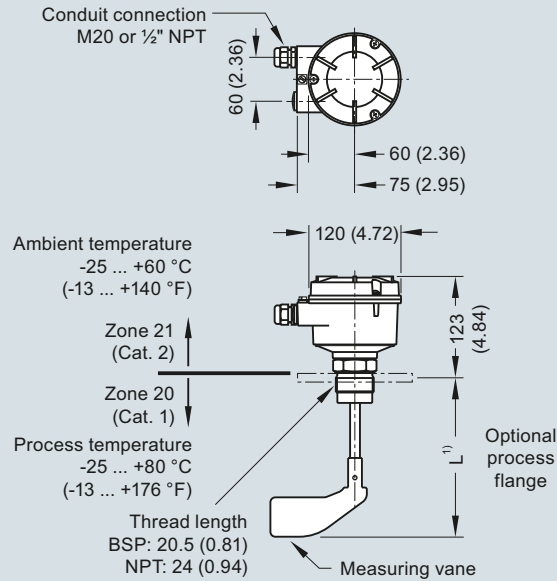
Hinged vane, 98 x 200 mm (3.86 x 7.87 inch)

**7ML1830-1KJ**

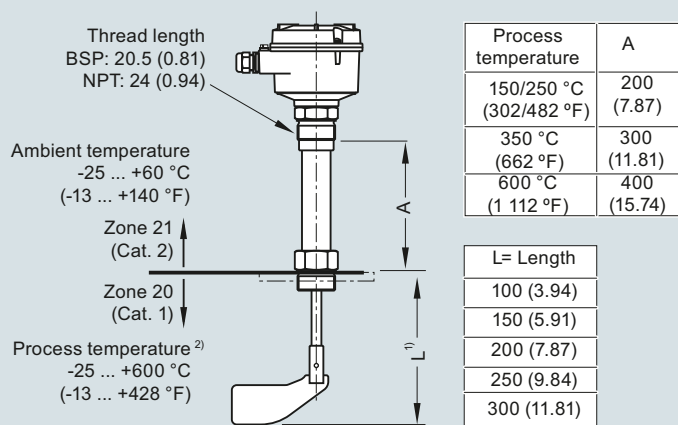
- 1) Available with approval options 3 and 4, up to max 0.5 bar.
- 2) Not available with process connections A, C, E.
- 3) Available with process pressure options 1 and 2 only.
- 4) Available with process temperature 1 only.
- 5) Available with process connections A ... E only, with process pressure 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.

**Dimensional drawings**

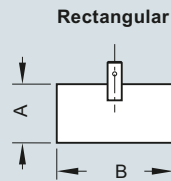
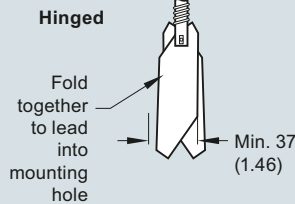
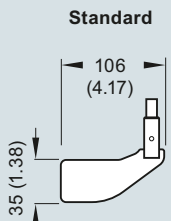
**Standard model: compact version**



**High temperature model: compact version**

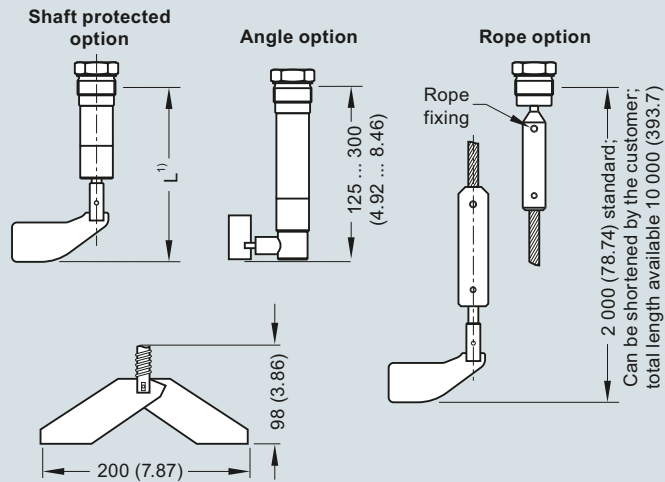


**Measuring vanes**



**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)



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/ft³)	300 g/l (18.7 lb/ft³)	100 g/l (6.2 lb/ft³)	150 g/l (9.4 lb/ft³)
Boot shaped 28 x 98 mm	300 g/l (18.7 lb/ft³)	500 g/l (31.2 lb/ft³)	150 g/l (9.4 lb/ft³)	150 g/l (9.4 lb/ft³)
Rectangular 50 x 98 mm	300 g/l (18.7 lb/ft³)	500 g/l (31.2 lb/ft³)	150 g/l (9.4 lb/ft³)	250 g/l (15.6 lb/ft³)
Rectangular 50 x 150 mm	80 g/l (5.0 lb/ft³)	120 g/l (7.5 lb/ft³)	40 g/l (2.5 lb/ft³)	60 g/l (3.7 lb/ft³)
Rectangular 50 x 250 mm	30 g/l (1.9 lb/ft³)	50 g/l (3.1 lb/ft³)	15 g/l (0.9 lb/ft³)	25 g/l (1.6 lb/ft³)
Rectangular 98 x 150 mm	30 g/l (1.9 lb/ft³)	50 g/l (3.1 lb/ft³)	15 g/l (0.9 lb/ft³)	25 g/l (1.6 lb/ft³)
Rectangular 98 x 250 mm	20 g/l (1.2 lb/ft³)	30 g/l (1.9 lb/ft³)	15 g/l (0.9 lb/ft³)	15 g/l (0.9 lb/ft³)
Hinged 98 x 200 mm	70 g/l (4.4 lb/ft³)	100 g/l (6.2 lb/ft³)	35 g/l (2.2 lb/ft³)	50 g/l (3.1 lb/ft³)

- 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.

SITRANS LPS200, dimensions in mm (inch)

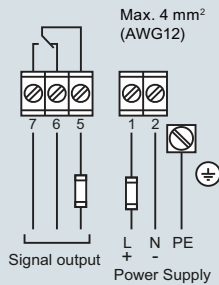
# Level measurement

Point level measurement  
Rotation paddle switches

## SITRANS LPS200

### 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  $\pm 10\%$ <sup>1)</sup>  
Supply voltage as selected.  
External fuse: max 10 A, fast or slow, HBC, 250 V

##### DC version:

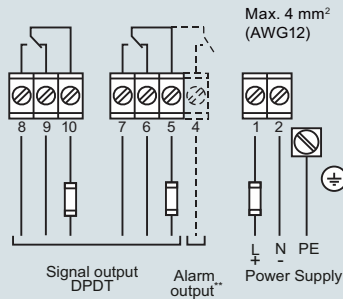
24 V DC  $\pm 15\%$ <sup>1)</sup> max. 2.5 W  
External fuse: not required

<sup>1)</sup> 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)\*

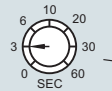


\* See manual for universal voltage with SIL.

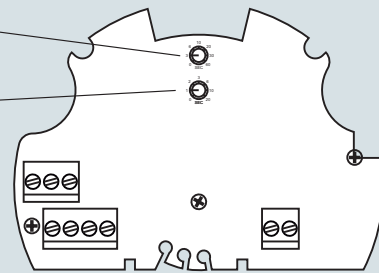
\*\* With option Fail safe alarm (rotation control).  
Contact open when de-energised.  
Fail safe alarm switching and timing behaviour:  
If the vane is not covered, the rotating vane shaft will send pulses at 20 second intervals.  
In case of fault, the pulses are missed.  
After 30 seconds, the alarm relay will open.

#### Signal output: delay

Sensor covered -> free  
Factory setting = 3 sec



Sensor covered -> covered  
Factory setting = 1 sec





#### 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.

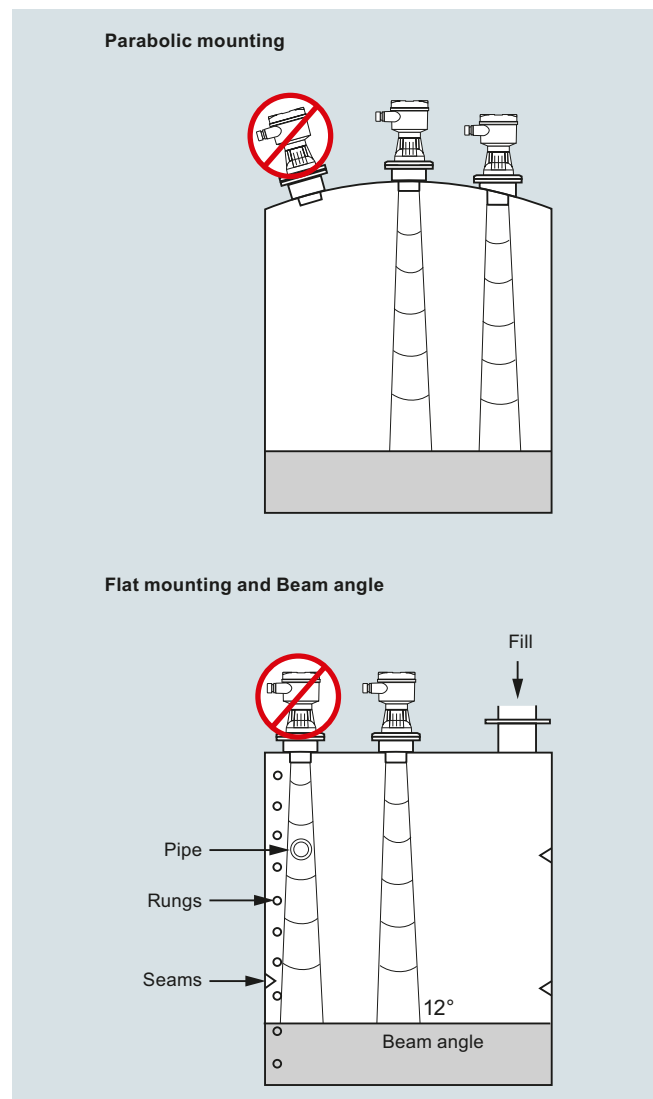
Locate the Pointek ULS200 so that it has a clear sound path perpendicular to the material surface. The sound path should not intersect the fill path, rough walls, seams, rungs etc.

##### 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.

#### Configuration



Pointek ULS200 mounting

**Level measurement**

Point level measurement

Ultrasonic non-contacting switch

**Pointek ULS200****Technical specifications**

<b>Mode of operation</b>		<b>Design</b>	
Measuring principle	Ultrasonic level switch	Material	Polycarbonate with gasket
<b>Measuring range</b>		Weight	Approx. 1.5 kg (3.3 lb)
Measuring range in liquids	0.25 ... 5 m (0.8 ... 16.4 ft)	Transducer material	PVDF or ETFE copolymer
Measuring range in bulk solids	0.25 ... 3 m (0.8 ... 9.8 ft)	Threaded mounting	2" NPT [(Taper), ANSI/ASME B1.20.1] R 2" [(BSPT), EN 10226] or G 2" [(BSPP), EN ISO 228-1]
<b>Output</b>		• Optional flange adapter	For 3" ASME, DN 65, PN 10, and JIS 10 K3B
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	Sanitary mounting	4" sanitary fitting clamp
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	<b>Power supply</b>	
DC Version (transistor)	2 switches, rated max. 100 mA, 48 V DC	AC version	100 ... 230 V AC, ± 15 %, 50/60 Hz, max. 12 VA, 5 W
<b>Accuracy</b>		DC version	18 ... 30 V DC, 3 W
AC/DC version		<b>Displays and controls</b>	
• Resolution	3 mm (0.1 inch)	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
• Repeatability	0.25 % of measuring range	Memory	EEPROM, non-volatile
<b>Rated operation conditions</b>		Programming	2 keys
Installation conditions		<b>Electronics/enclosure</b>	
• Location	Indoors/outdoors	Degree of protection	IP67/Type 6/NEMA 6
• Beam angle	12°	Cable inlet	2 x ½" NPT or 2 x PG 13.5
Ambient conditions		<b>Certificates and approvals</b>	
• Ambient temperature	-40 ... +60 °C (-40 ... +140 °F)	CE, CSA <sub>US/C</sub> , FM	
• Storage 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.		

# Level measurement

## Point level measurement

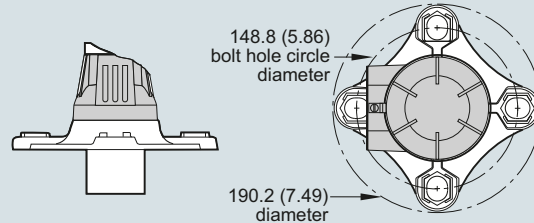
### Ultrasonic non-contacting switch

Pointek ULS200

Selection and ordering data	Article No.
<b>Pointek ULS200 Ultrasonic point level switch</b> Non-contact, 5 m (16.4 ft) range, for bulk solids, liquids, and slurries. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	<b>7ML1510-</b> <b>0</b>
<b>Power supply</b> 24 V DC, relay output 24 V DC, transistor output 100 ... 230 V AC, relay output	<b>1</b> <b>2</b> <b>3</b>
<b>Approvals</b> CE, RCM, CSA Class I, II, Div. 2 <sup>1)</sup> CE, RCM, CSA <sub>us/c</sub> , FM	<b>J</b> <b>K</b>
<b>Transducer/Process connection</b> ETFE, 2" NPT [(Taper), ANSI/ASME B1.20.1] EFTE, R 2" [(BSPT), EN 10226] EFTE, 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 mounting <sup>2)</sup>	<b>A</b> <b>B</b> <b>C</b> <b>E</b> <b>F</b> <b>G</b> <b>J</b>
<b>Enclosure/cable inlet</b> <b>Polycarbonate</b> • Cable inlet PG 13.5 • Cable inlet ½" NPT	<b>1</b> <b>2</b>
<sup>1)</sup> Available with Enclosure/cable inlet option 2 only. <sup>2)</sup> Available with Approvals option K only.	
<b>Further designs</b> Please add <b>"-Z"</b> to Article No. and specify Order code(s)	Order code
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]; Measuring-point number/identification (max. 27 characters) specify in plain text	<b>Y15</b>
<b>Operating Instructions</b> All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>	
<b>Accessories</b>	Article No.
Tag, stainless steel, 12 x 45 mm (0.47 x 1.77 inch), one text line, suitable for enclosures	<b>7ML1930-1AC</b>
Universal Box Bracket Mounting Kit	<b>7ML1830-1BK</b>
3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" NPT	<b>7ML1830-1BT</b>
3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" BSPT	<b>7ML1830-1BU</b>
2" BSP nylon plastic locknut	<b>7ML1830-1DQ</b>
2" NPT nylon plastic locknut	<b>7ML1830-1DT</b>
4" sanitary mounting clamp	<b>7ML1830-1BR</b>
<b>Spare Parts</b> Polycarbonate Lid	<b>7ML1830-1LG</b>

### 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)

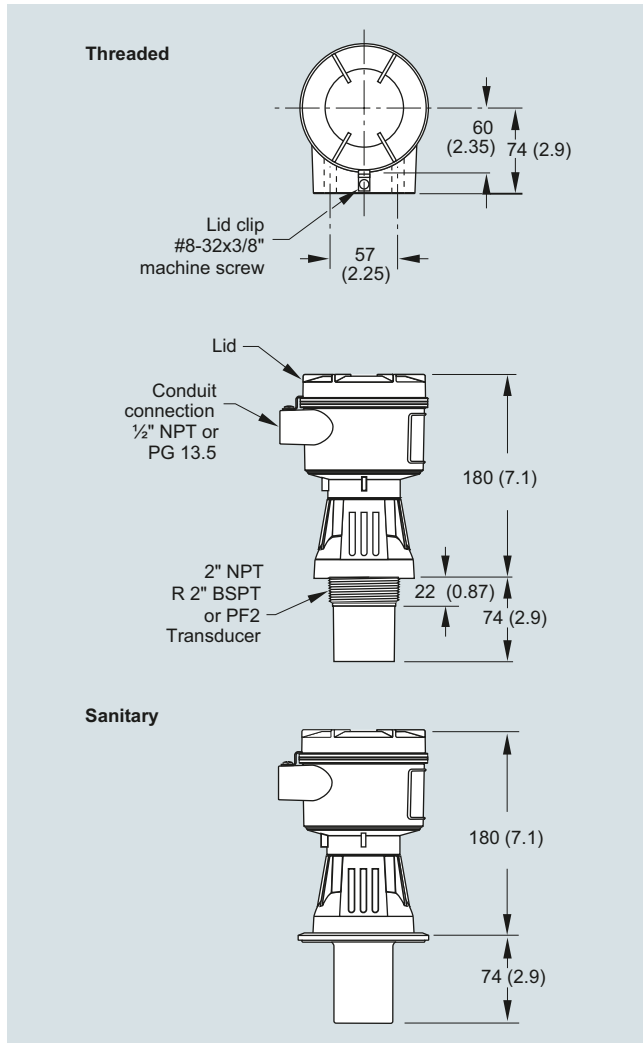
## Level measurement

Point level measurement

Ultrasonic non-contacting switch

### Pointek ULS200

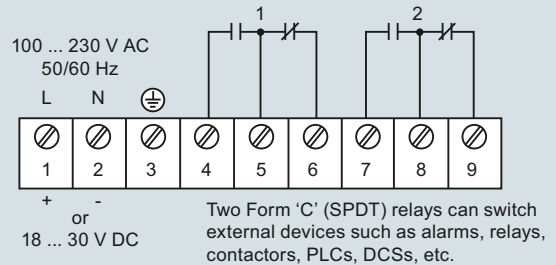
#### Dimensional drawings



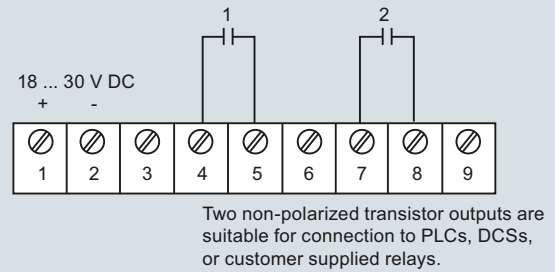
Pointek ULS200, dimensions in mm (inch)

#### Circuit diagrams

##### Relay output



##### Transistor output: DC version only



Pointek ULS200 connections

4

### Overview

After driving the market in ultrasonic level controllers for the past 40 years, Siemens has evolved its industry leading solutions to include control for 80 GHz radar sensors.

Siemens level controller portfolio provides high-accuracy open channel monitoring, flexible control for multiple-relay ultrasonics, and reliable controllers for long-range, high frequency radar.

### Technical specifications

#### Controller Selection Guide

Criteria	SITRANS LT500	SITRANS LUT400	HydroRanger 200	MultiRanger 100/200
Range	Sensor dependent	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	Single or dual point, wet wells, reservoirs, flumes/weirs, chemical storage, liquid storage, hoppers, crusher bins, dry solids storage	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	1, 3, 6 relays, two 4 ... 20 mA outputs (isolated)	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	Options: • HART (additional 4 ... 20 mA output) • PROFIBUS PA • PROFIBUS DP • Modbus RTU	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	AC version: 100 ... 230 V AC $\pm$ 15 %, 50/60 Hz, 36 VA/17 W DC version: 12 ... 30 V DC, 20 W	AC version: 100 ... 230 V AC $\pm$ 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 $\pm$ 15 %, 50/60 Hz, 36 VA/17 W DC version: 12 ... 30 V DC, 20 W	AC version: 100 ... 230 V AC $\pm$ 15 %, 50/60 Hz, 36 VA/17 W DC version: 12 ... 30 V DC, 20 W
Approvals	CE, CSA <sub>US/C</sub> , UL Listed, FM, RCM	CE, CSA <sub>US/C</sub> , UL Listed, FM, RCM, LR, ABS, MCERTS	CE, CSA <sub>US/C</sub> , UL Listed, FM, RCM, MCERTS	CE, CSA <sub>US/C</sub> , UL Listed, FM, RCM

## Level measurement

Continuous level measurement  
Controllers

### SITRANS LT500

#### Overview



SITRANS LT500 is a versatile, 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, Japanese, Danish, Dutch, Swedish, Finnish, Polish, 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 options for HART, Modbus RTU, PROFIBUS PA, PROFIBUS DP and ProfiNet.
- Single or dual point level monitoring.
- Auto False-Echo Suppression for fixed obstruction avoidance.
- Up to 6 independent programmable relays for pump control, alarms, or remote totalization.
- Level, volume, and flow measurements in open channels, differential control, extended pump control, and alarm functions.
- Wall and panel mounting options.

#### Application

SITRANS LT500 can be used with SITRANS LR110, LR120, Probe LU240 or any level device generating a mA signal. SITRANS LT500 offers true dual point monitoring and digital communications. SITRANS LT500 is low maintenance and economical. With its advanced control functions, it can operate pumps during lower cost time periods and manage pump rosters for efficiency.

SITRANS LT500 will monitor open channel flow and features advanced relay alarming and pump control functions as well as volume conversion.

- Key Applications: wet wells, flumes/weirs, bar screen control, hoppers, chemical storage, liquid storage, crusher bins, dry solids storage

#### Design

SITRANS LT500 is available in wall or panel mounting options.

#### Technical specifications

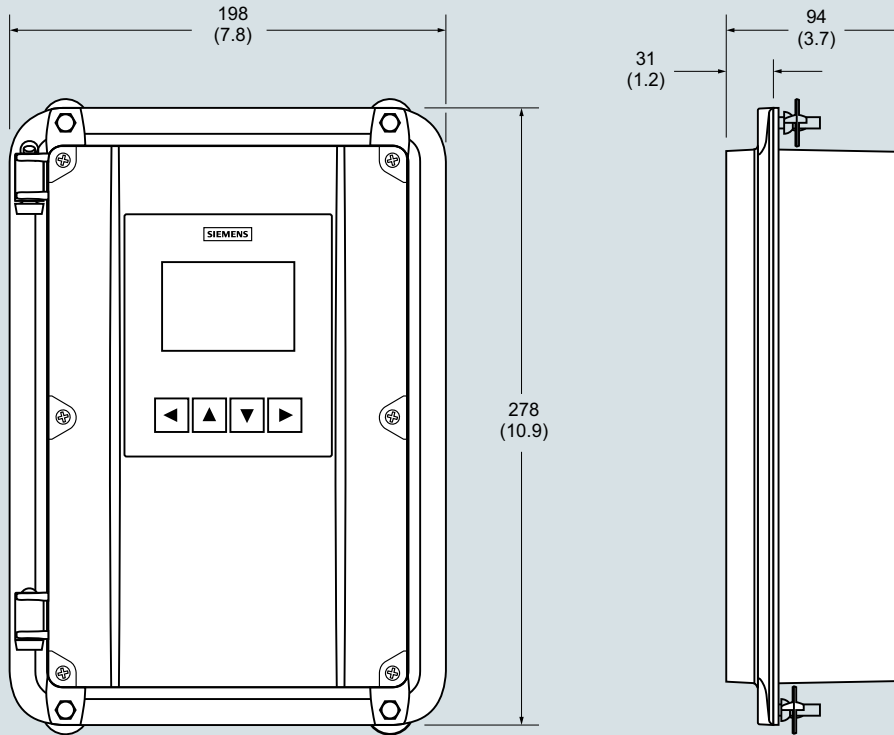
<b>Sensor input</b>		<b>Rated operating conditions</b>	
Number of inputs	1 or 2	Installation conditions	
Terminal voltage	Max. 26 V, Min. 18 V (0 ... 22.6 mA)	• Location	Indoor/outdoor
Wiring	2 conductor, twisted, shielded, 0.5 ... 0.75 mm <sup>2</sup> (22 ... 18 AWG)	• Installation category	II
Max. cable length	500 m (1 640.42 ft)	• Pollution degree	4
Sensor input communication	<ul style="list-style-type: none"> <li>• 4 ... 20 mA</li> <li>• HART protocol, for supported sensors: SITRANS LR110, LR120, SITRANS Probe LU240</li> </ul>	Ambient conditions	
4 ... 20 mA sensor input		• Ambient temperature	-20 ... +50 °C (-4 ... +122 °F)
• Resolution	0.025 % of full scale	• Storage temperature	-20 ... +50 °C (-4 ... +122 °F)
• Accuracy	0.1 % of full scale	<b>Design</b>	
HART sensor input	Resolution and accuracy are dependent on connected sensor	Weight	
<b>Discrete input</b>		• Wall mount	1.22 kg (2.68 lb)
Quantity	2 (1 additional available on optional HART communication card)	• Panel mount	1.35 kg (2.97 lb)
Switching threshold, low	0 ... 0.5 V DC	Enclosure	
Switching threshold, high	10 ... 50 V DC	• Material	Polycarbonate
Input current	Max. 3 mA	• Degree of protection	
Bias voltage	24 V	- Wall mount	IP65/Type 4X/NEMA 4X
<b>Analog output</b>		- Wall mount	IP54/Type 3/NEMA 3
Quantity	2	<b>Display and control</b>	
Range	0 ... 20 mA or 4 ... 20 mA	LCD display	60 x 40 mm (2.36 x 1.57 inch) LCD, 240 x 160 pixels resolution
• Max. load	750 Ω	Menu navigation	4 push button keys
• Resolution	0.1 % of range	<b>Memory card</b>	8 GB Industrial micro SD
Accuracy	±20 μA	<b>Power supply</b>	
Wiring	2 conductor, twisted, shielded, 0.5 ... 0.75 mm <sup>2</sup> (22 ... 18 AWG)	AC version	100 ... 230 V AC, ±15 %, 50/60 Hz, 36 VA (17 W)
<b>Relay output</b>		DC version	12 ... 30 V DC (20 W)
Quantity	Up to 6, 4 form A and 2 form C	<b>Certificates and approvals</b>	<ul style="list-style-type: none"> <li>• CE, RCM</li> <li>• FM, cCSA<sub>US</sub>, cUL<sub>US</sub></li> </ul>
Rating	5 A at 250 V AC, non-inductive	<b>Communication</b>	
		Service interface	USB 2.0 mini A cable
		Optional Fieldbus	<ul style="list-style-type: none"> <li>• HART, with Active/Passive 4 ... 20 mA</li> <li>• Modbus RTU</li> <li>• PROFIBUS PA</li> <li>• PROFIBUS DP</li> <li>• ProfiNet</li> </ul>



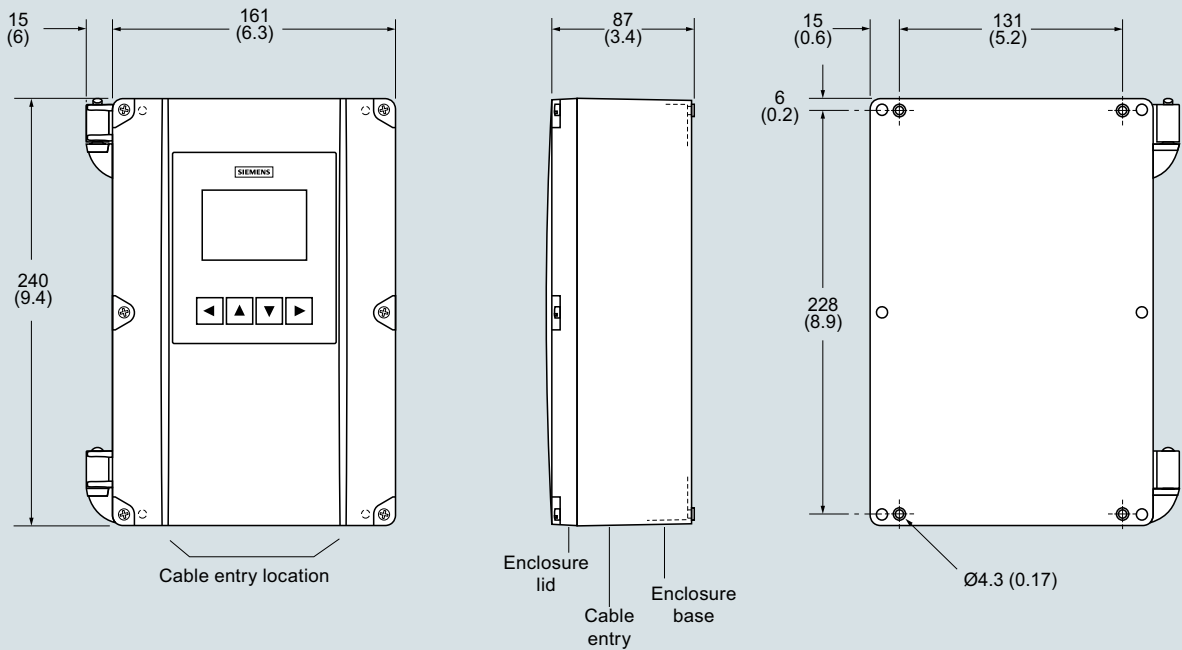


**Dimensional drawings**

**Panel mount dimensions**



**Wall mount dimensions**



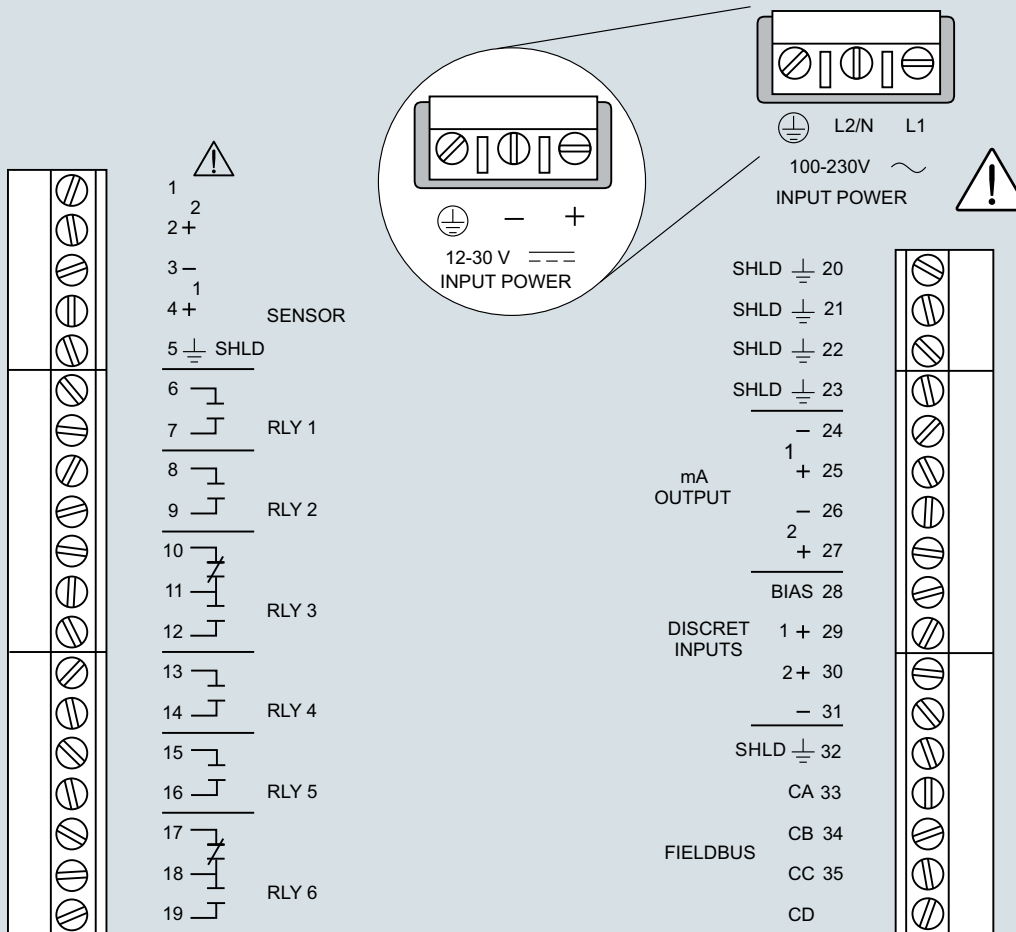
SITRANS LT500, dimensions in mm (inch)

## Level measurement

Continuous level measurement  
Controllers

### SITRANS LT500

#### 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 SITRANS LT500 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.

SITRANS LT500 connections

### 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 ( $\pm 1$  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

## Level measurement

Continuous level measurement  
Controllers

### SITRANS LUT400 series

#### Technical specifications

<b>Mode of Operation</b>	Ultrasonic level, volume, pump, and open channel flow
Measuring range	0.3 ... 60 m (1 ... 196 ft), transducer dependent
<b>Input</b>	
Discrete	0 ... 50 V DC switching level Logical 0 ≤ 10 V DC Logical 1 = 10 ... 50 V DC Max. 3 mA
<b>Output</b>	
Transducer frequency	10 ... 52 kHz
Ultrasonic transducer	Compatible transducers: All Echo-Max and ST-H series transducers
Relays	<ul style="list-style-type: none"> <li>• 1 SPDT Form C, NO or NC relay, rated 1A at 250 V AC, non-inductive and 3A at 30 V DC</li> <li>• 2 SPST Form A, NO relays, rated 5A at 250 V AC, non-inductive and 3 A at 30 V DC</li> </ul>
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
<b>Accuracy</b>	
Error in measurement	<ul style="list-style-type: none"> <li>• Standard operation: ± 1 mm (0.04 inch) plus 0.17 % of measured distance</li> <li>• High accuracy OCM: ± 1 mm (0.04 inch), within 3 m (9.84 ft) range</li> </ul>
Resolution	<ul style="list-style-type: none"> <li>• Standard operation: 0.1 % of range or 2 mm (0.08 inch), whichever is greater</li> <li>• High accuracy OCM: 0.6 mm (0.02 inch), within 3 m (9.84 ft) range</li> </ul>
Temperature compensation	<ul style="list-style-type: none"> <li>• -40 ... +150 °C (-40 ... +300 °F)</li> <li>• Integral temperature sensor in transducer</li> <li>• External TS-3 temperature sensor (optional)</li> <li>• Programmable fixed temperature values</li> </ul>
<b>Rated operating conditions</b>	
Installation conditions	
• Location	Indoor/outdoor
• Installation category	II
• Pollution degree	4
Ambient conditions	
• Ambient temperature (enclosure)	-20 ... +50 °C (-4 ... +122 °F)
• Storage temperature	-20 ... +50 °C (-4 ... +122 °F)

<b>Design</b>	
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
<b>Cable</b>	
Transducer and mA output signal	<ul style="list-style-type: none"> <li>• Transducer, mA output: 2 copper conductors, twisted, with foil shield/drain wire, 300 V 0.5 ... 0.75 mm<sup>2</sup> (22 ... 18 AWG)</li> <li>• Relay/power to be copper conductors per local requirements to meet 250 V 5 A contact rating</li> </ul>
Max. separation between transducer and transceiver	365 m (1 200 ft)
<b>Displays and controls</b>	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"> <li>• PC running SIMATIC PDM</li> <li>• PC running Emerson AMS Device Manager</li> <li>• PC running a web browser</li> <li>• PC running a Field Device Tool (FDT)</li> <li>• Field Communicator 375/475 (FC375/FC475)</li> </ul>
Memory	<ul style="list-style-type: none"> <li>• 512 kB flash EPROM</li> <li>• 1.5 MB flash for data logging</li> </ul>
<b>Power supply</b>	
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
<b>Certificates and approvals</b>	
General	CSA <sub>US/C</sub> , 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
<b>Communication</b>	HART 7.0, USB

#### Technical specifications (continued)

Category	Feature	SITRANS LUT420	SITRANS LUT430	SITRANS LUT440
		Level Controller	Level, pump and flow controller	High accuracy OCM controller
<b>Operations</b>	Level, space, and distance measurement	✓	✓	✓
	Open channel flow measurement		✓	✓
	Volume conversion	✓	✓	✓
<b>Specifications</b>	Compatible with EchoMax and ST-H transducers	✓	✓	✓
	Standard accuracy: ± 1 mm + 0.17 % of measured distance	✓	✓	✓
	High accuracy: ± 1 mm within 3 meters			✓
	Mounting options: wall or panel, pipe, DIN-rail	✓	✓	✓
<b>Data logging and communications</b>	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		✓	✓
<b>Flow monitoring</b>	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		✓	
<b>Pump control</b>	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		✓	✓	

# Level measurement

## Continuous level measurement

### Controllers

#### SITRANS LUT400 series

4

#### Selection and ordering data

#### Article No.

#### Article No.

##### SITRANS LUT420 and LUT430

Continuous, non-contact, 60 m (197 ft) range. Monitors level, volume, and volume flow in liquids, slurries, and solids. With high accuracy volume flow and built in data logging.

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

##### Model

SITRANS LUT420 - Level controller

SITRANS LUT430 - Level, Pump & Flow controller

##### 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 ± 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<sub>US/C</sub>, UL, RCM, EAC, KCC

Hazardous locations CSA Class I, II, III, Div. 2, Groups A, B, C, D, F, G

##### 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

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/processinstrumentation/documentation>

7ML5050-	0	1	2	-	1	2	0
<b>A</b>							
<b>B</b>							
<b>A</b>							
<b>B</b>							
<b>C</b>							
<b>1</b>							
<b>2</b>							
<b>1</b>							
<b>D</b>							
<b>A</b>							
<b>C</b>							

Order code
<b>C11</b>
<b>Y15</b>
<b>N07</b>

##### 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 4/226

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 RD150, remote digital display for 4 ... 20 mA and HART devices - 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

LUT420, assembly, DC, board stack with cradle, general purpose

LUT420, assembly, AC, board stack with cradle, general purpose

LUT430, assembly, DC, board stack with cradle, general purpose

LUT430, assembly, AC, board stack with cradle, general purpose

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

**7ML1930-1AC**

**7ML1813-...**

**7ML1930-1GF**

**7ML1930-1GB**

**7ML1930-1GD**

**7MF4997-1DB**

**7ML1930-1GE**

**7ML5741-...**

**7ML5742-.....-....**

**7ML5740-...**

**7ML5744-...**

**7ML5750-...**

**7ML1830-1PA**

**7ML1830-1PB**

**7ML1830-1PC**

**7ML1830-1PD**

**7ML1830-1PE**

**7ML1830-1PF**

**7ML1830-1PG**

**7ML1830-1PH**

**7ML1830-1PK**

**7ML1830-1PL**

**A5E42824483**

**A5E42824562**

**A5E42824564**

**A5E42824568**

**A5E42824561**

**A5E42824563**

**A5E42824565**

**A5E42824570**

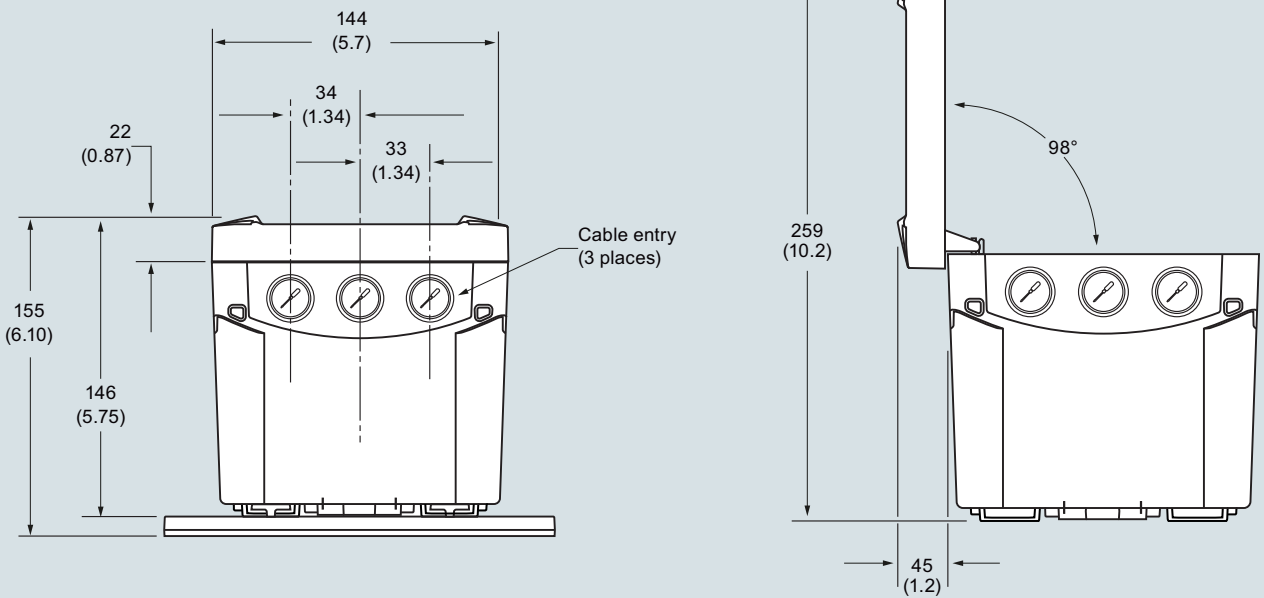
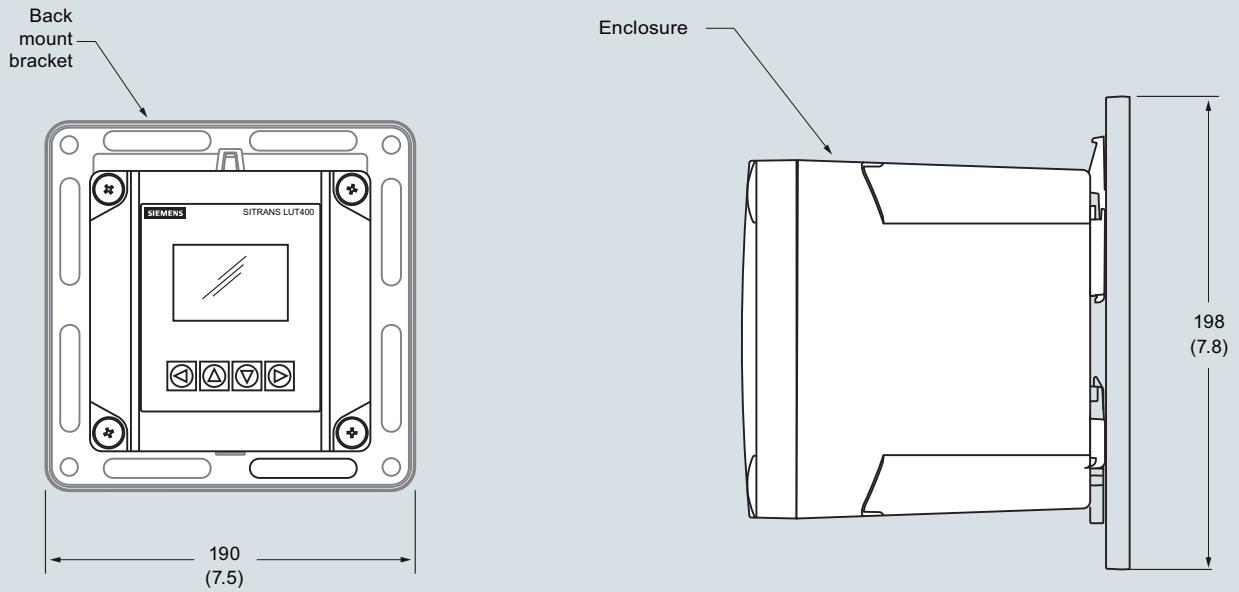
Selection and ordering data	Article No.	Article No.
<b>SITRANS LUT440</b> Continuous, non-contact, 60 m (197 ft) range. Monitors level, volume, and volume flow in liquids, slurries, and solids. With high accuracy volume flow and built in data logging. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	<b>7ML5050-</b> 	<b>Accessories</b> 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 4/226 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 RD150, remote digital display for 4 ... 20 mA and HART devices - 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
<b>Model</b> SITRANS LUT440 - High accuracy Open Channel Monitor <sup>1)</sup>	<b>C</b>	<b>7ML1930-1AC</b>  <b>7ML1813-...</b> <b>7ML1930-1GF</b> <b>7ML1930-1GB</b> <b>7ML1930-1GD</b>  <b>7MF4997-1DB</b>  <b>7ML1930-1GE</b> <b>7ML5741-...</b>  <b>7ML5742-.....-....</b>  <b>7ML5740-...</b>  <b>7ML5744-...</b>  <b>7ML5750-...</b>
<b>Enclosure display options</b> 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	<b>A</b> <b>B</b> <b>C</b>	<b>Spare parts</b> 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, general purpose LUT440, assembly, AC, board stack with cradle, general purpose LUT440, assembly, DC, board stack with cradle, hazardous LUT440, assembly, AC, board stack with cradle, hazardous
<b>Input voltage</b> 100 ... 230 V AC ± 15 % 10 ... 32 V DC	<b>1</b> <b>2</b>	<b>7ML1830-1PA</b>  <b>7ML1830-1PB</b>  <b>7ML1830-1PC</b> <b>7ML1830-1PD</b> <b>7ML1830-1PE</b> <b>7ML1830-1PF</b> <b>7ML1830-1PG</b> <b>7ML1830-1PH</b> <b>7ML1830-1PK</b> <b>7ML1830-1PL</b> <b>A5E42847453</b> <b>A5E42847455</b> <b>A5E42847454</b> <b>A5E42847456</b>
<b>Cable inlet</b> 3 cable inlets, cable glands not supplied 3 cable inlets, 3 M20 plastic cable glands supplied	<b>1</b> <b>2</b>	
<b>Number of measurement points</b> Single point system (includes one transducer input, one mA output, and one external temperature sensor input)	<b>1</b>	
<b>Communications and I/O</b> HART, 2 discrete inputs, 3 relays	<b>D</b>	
<b>Approvals</b> General purpose CE, FM, CSA <sub>US/C</sub> , UL, RCM, EAC, KCC Hazardous locations CSA Class I, II, III, Div. 2, Groups A, B, C, D, F, G	<b>A</b>  <b>C</b>	
<sup>1)</sup> 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).		
<b>Further designs</b> Please add <b>"-Z"</b> 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	Order code  <b>C11</b> <b>Y15</b> <b>N07</b>	
<b>Operating Instructions</b> All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>		

## Level measurement

Continuous level measurement  
Controllers

### SITRANS LUT400 series

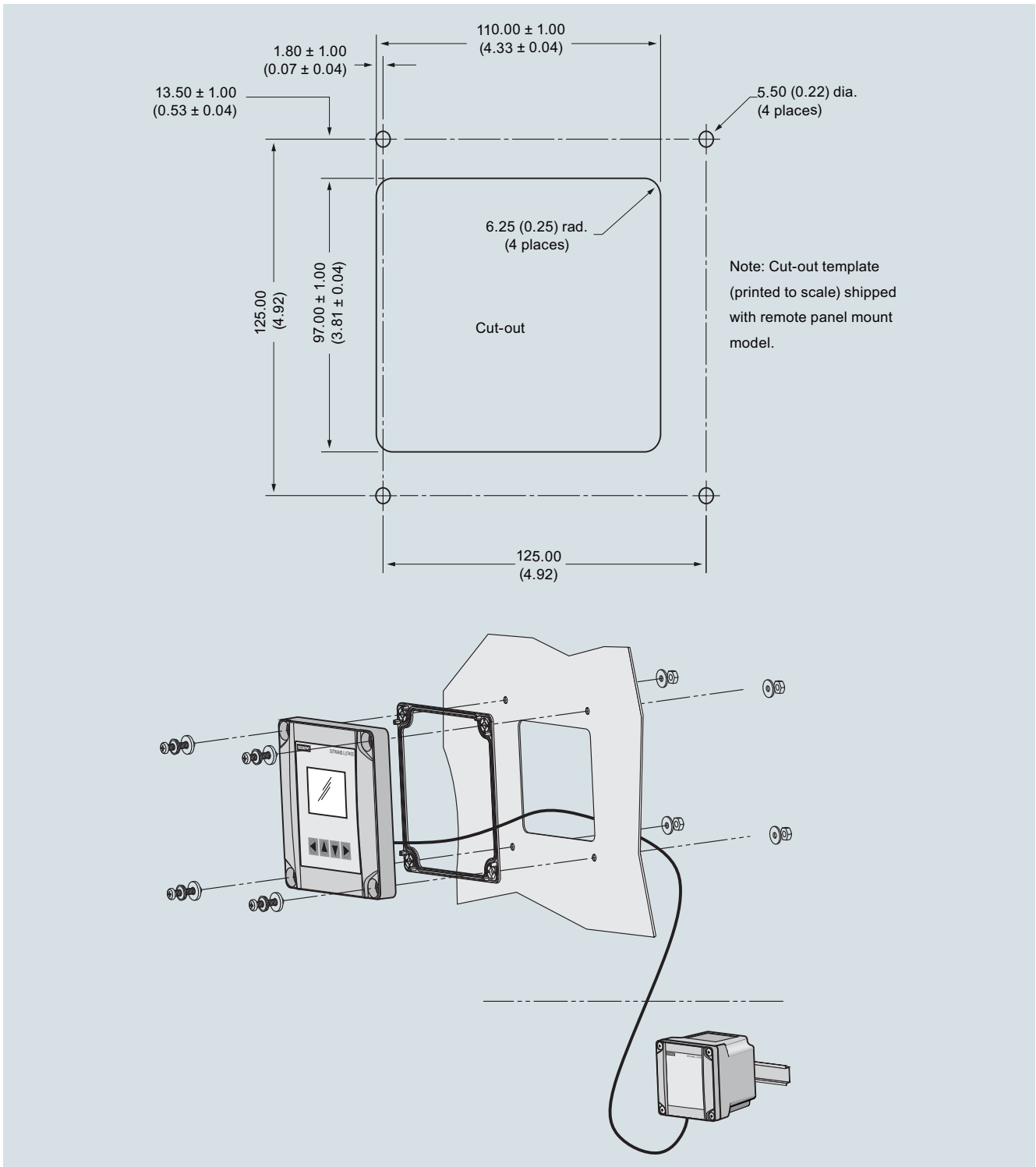
#### Dimensional drawings



SITRANS LUT400, dimensions in mm (inch)



**Dimensional drawings** (continued)



# Level measurement

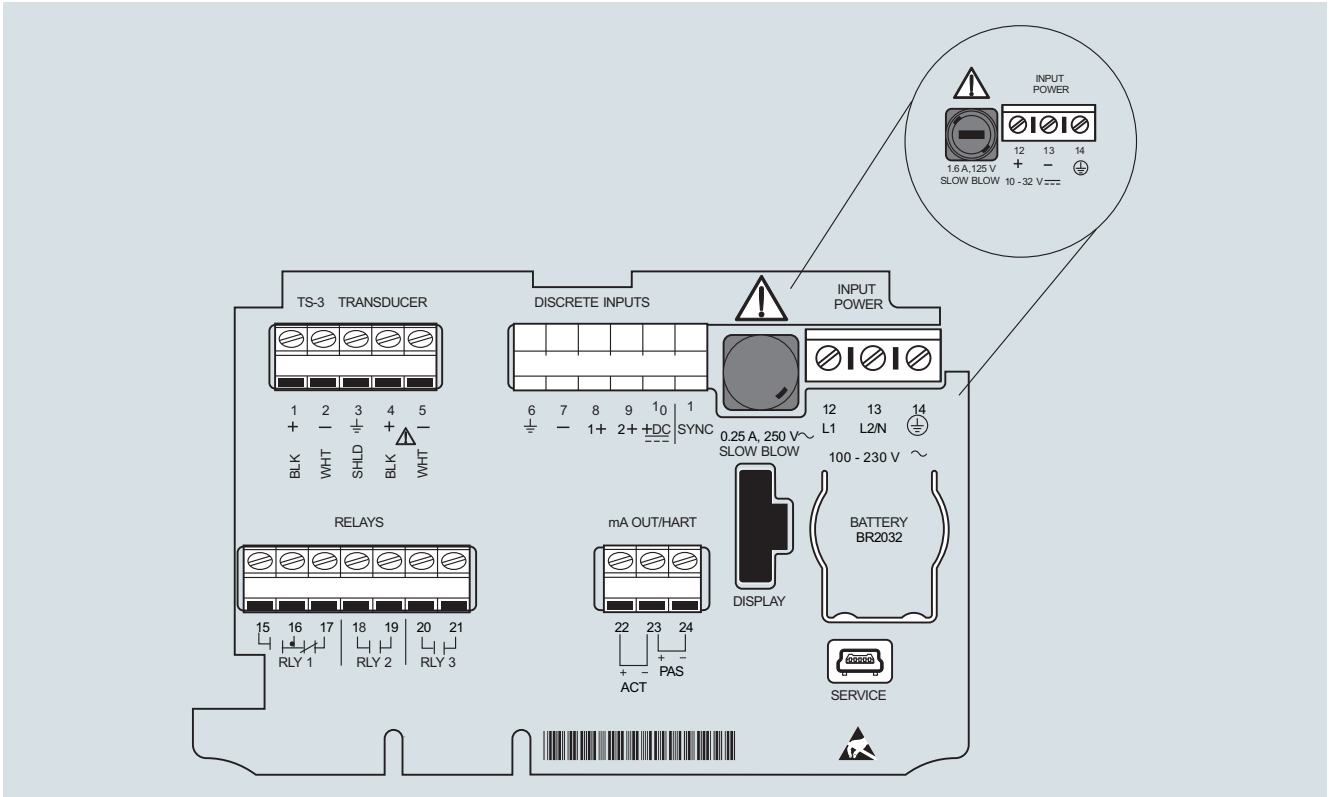
Continuous level measurement

Controllers

## SITRANS LUT400 series

### Circuit diagrams

4



SITRANS LUT400 connections

### 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.

## Level measurement

### Continuous level measurement Controllers

#### MultiRanger 200 HMI

#### 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 <sup>1)</sup> or 2 mm (0.08 inch), whichever is greater
Temperature compensation	<ul style="list-style-type: none"> <li>-50 ... +150 °C (-58 ... +302 °F)</li> <li>Integral temperature sensor</li> <li>External TS-3 temperature sensor (optional)</li> <li>Programmable fixed temperature values</li> </ul>
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)
• Storage temperature	-20 ... +50 °C (-4 ... +122 °F)

Mode of Operation	
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 <sup>2</sup> (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"> <li>CE, RCM, EAC, KCC<sup>2)</sup></li> <li>FM, CSA<sub>US/C</sub>, UL</li> <li>CSA Class I, Div. 2, Groups A, B, C, and D, Class II, Div. 2, Groups F and G, Class III (wall mount only)</li> </ul>
Communication	
	<ul style="list-style-type: none"> <li>RS 232 with Modbus RTU or ASCII via RJ-11 connector</li> <li>RS 485 with Modbus RTU or ASCII via terminal strips</li> <li>Optional: SmartLinX cards for               <ul style="list-style-type: none"> <li>PROFIBUS DP-V1, PROFINET (cyclic access of process values only)</li> <li>DeviceNet, Modbus TCP/IP, EtherNet/IP</li> </ul> </li> </ul>

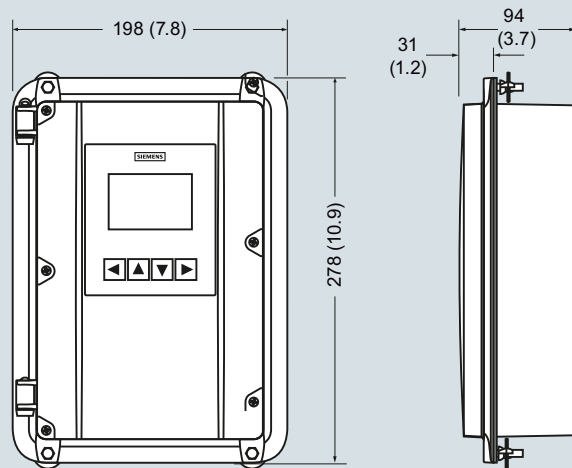
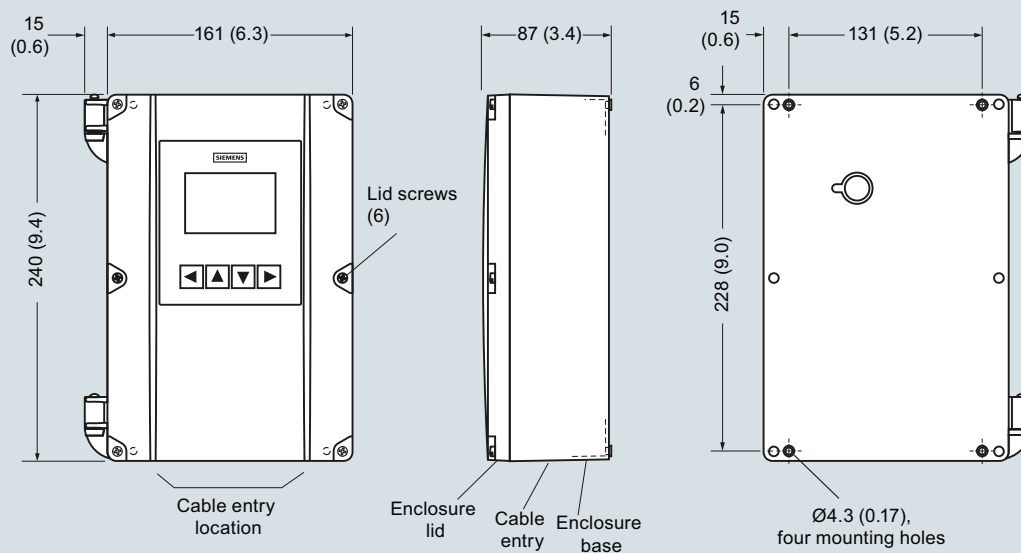
<sup>1)</sup> Program range is defined as the empty distance to the face of the transducer plus any range extension

<sup>2)</sup> EMC performance available on request

Selection and ordering data	Article No.	Order code
<b>MultiRanger 200 Ultrasonic level controller</b> Continuous, non-contact, 15 m (50 ft) range. Monitors level, volume, and open channel flow in liquids, slurries, and solids. <a href="#">Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</a>	7ML5033-	
<b>Versions</b> MultiRanger 200, level, volume, flow, and differential measurements	2	
<b>Mounting, enclosure design</b> 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	
<b>Input voltage</b> 100 ... 230 V AC 12 ... 30 V DC	A B	
<b>Number of measurement points</b> Single point version Dual point version	0 1	
<b>Data communications (SmartLinx)</b> Without module SmartLinx PROFIBUS DP V0 module SmartLinx DeviceNet module SmartLinx PROFIBUS DP V1 module SmartLinx PROFINET module <sup>2)</sup> SmartLinx EtherNet/IP module SmartLinx Modbus TCP/IP module See SmartLinx product page 4/348 for more information.	0 2 3 4 5 6 7	
<b>Output relays</b> 6 relays (4 Form A, 2 Form C), 250 V AC	2	
<b>Approvals</b> General Purpose CE, FM, CSA <sub>US/C</sub> , 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 <sup>1)</sup>	A B	
<sup>1)</sup> Available with Mounting/Enclosure design options D or E. <sup>2)</sup> SmartLinx PROFINET module is certified per standard V2.2.4.		
		<b>Further designs</b> 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 Test Certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and to ISO 9000
		<b>Operating Instructions</b> All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>
		<b>Optional equipment</b> 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 RD150, remote digital display for 4 ... 20 mA and HART devices - 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
		<b>Spare parts</b> Power Supply Board (100 ... 230 V AC) Power Supply Board (12 ... 30 V DC) Removable terminal blocks Spare lid with HMI, MultiRanger 200 HMI/HydroRanger 200 HMI, wall Spare lid with HMI, MultiRanger 200 HMI/HydroRanger 200 HMI, panel SmartLinx DeviceNet module SmartLinx PROFIBUS DP V1 module SmartLinx PROFINET IO module SmartLinx Modbus TCP/IP, EtherNet/IP module
		Article No. <b>7ML1930-1AC</b> <b>7ML1930-1GA</b> <b>7ML1930-6AK</b> <b>7ML1830-1MC</b> <b>7ML5741-...</b> <b>7ML5742-.....-....</b> <b>7ML5740-...</b> <b>7ML5744-...</b> <b>7ML5750-...</b> <b>7ML1830-1MD</b> <b>7ML1830-1ME</b> <b>A5E38824197</b> <b>A5E35778738</b> <b>A5E35778740</b> <b>7ML1830-1HT</b> <b>A5E35778741</b> <b>7ML1830-1PM</b> <b>7ML1830-1PN</b>

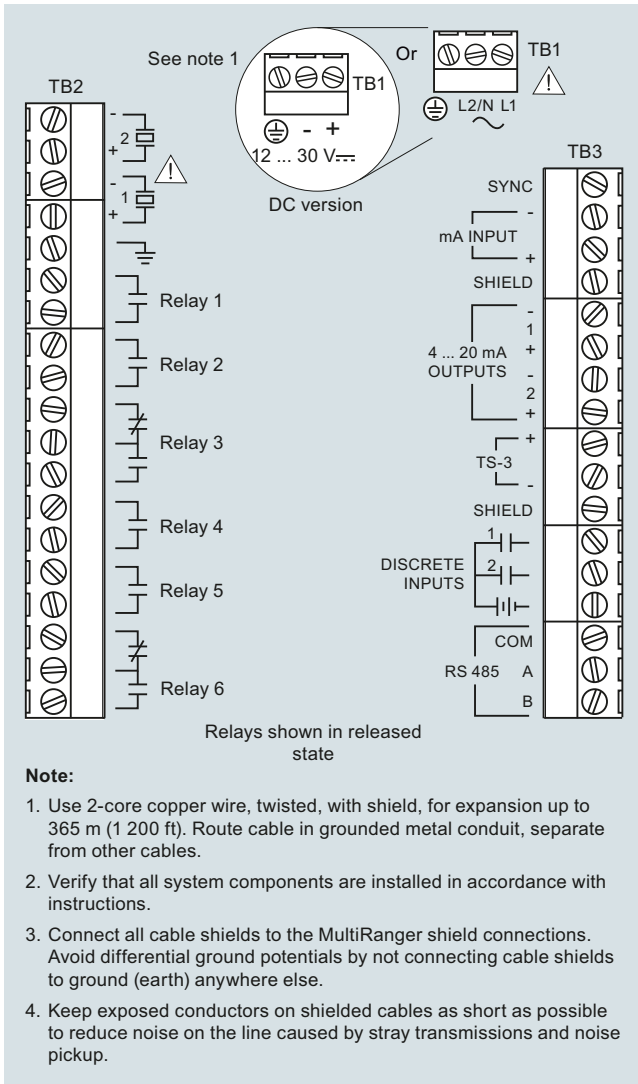
**Level measurement**

Continuous level measurement  
Controllers

**MultiRanger 200 HMI****Dimensional drawings****Panel mount dimensions****Wall mount dimensions**

MultiRanger 200 HMI, dimensions in mm (inch)

## Circuit diagrams



MultiRanger 200 HMI connections

## Level measurement

Continuous level measurement  
Controllers

### MultiRanger 100/200

#### 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.



#### Technical specifications

<b>Mode of Operation</b>		<b>Design</b>	
Measuring principle	Ultrasonic level measurement	Weight	
Measuring range	0.3 ... 15 m (1 ... 50 ft)	• Wall mount	1.37 kg (3.02 lb)
Measuring points	1 or 2	• Panel mount	1.50 kg (3.31 lb)
<b>Input</b>		Material (enclosure)	Polycarbonate
Analog (MultiRanger 200 only)	0 ... 20 mA or 4 ... 20 mA, from alternate device, scalable	Degree of protection (enclosure)	
Discrete	10 ... 50 V DC switching level Logical 0 ≤ 0.5 V DC Logical 1 = 10 ... 50 V DC Max. 3 mA	• Wall mount	IP65/Type 4X/NEMA 4X
<b>Output</b>		• Panel mount	IP54/Type 3/NEMA 3
EchoMax transducer	44 kHz	Electrical connection	
Ultrasonic transducer	Compatible transducers: ST-H and EchoMax series XPS-10, XPS 15/15F, and XRS-5	• Transducer and mA output signal	2-core copper conductor, twisted, shielded, 0.5 ... 0.75 mm <sup>2</sup> (22 ... 18 AWG), Belden 8760 or equivalent is acceptable
Relays	Rating 5 A at 250 V AC, non-inductive	• Max. separation between transducer and transceiver	365 m (1 200 ft)
• Version with 1 relay (MultiRanger 100 only)	1 SPST Form A	<b>Displays and controls</b>	
• Version with 3 relays	2 SPST Form A/1 SPDT Form C	100 x 40 mm (4 x 1.5 inch) multi-block LCD with backlighting	
• Version with 6 relays	4 SPST Form A/2 SPDT Form C	Programming	
mA output	0 ... 20 mA or 4 ... 20 mA	Programming using hand-held programmer, SIMATIC PDM or via PC with Dolphin Plus software	
• Max. load	750 Ω, isolated	<b>Power supply</b>	
• Resolution	0.1 % of range	AC version	100 ... 230 V AC ± 15 %, 50/60 Hz, 36 VA (17 W)
<b>Accuracy</b>		DC version	12 ... 30 V DC (20 W)
Error in measurement	0.25 % of range or 6 mm (0.24 inch), whichever is greater	<b>Certificates and approvals</b>	
Resolution	0.1 % of measuring range <sup>1)</sup> or 2 mm (0.08 inch), whichever is greater	<ul style="list-style-type: none"> <li>• CE, RCM, EAC, KCC<sup>2)</sup></li> <li>• Lloyd's Register of Shipping</li> <li>• ABS Type Approval</li> <li>• FM, CSA<sub>US/C</sub>, UL listed</li> <li>• 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</li> </ul>	
Temperature compensation	<ul style="list-style-type: none"> <li>• -50 ... +150 °C (-58 ... +302 °F)</li> <li>• Integral temperature sensor</li> <li>• External TS-3 temperature sensor (optional)</li> <li>• Programmable fixed temperature values</li> </ul>	<b>Communication</b>	
<b>Rated operating conditions</b>		<ul style="list-style-type: none"> <li>• RS 232 with Modbus RTU or ASCII via RJ-11 connector</li> <li>• RS 485 with Modbus RTU or ASCII via terminal strips</li> <li>• Optional: SmartLinX cards for <ul style="list-style-type: none"> <li>- PROFIBUS DP</li> <li>- DeviceNet</li> </ul> </li> </ul>	
Installation conditions		<sup>1)</sup> Program range is defined as the empty distance to the face of the transducer plus any range extension	
• Location	Indoor/outdoor	<sup>2)</sup> EMC performance available on request	
• Installation category	II		
• Pollution degree	4		
Ambient conditions			
• Ambient temperature (housing)	-20 ... +50 °C (-4 ... +122 °F)		
• Storage temperature	-20 ... +50 °C (-4 ... +122 °F)		

## Level measurement

### Continuous level measurement Controllers

#### MultiRanger 100/200

#### Selection and ordering data

#### Article No.

#### Order code

##### MultiRanger 200 Ultrasonic level controller

Continuous, non-contact, 15 m (50 ft) range.  
Monitors level, volume, and open channel flow in liquids, slurries, and solids.

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

##### Versions

MultiRanger 100, level measurement only  
MultiRanger 200, level, volume, flow, and differential measurements

##### Mounting, enclosure design

Wall mount, standard enclosure  
Wall mount, 4 entries, 4 M20 cable glands included  
Panel mount (CE, CSA<sub>US/C</sub>, FM, UL)

##### Power supply

100 ... 230 V AC  
12 ... 30 V DC

##### Number of measurement points

Single point version  
Dual point version

##### Communication (SmartLinx)

Without module  
SmartLinx PROFIBUS DP module  
SmartLinx DeviceNet module  
See SmartLinx product on page 4/348 for more information.

##### 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)

##### Approvals

General Purpose CE, FM, CSA<sub>US/C</sub>, 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<sup>1)</sup>  
ATEX II 3D, EAC Ex<sup>2)</sup>

1) For wall mount applications only.

2) For standard enclosure wall mount, option A only.

7ML5033-

1	A	0	0	1	1
2	B	1	2	2	2
	C		3	3	3
					A
					B
					C

##### 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

Article No.

Handheld programmer

A5E36563512

Tag, stainless steel, 12 x 45 mm (0.47 x 1.77 inch), one text line, suitable for enclosure

7ML1930-1AC

M20 cable gland kit (4 M20 cable glands, 4 M20 nuts, 4 washers)

7ML1930-1FV

Sunshield kit, 304 stainless steel

7ML1930-1GA

USB to RS 232 adapter

7ML1930-6AK

SITRANS RD100, loop powered display - see Chapter 7

7ML5741-...

SITRANS RD150, remote digital display for 4 ... 20 mA and HART devices - see Chapter 7

7ML5742-.....-....

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

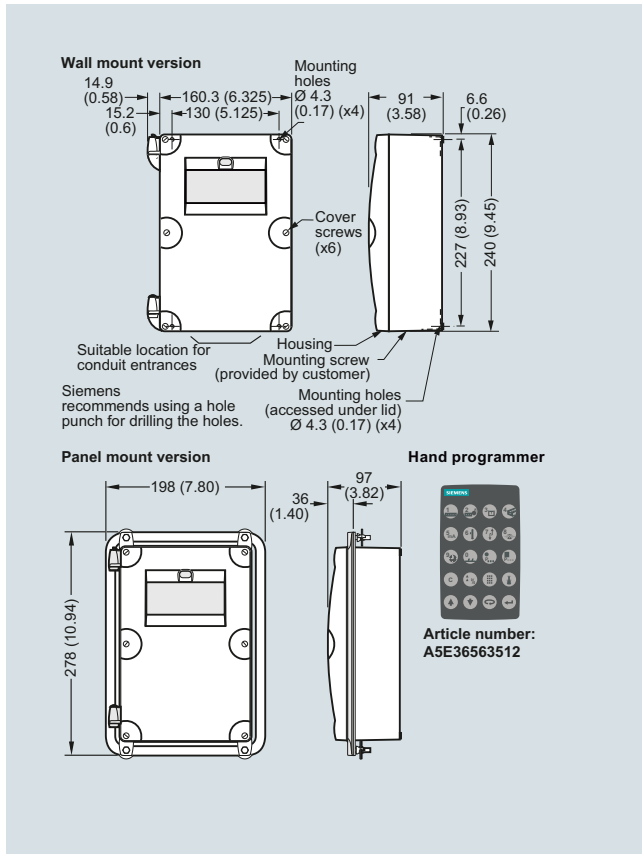
MultiRanger 100/200/ HydroRanger 200 display, non-HMI

7ML1830-1MF

Removable terminal blocks

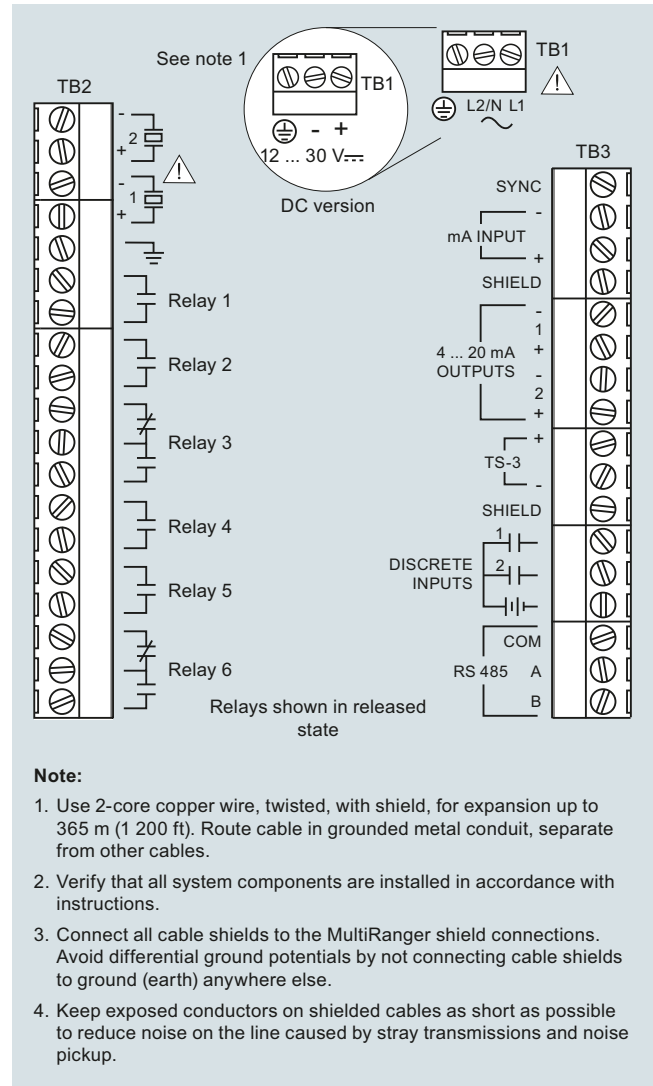
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**Dimensional drawings**



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

## Level measurement

Continuous level measurement  
Controllers

### HydroRanger 200 HMI

#### 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

<b>Mode of Operation</b>	
Measuring principle	Ultrasonic level measurement
Measuring range	0.3 ... 15 m (1 ... 50 ft), transducer dependent
Measuring points	1 or 2
<b>Input</b>	
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
<b>Output</b>	
EchoMax transducer	44 kHz
Ultrasonic transducer	Compatible transducers: ST-H and EchoMax series XPS-10, XPS-15/15F, and XRS-5
Relays <sup>1)</sup>	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
<b>Accuracy</b>	
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 <sup>2)</sup>
Temperature compensation	<ul style="list-style-type: none"> <li>• -50 ... +150 °C (-58 ... +302 °F)</li> <li>• Integral temperature sensor in transducer</li> <li>• External TS-3 temperature sensor (optional)</li> <li>• Programmable fixed temperature values</li> </ul>
<b>Rated operating conditions</b>	
Installation conditions	
• Location	Indoor / outdoor
• Installation category	II
• Pollution degree	4
Ambient conditions	
• Ambient temperature (enclosure)	-20 ... +50 °C (-4 ... +122 °F)
• Storage temperature	-20 ... +50 °C (-4 ... +122 °F)
<b>Design</b>	
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 <sup>2</sup> (18 AWG), Belden 8 760 or equivalent is acceptable
• Max. separation between transducer and transceiver	365 m (1 200 ft)
<b>Displays and controls</b>	60 x 40 mm (2.36 x 1.57 inch) LCD 240 x 160 pixels resolution
<b>Power supply<sup>3)</sup></b>	
AC version	100 ... 230 V AC ± 15 %, 50/60 Hz, 36 VA (17 W)
DC version	12 ... 30 V DC (20 W)

### Technical specifications (continued)

<b>Certificates and approvals</b>	<ul style="list-style-type: none"> <li>• CE, RCM, EAC, KCC<sup>4)</sup></li> <li>• FM, CSA<sub>US/C</sub>, UL listed</li> <li>• CSA<sub>US/C</sub> Class I, Div. 2, Groups A, B, C and D, Class II, Div. 2, Groups F and G, Class III (wall mount only)</li> <li>• MCERTS Class 2 approved for Open Channel Flow</li> </ul>
<b>Communication</b>	<ul style="list-style-type: none"> <li>• RS 232 with Modbus RTU or ASCII via RJ-11 connector</li> <li>• RS 485 with Modbus RTU or ASCII via terminal blocks</li> <li>• Optional: SmartLinx cards for             <ul style="list-style-type: none"> <li>- PROFIBUS DPV1, PROFINET (cyclic access of process values only)</li> <li>- DeviceNet, Modbus TCP/IP, EtherNet/IP</li> </ul> </li> </ul>

- 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.
<b>HydroRanger 100/200 Ultrasonic level controller</b>	<b>7ML5034-</b>
Continuous, non-contact, 15 m (50 ft) range. Monitors level, volume, and open channel flow in liquids, slurries, and solids.	
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
<b>Mounting, enclosure design</b>	
4 button HMI, Wall mount, standard enclosure	4
4 button HMI, Wall mount, 4 entries,	5
4 M20 cable glands included	
4 button HMI, Panel Mount	6
<b>Input voltage</b>	
100 ... 230 V AC	A
12 ... 30 V DC	B
<b>Number of measurement points</b>	
Single point model, 6 relays	A
Dual point model, 6 relays	B
<b>Communication (SmartLinx)</b>	
Without module	0
SmartLinx PROFIBUS DP-V0 module	2
SmartLinx DeviceNet module	3
SmartLinx PROFIBUS DP-V1 module	4
SmartLinx PROFINET module <sup>2)</sup>	5
SmartLinx EtherNet/IP module	6
SmartLinx Modbus TCP/IP module	7
See SmartLinx product page 4/348 for more information	
<b>Approvals</b>	
General Purpose CE, FM, CSA <sub>US/C</sub> , 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 <sup>1)</sup>	2

- 1) Available with Mounting/Enclosure design options 4 or 5.
- 2) SmartLinx PROFINET module is certified per standard V2.2.4.

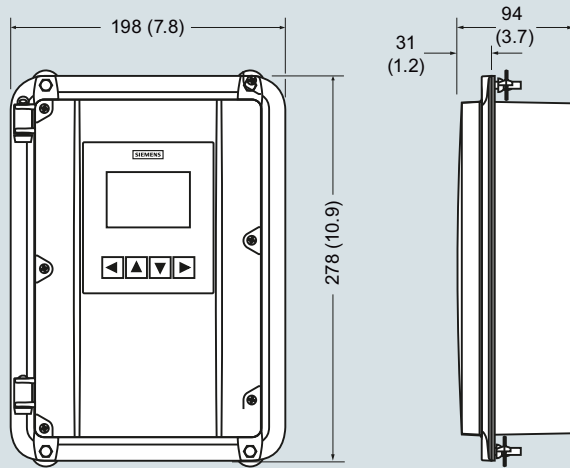
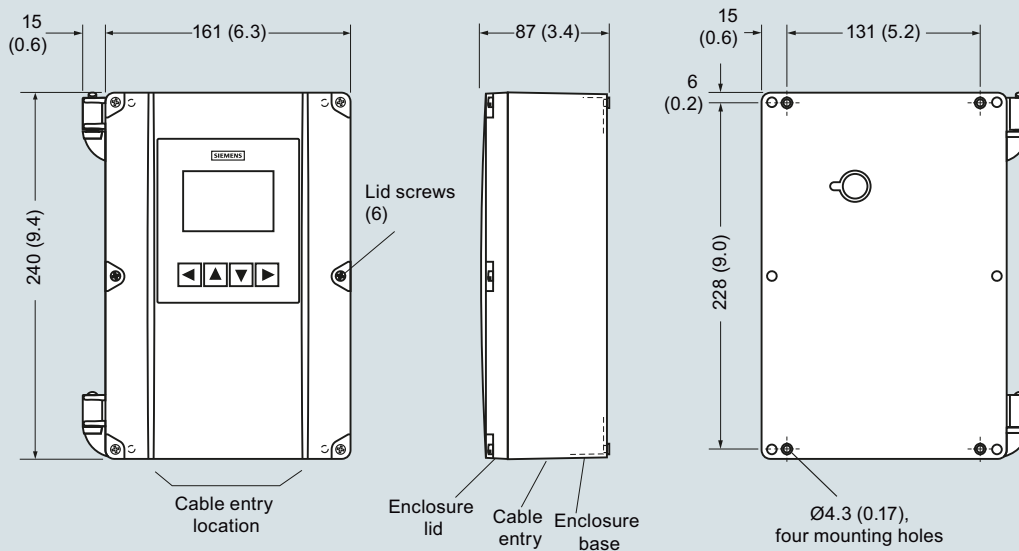
### Selection and ordering data

### Order code

<b>Further designs</b>	
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	<b>Y15</b>
Test Certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and to ISO 9000	<b>C11</b>
<b>Operating Instructions</b>	
All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a> .	
<b>Accessories</b>	Article No.
Tag, stainless steel, 12 x 45 mm (0.47 x 1.77 inch), one text line, suitable for enclosure	<b>7ML1930-1AC</b>
Sunshield kit, 304 stainless steel	<b>7ML1930-1GA</b>
USB to RS 232 adapter	<b>7ML1930-6AK</b>
RS 232 to RJ11 COMMS adapter	<b>7ML1830-1MC</b>
SITRANS RD100, loop powered display - see Chapter 7	<b>7ML5741-...</b>
SITRANS RD150, remote digital display for 4 ... 20 mA and HART devices - see Chapter 7	<b>7ML5742-.....-....</b>
SITRANS RD200, universal input display with Modbus conversion - see Chapter 7	<b>7ML5740-...</b>
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7	<b>7ML5744-...</b>
SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7	<b>7ML5750-...</b>
<b>Spare parts</b>	
Power Supply Board (100 ... 230 V AC)	<b>7ML1830-1MD</b>
Power Supply Board (12 ... 30 V DC)	<b>7ML1830-1ME</b>
Removable terminal blocks	<b>A5E38824197</b>
Spare lid with HMI, MultiRanger 200 HMI/HydroRanger 200 HMI, wall	<b>A5E35778738</b>
Spare lid with HMI, MultiRanger 200 HMI/HydroRanger 200 HMI, panel	<b>A5E35778740</b>
SmartLinx DeviceNet module	<b>7ML1830-1HT</b>
SmartLinx PROFIBUS DP-V1 module	<b>A5E35778741</b>
SmartLinx PROFINET IO module	<b>7ML1830-1PM</b>
SmartLinx Modbus TCP/IP, EtherNet/IP module	<b>7ML1830-1PN</b>

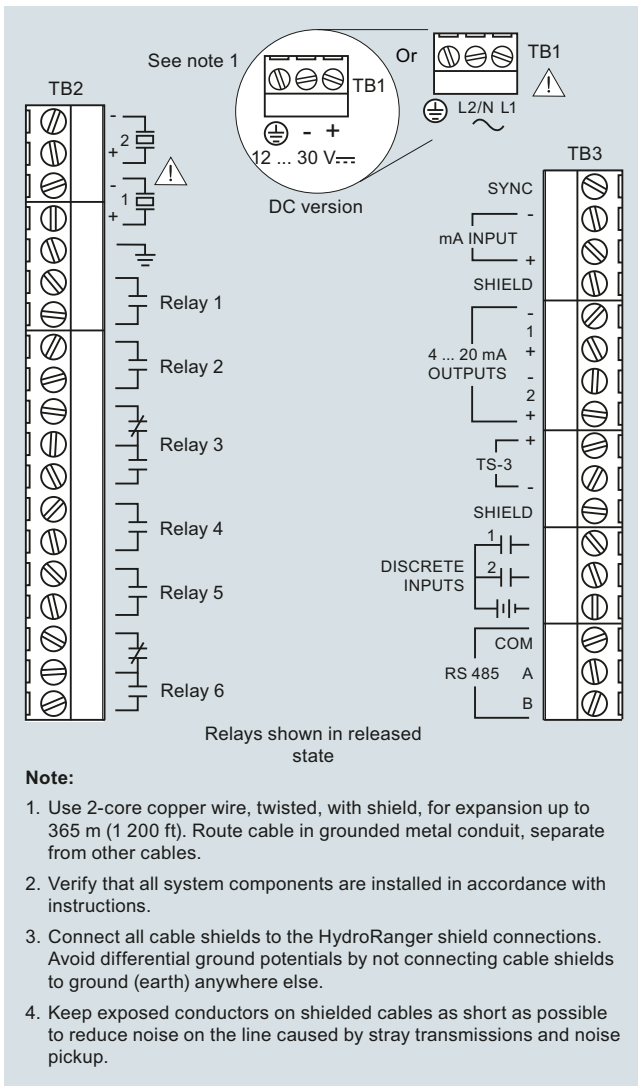
**Level measurement**

Continuous level measurement  
Controllers

**HydroRanger 200 HMI****Dimensional drawings****Panel mount dimensions****Wall mount dimensions**

HydroRanger 200 HMI, dimensions in mm (inch)

## Circuit diagrams



HydroRanger 200 HMI connections

## Level measurement

Continuous level measurement  
Controllers

### HydroRanger 200

#### 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



#### 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 <sup>1)</sup>	Rating 5 A at 250 V AC, non-inductive
• Model with 1 relay <sup>2)</sup>	1 SPST Form A
• Model with 3 relays <sup>2)</sup>	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 <sup>3)</sup>
Temperature compensation	<ul style="list-style-type: none"> <li>-50 ... +150 °C (-58 ... +302 °F)</li> <li>Integral temperature sensor in transducer</li> <li>External TS-3 temperature sensor (optional)</li> <li>Programmable fixed temperature values</li> </ul>
Rated operating conditions	
Installation conditions	Indoor / outdoor
• Location	II
• Installation category	4
• Pollution degree	
Ambient conditions	
• Ambient temperature (enclosure)	-20 ... +50 °C (-4 ... +122 °F)
• Storage temperature	-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 <sup>2</sup> (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 supply <sup>4)</sup>	
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"> <li>CE, RCM, EAC, KCC<sup>5)</sup></li> <li>Lloyd's Register of Shipping</li> <li>ABS Type Approval</li> <li>FM, CSA<sub>US/C</sub>, UL listed</li> <li>CSA<sub>US/C</sub> 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)</li> <li>MCERTS Class 3 approved for Open Channel Flow</li> </ul>
Communication	
	<ul style="list-style-type: none"> <li>RS 232 with Modbus RTU or ASCII via RJ-11 connector</li> <li>RS 485 with Modbus RTU or ASCII via terminal blocks</li> <li>Optional: SmartLinX cards for <ul style="list-style-type: none"> <li>- PROFIBUS DP</li> <li>- DeviceNet</li> </ul> </li> </ul>

<sup>1)</sup> All relays certified for use with equipment that fails in a state at or under the rated maximums of the relays

<sup>2)</sup> This model is level control only; no open channel flow, differential level or volume conversion functions

<sup>3)</sup> Program range is defined as the empty distance to the face of the transducer plus any range extension

<sup>4)</sup> Maximum power consumption is listed

<sup>5)</sup> EMC performance available upon request

## Level measurement

Continuous level measurement  
Controllers

### HydroRanger 200

#### Selection and ordering data

#### Article No.

#### Order code

##### HydroRanger 100/200 Ultrasonic level controller

Continuous, non-contact, 15 m (50 ft) range.  
Monitors level, volume, and open channel flow in liquids, slurries, and solids.

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

##### Mounting

Wall mount, standard enclosure  
Wall mount, 4 entries, 4 M20 cable glands included  
Panel mount<sup>1)</sup>

##### Power supply

100 ... 230 V AC  
12 ... 30 V DC

##### Number of measurement points

Single point model, 6 relays  
Dual point model, 6 relays  
Single point model, level only, 1 relay<sup>2)</sup>  
Single point model, level only, 3 relays<sup>2)</sup>

##### Communication (SmartLinX)

Without module  
SmartLinX PROFIBUS DP module  
SmartLinX DeviceNet module  
See SmartLinX product on page 4/348 for more information.

##### Approvals

General Purpose CE, FM, CSA<sub>US/C</sub>, 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)

<sup>1)</sup> Available with approval option 1 only.

<sup>2)</sup> This model is level control only; no open channel flow, differential level, or volume conversion functions.

7ML5034-

1	A	0	1
2	B	2	2
3	C	3	
	D		

##### 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

Handheld programmer

Article No.

A5E36563512

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

SITRANS RD100, loop powered display - see Chapter 7

7ML5741-...

SITRANS RD150, remote digital display for 4 ... 20 mA and HART devices - see Chapter 7

7ML5742-.....-....

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

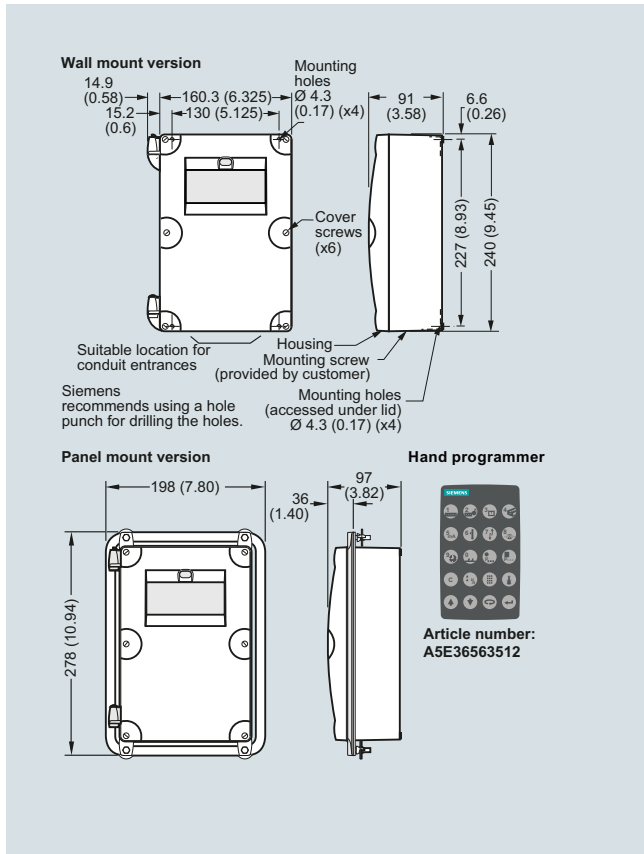
MultiRanger 100/200/HydroRanger 200 display, non-HMI

7ML1830-1MF

Removable terminal blocks

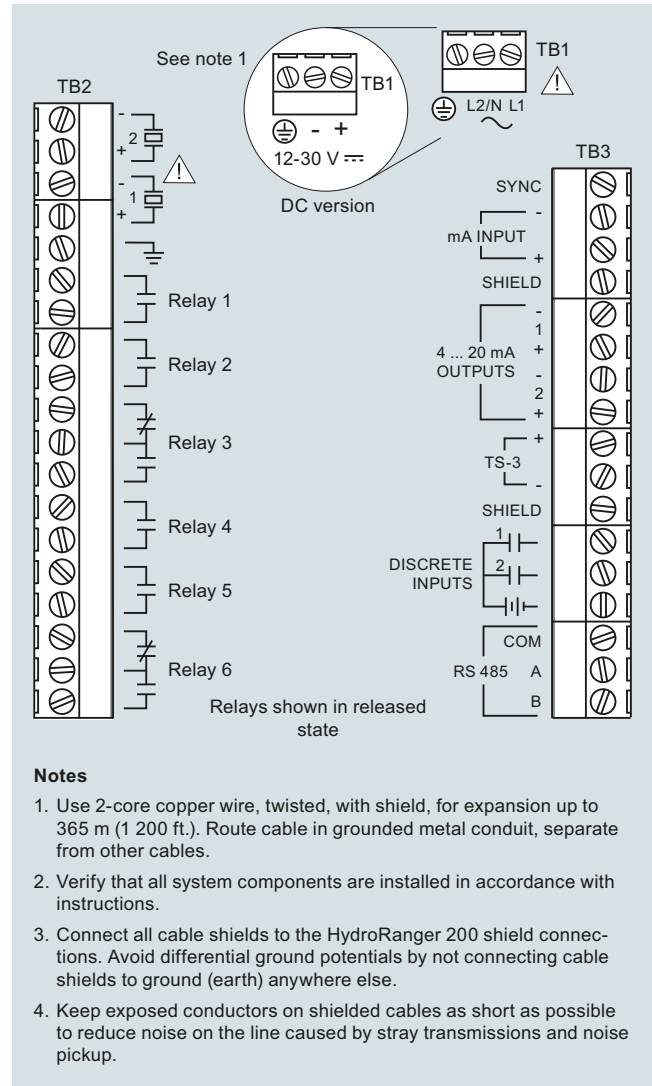
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**Dimensional drawings**



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

## Level measurement

Continuous level measurement

Ultrasonic

### Introduction

#### 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:

Distance = (Velocity of Sound x 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.

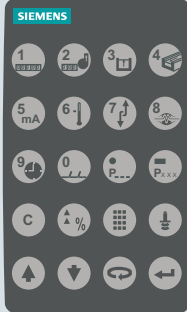
**Technical specifications**

**Ultrasonic Transmitter Selection Guide**

Criteria	SITRANS Probe LU	SITRANS Probe LU240	SITRANS LU150/LU180
Range	6 m (20 ft) or 12 m (40 ft)	0.2 ... 6 m (8 inch ... 20 ft) 0.2 ... 12 m (8 inch ... 40 ft)	0.25 ... 5 m (0.8 ... 16.4 ft)
Typical applications	Chemical storage vessels, filter beds, liquid storage vessels	Chemical storage vessels, filter beds, liquid storage vessels	Chemical storage vessels, filter beds, mud pits, liquid storage vessels, food applications
Output	HART model: 4 ... 20 mA/HART PROFIBUS PA model: PROFIBUS	4 ... 20 mA/HART	4 ... 20 mA loop powered
Communications	HART or PROFIBUS PA  Options: SIMATIC PDM for remote configuration and diagnostics	HART, SIMATIC PDM	N/A
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	HART: 4 ... 20 mA, 10.5 ... 30 V DC	12 ... 30 V DC, 0.1 A surge, max. 600 Ω in the loop at 24 V DC
Approvals	CE, CSA <sub>US/C</sub> , FM, RCM, ATEX, IECEx	FM, CSA <sub>US/C</sub> , CE, RCM, ATEX, IECEx, FM, INMETRO, NEPSI, SABS	CE, CSA <sub>US/C</sub> , FM, ATEX, RCM, NEPSI, IECEx

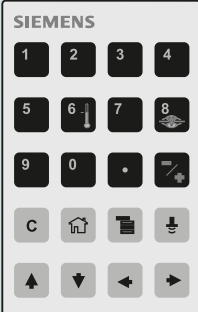
4

**A5E36563512**



**MultiRanger 100/200**  
**HydroRanger 200**  
**SITRANS Probe LU HART\***  
**SITRANS LU**

**7ML5830-2AJ**



**SITRANS Probe LU PROFIBUS**

\* **Note:** To order the IS version of this hand programmer, order 7ML5830-2AH.

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

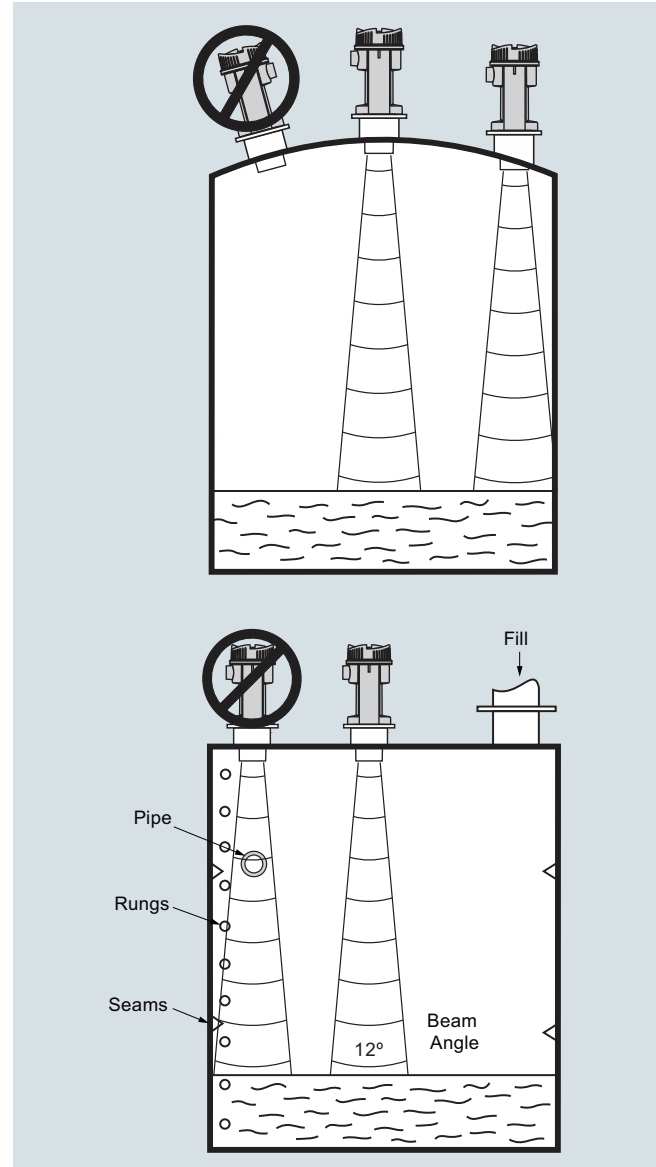
The transducer is available in PVDF copolymer, making the device suitable for use in a wide variety of applications.

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

### 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 <sub>US/C</sub>
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)
Storage 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"> <li>• 2" NPT [(Taper), ANSI/ASME B1.20.1]</li> <li>• R 2" [(BSPT), EN 10226]</li> <li>• G 2" [(BSPP), EN ISO 228-1]</li> <li>• 4" sanitary</li> </ul>
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 Ultrasonic level transmitter**  
 Continuous, non-contact, 5 m (16.4 ft) range.  
 Monitors level in liquids and slurries.  
 Basic level performance.

➤ 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)

#### 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

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" BSP nylon plastic locknut

2" NPT nylon plastic locknut

Cable Gland - General Purpose -20 ... +60 °C (-4 ... +140 °F)

### Article No.

<b>7ML5201-</b>
0 ■ 0
E
F
G
J
B
C

### Order code

**Y15**

**C11**

### Article No.

**7ML1930-1AC**

**7ML1830-1BK**

**7ML1830-1BR**

**7ML1830-1BT**

**7ML1830-1BU**

**7ML1830-1DQ**

**7ML1830-1DT**

**A5E34457564**

## Level measurement

Continuous level measurement

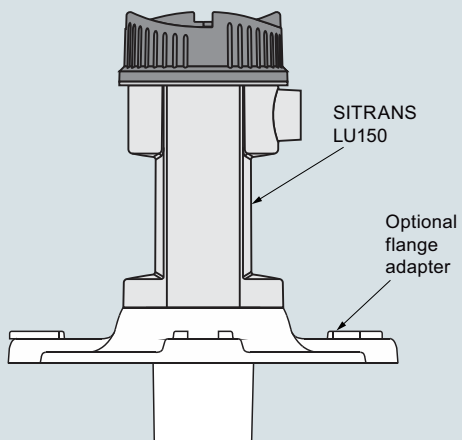
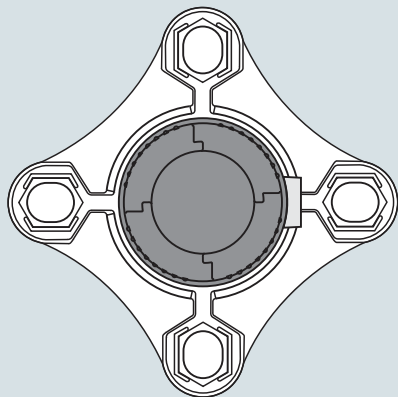
Ultrasonic transmitters

### 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.

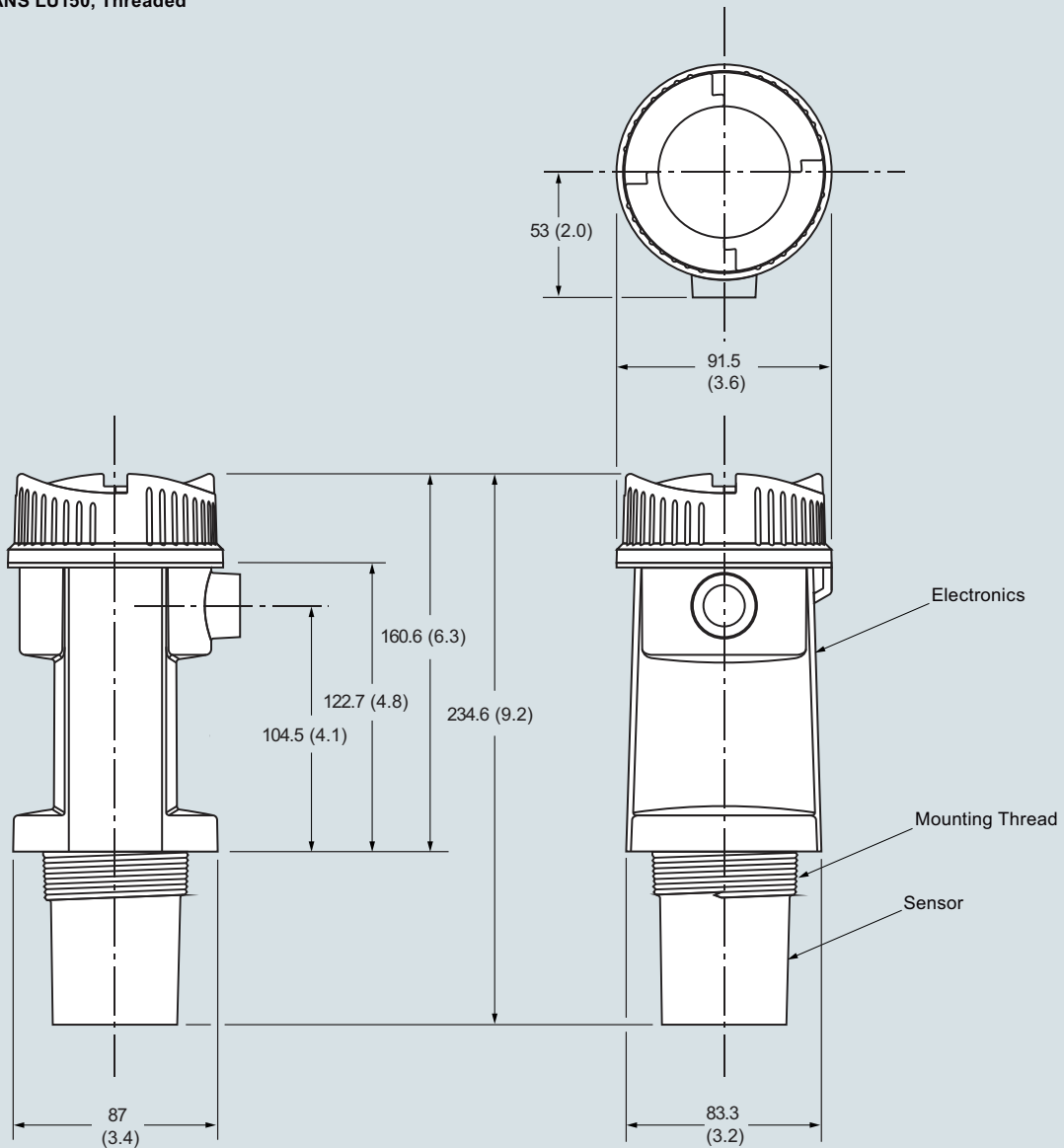


SITRANS LU150 optional flange adapter, dimensions in mm (inch)



**Dimensional drawings**

SITRANS LU150, Threaded



SITRANS LU150, dimensions in mm (inch)

## Level measurement

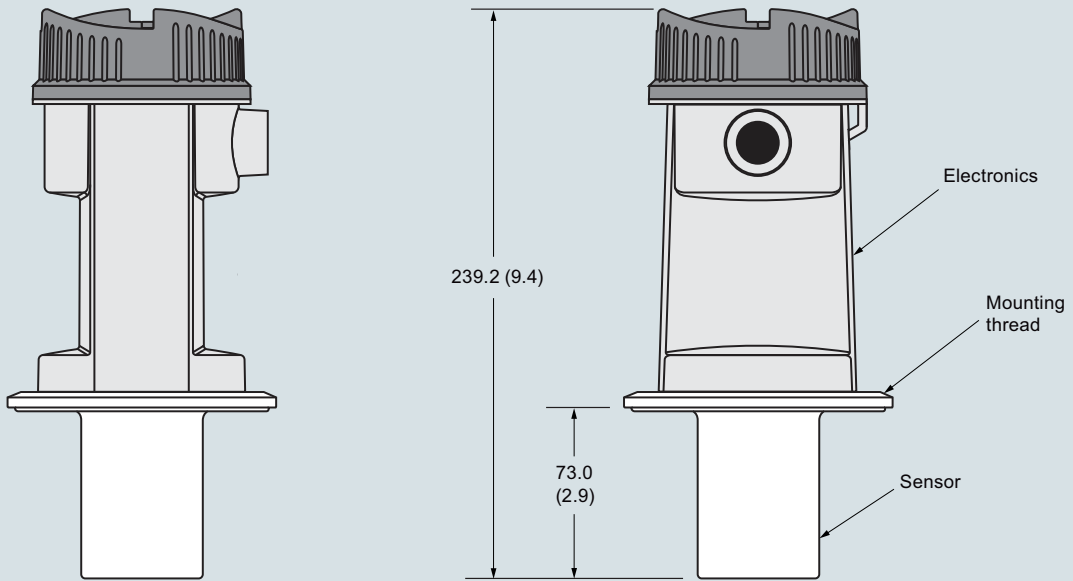
Continuous level measurement

Ultrasonic transmitters

### SITRANS LU150

#### Dimensional drawings (continued)

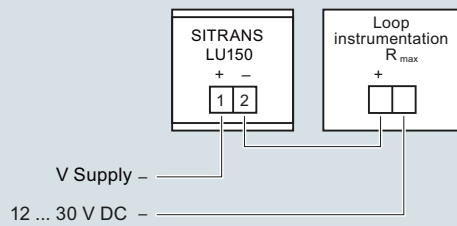
##### SITRANS LU150, Sanitary



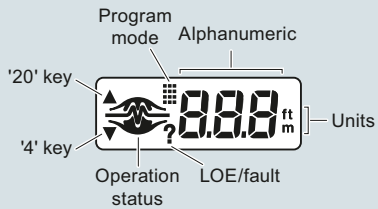
SITRANS LU150, dimensions in mm (inch)

#### 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

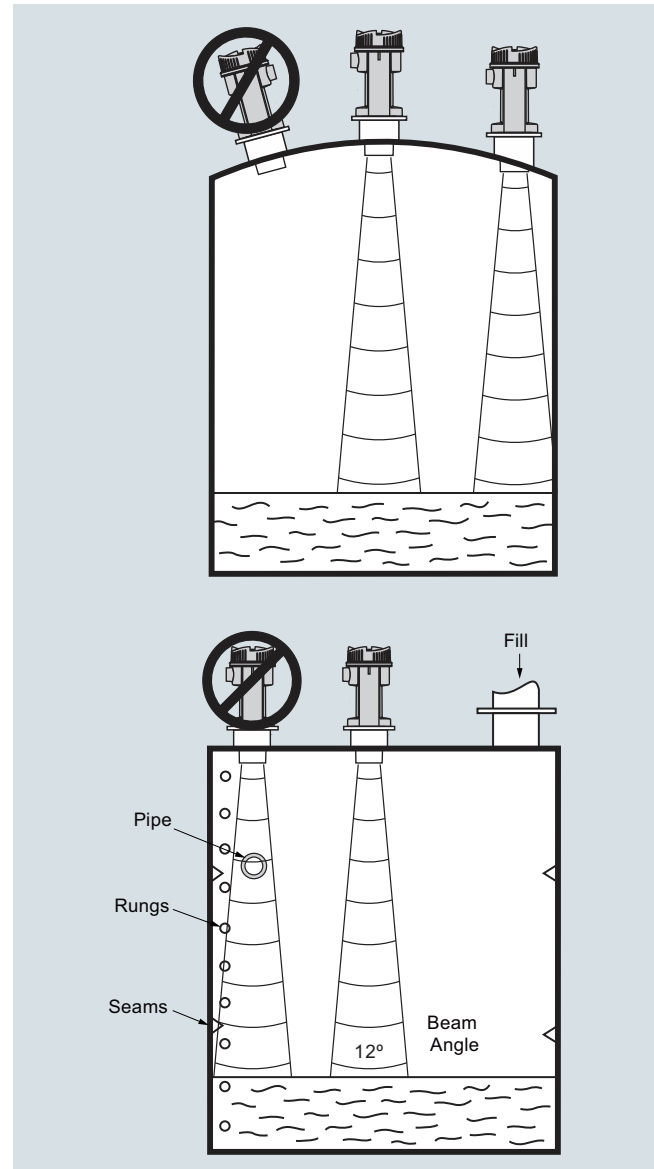
- Easy to install, program, and maintain
- Accurate and reliable
- Sanitary models available
- Patented Sonic Intelligence echo processing
- Integral temperature compensation

## 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

<b>Mode of operation</b>	
Measuring principle	Ultrasonic level measurement
<b>Input</b>	
Measuring range	0.25 ... 5 m (0.8 ... 16.4 ft)
Frequency	54 kHz
<b>Output</b>	
mA	4 ... 20 mA
• Span	Proportional/ inversely proportional
• Max. load	600 Ω in the loop at 24 V DC
<b>Power supply</b>	
Supply voltage	12 ... 30 V DC, 0.1 A surge
Max. power consumption	0.75 W (25 mA at 24 V DC)
<b>Certificates and approvals</b>	
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	
<b>Accuracy</b>	
Error in measurement	0.25 % of measuring range (in air)
Resolution	3 mm (0.125 inch)
Temperature compensation	Built in
Echo processing	Sonic Intelligence
<b>Rated operation conditions</b>	
Beam angle	12°
Ambient temperature	
• Standard	-40 ... +60 °C (-40 ... +140 °F)
• Metallic mounting	-20 ... +60 °C (-4 ... +140 °F)
Storage temperature	
• Standard	-40 ... +60 °C (-40 ... +140 °F)
• Metallic mounting	-20 ... +60 °C (-4 ... +140 °F)
Max. static operating pressure	Normal atmospheric pressure
<b>Design</b>	
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"> <li>• 2" NPT [(Taper), ANSI/ASME B1.20.1]</li> <li>• R 2" [(BSPT), EN 10226]</li> <li>• G 2" [(BSPP), EN ISO 228-1]</li> <li>• 4" sanitary</li> </ul>
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 Ultrasonic level transmitter**  
Continuous, non-contact, 5 m (16.4 ft) range. Monitors level in liquids and slurries. Basic level performance for intrinsically safe applications.

↗ 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)

#### 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

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" BSP nylon plastic locknut

2" NPT nylon plastic locknut

Cable Gland, General Purpose -20 ... +60 °C (-4 ... +140 °F)

#### Article No.

<b>7ML5202-</b>
<b>0</b> ■ <b>0</b>
<b>E</b>
<b>F</b>
<b>G</b>
<b>J</b>
<b>B</b>
<b>C</b>

#### Order code

**Y15**

**C11**

#### Article No.

**7ML1930-1AC**

**7ML1830-1BK**

**7ML1830-1BR**

**7ML1830-1BT**

**7ML1830-1BU**

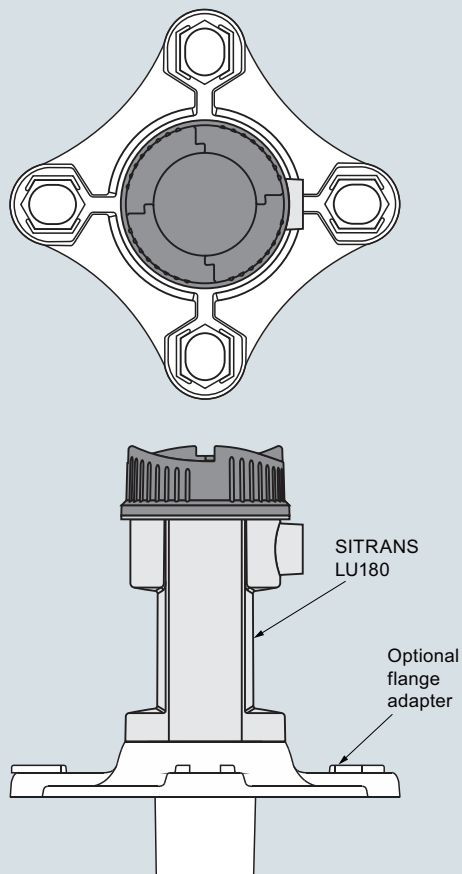
**7ML1830-1DQ**

**7ML1830-1DT**

**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**

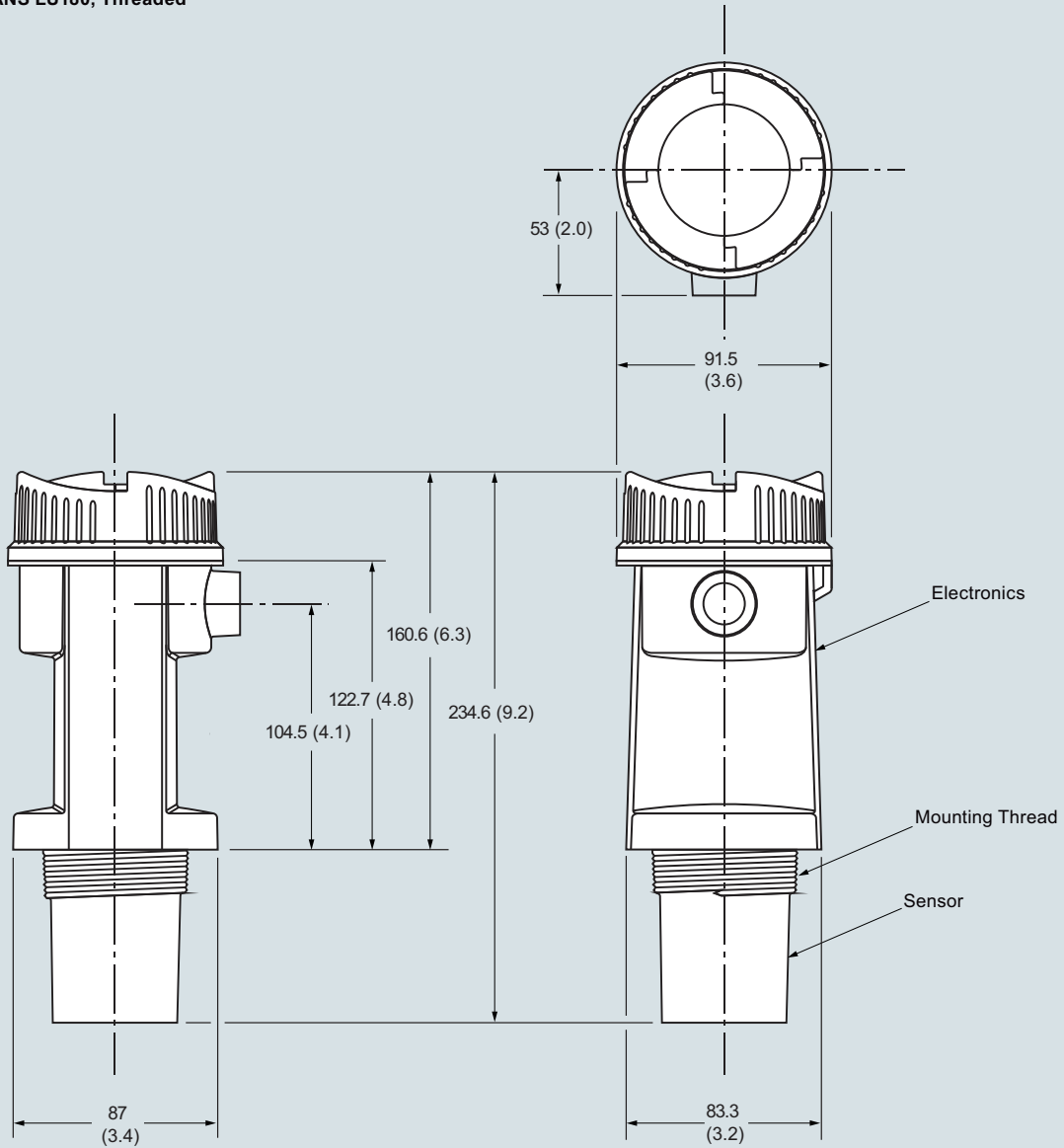
Continuous level measurement

Ultrasonic transmitters

**SITRANS LU180**

**Dimensional drawings**

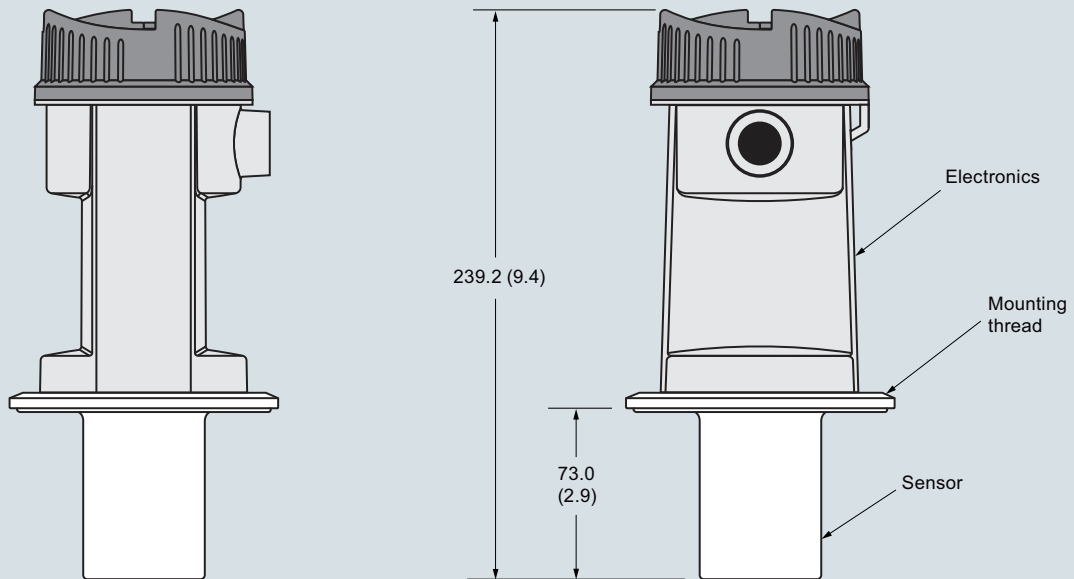
SITRANS LU180, Threaded



SITRANS LU180, dimensions in mm (inch)

**Dimensional drawings** (continued)

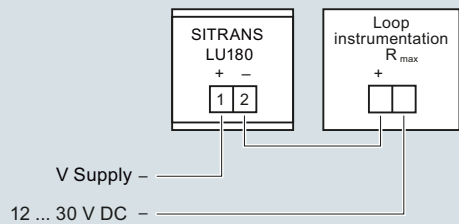
SITRANS LU180, Sanitary



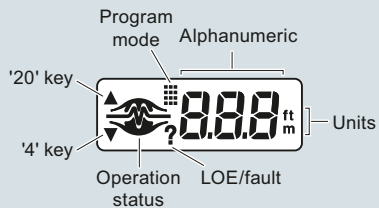
SITRANS LU180, dimensions in mm (inch)

**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.

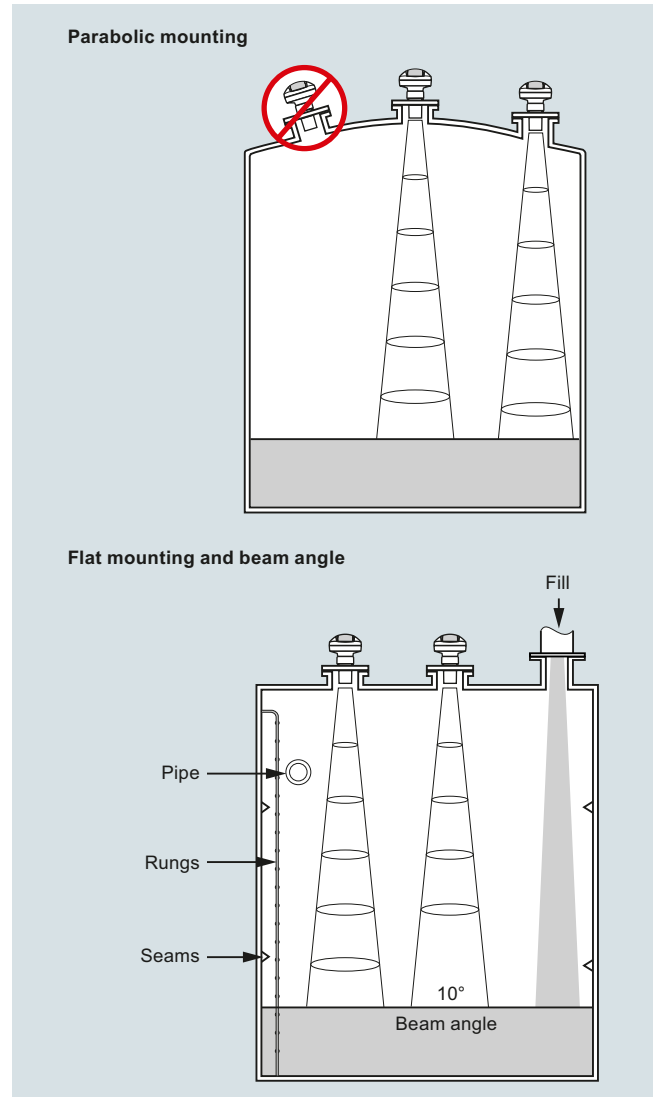
The range of SITRANS Probe LU is 6 or 12 m (20 or 40 ft). Using Sonic Intelligence, Auto False Echo Suppression for fixed obstruction avoidance, and accuracy of 0.15 % of range or 6 mm (0.25 inch), the Probe LU provides unmatched reliability.

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



SITRANS Probe LU mounting



#### Technical specifications

<b>Mode of operation</b>		<b>Process connection</b>	
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
<b>Inputs</b>		Other connection	FMS 200 mounting bracket (see page 5/189) or customer supplied mount
Measuring range		<b>Display and Controls</b>	
• 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
<b>Outputs</b>		<b>Power supply</b>	
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	<b>Certificates and Approvals</b>	
PROFIBUS PA	Profile 3, Class B	General	CSA <sub>US/C</sub> , FM, CE, RCM
<b>Performance</b>		Marine (only applies to HART communication option)	• Lloyd's Register of Shipping • ABS Type Approval
Resolution	≤ 3 mm (0.12 inch)	Hazardous	
Accuracy	± 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	<b>Handheld Programmer</b>	
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
<b>Rated operating conditions</b>		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)		
• Storage 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)		
<b>Design</b>			
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

#### Article No.

#### Order code

#### SITRANS Probe LU Ultrasonic level transmitter

Continuous, non-contact, up to 12 m (40 ft) range.  
Monitors level and volume in liquids and slurries.  
With optional PROFIBUS PA.

➤ 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<sub>US/CA</sub>: CE, RCM, KCC  
Non-incendive, FM Class I, Div. 2, Groups A, B, C, D T5<sup>1)</sup>  
Intrinsically Safe, CSA/FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III T4<sup>2)</sup>  
Intrinsically Safe ATEX 1G/IECEx/INMETRO Ex ia IIC T4 Ga, RCM, KCC<sup>2)</sup>  
Intrinsically Safe ATEX 1G/IECEx/INMETRO Ex ia IIC T4 Ga, RCM, KCC<sup>3)</sup>  
Intrinsically safe, CSA/FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III T4<sup>3)</sup>

- 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.	Order code
7ML5221-	
0	
1	
2	
A	
B	
C	
D	
A	
B	
C	
1	
2	
1	
4	
5	
6	
7	
8	

#### 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 for HART/mA device

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

Article No.

7ML5830-2AH

A5E36563512

7ML5830-2AJ

HART modem/USB (for use with a PC and SIMATIC PDM)

7MF4997-1DB

2" BSP nylon plastic locknut

7ML1830-1DQ

2" NPT nylon plastic locknut

7ML1830-1DT

3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" NPT

7ML1830-1BT

3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" BSPT

7ML1830-1BU

One General Purpose polymeric cable gland M20 x 1.5, rated for -20 ... +80 °C (-4 ... +176 °F)

7ML1930-1AM

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)

7ML1930-1AP

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

7ML1930-1AQ

Universal box bracket, FMS-200

7ML1830-1BK

Probe LU rock guard and sunshield

7ML1930-1GH

SITRANS RD100, loop powered display - see Chapter 7

7ML5741-.....-

SITRANS RD150, remote digital display for 4 ... 20 mA and HART devices - see Chapter 7

7ML5742-.....-

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-.....-

For applicable back up point level switch see point level measurement section.

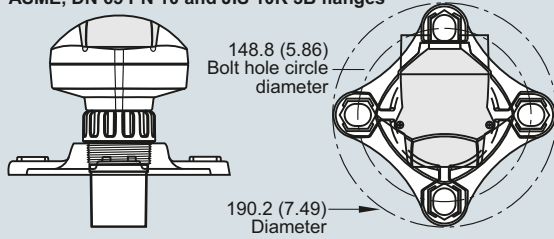
#### Spare Parts

Plastic lid

7ML1830-1KB

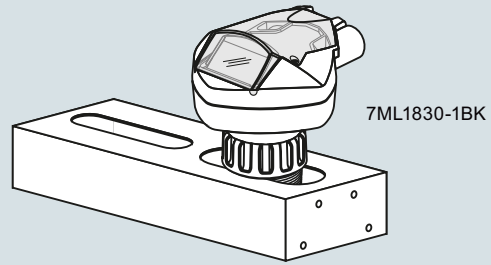
**Options**

Flange adapter for mating 2" NPT or 2" BSP process connections to 3" ASME, DN 65 PN 10 and JIS 10K 3B flanges



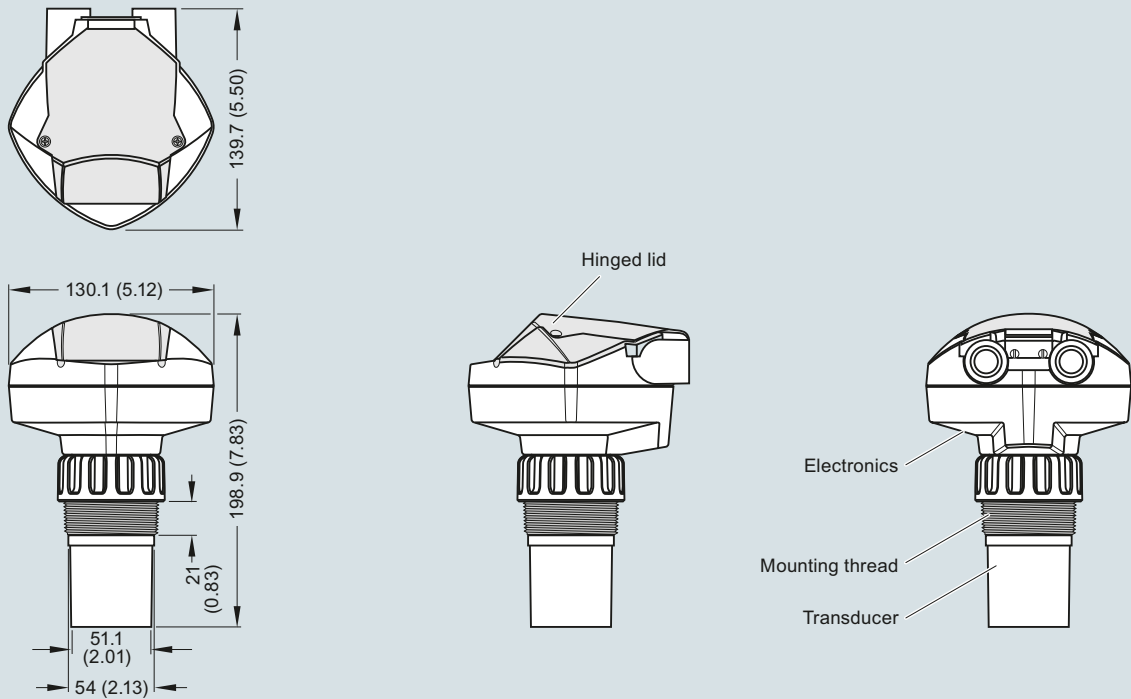
SITRANS Probe LU optional flange adapter, dimensions in mm (inch)

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.

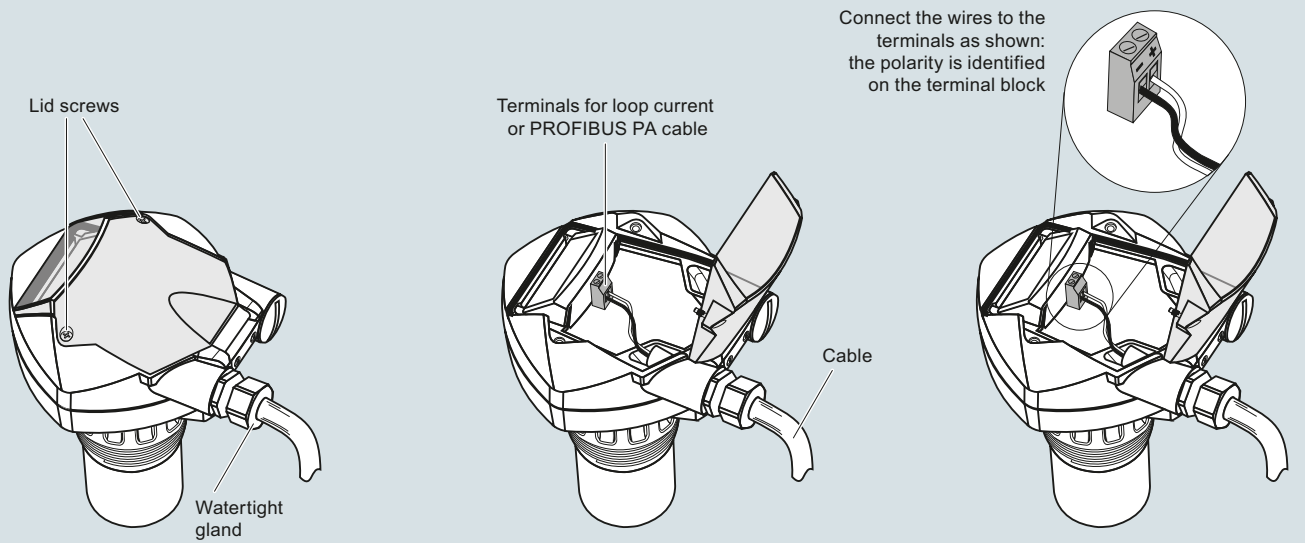
SITRANS Probe LU, dimensions in mm (inch)

## 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



SITRANS Probe LU240 ultrasonic level transmitter, ideal for level, volume, and volume flow measurements. It works with liquids, slurries, and bulk materials up to 12 m (40 ft).

### Benefits

- Continuous level measurement up to 12 m (40 ft) range
- Easy installation and simple startup
- Programming using 4-button HMI or SIMATIC PDM
- Communication using HART
- ETFE or PVDF transducers for chemical compatibility
- Process Intelligence signal processing
- Auto False Echo Suppression for fixed obstruction avoidance
- Low power and current startup

### Application

SITRANS Probe LU240 is ideal for level monitoring in the water and wastewater industry, chemical storage vessels, and small bulk hoppers.

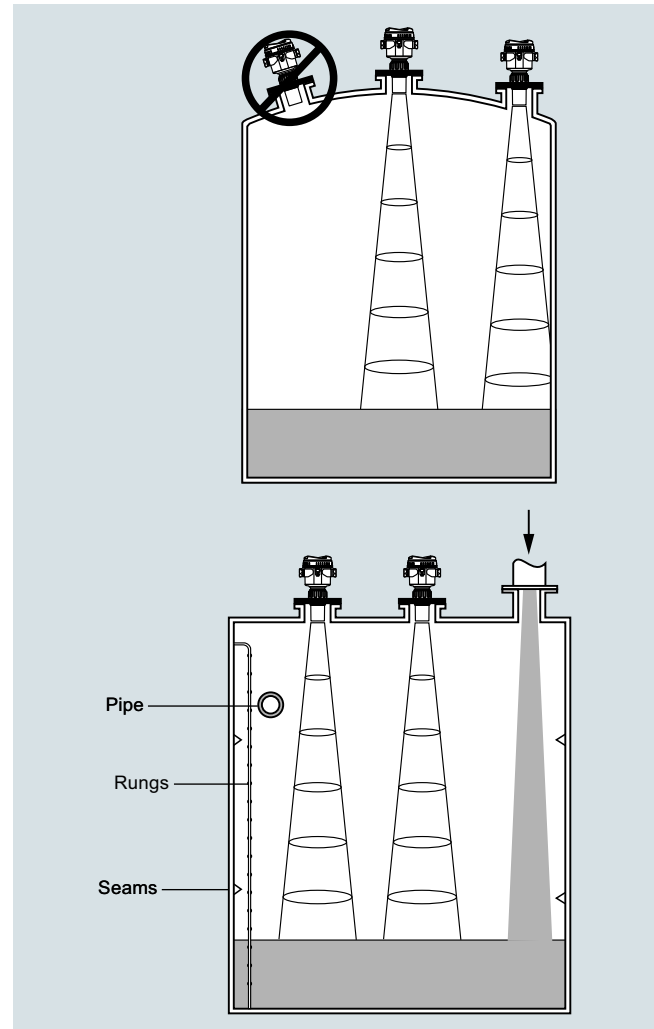
The range of SITRANS Probe LU240 is 3, 6, or 12 m (10, 20, or 40 ft). Probe LU240 provides unmatched reliability, using Process Intelligence, Auto False Echo Suppression for fixed obstruction avoidance, and accuracy of 0.15 % of range or 6 mm (0.25 inch) (on 6 m and 12 m models only).

SITRANS Probe LU240 offers HART communication on certain models and mA output on all models.

The transducer on the Probe LU240 is available as ETFE or PVDF to suit the chemical conditions of your application. As well, for applications with varying material and process temperatures, Probe LU240 incorporates an internal temperature sensor to compensate for temperature changes.

- Key Applications: chemical storage vessels, filter beds, liquid storage vessels

### Configuration



SITRANS Probe LU240 mounting

## Level measurement

Continuous level measurement  
Ultrasonic transmitters

### SITRANS Probe LU240

#### Technical specifications

<b>Mode of operation</b>		<b>Process connection</b>	
Measuring principle	Ultrasonic level measurement	Threaded connection	2" NPT [(Taper), 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
<b>Inputs</b>		Other connection	FMS 200 mounting bracket (see page 4/186) or customer supplied mount
Measuring range		<b>Display and Controls</b>	
• 3 m (10 ft)	0.2 ... 3 m (8 inch ... 10 ft)	Interface	Local: LCD display Remote: Available via HART
• 6 m (20 ft) model	0.2 ... 6 m (8 inch ... 20 ft)	Configuration	4-button HMI
• 12 m (40 ft) model	0.2 ... 12 m (8 inch ... 40 ft)	Memory	Non-volatile EEPROM, no battery required
Frequency	54 kHz	<b>Power supply</b>	
<b>Outputs</b>		4 ... 20 mA/HART	10.5 ... 30 V DC
mA/HART		<b>Certificates and Approvals</b>	
• Range	4 ... 20 mA	General	FM, cCSA <sub>US</sub> , CE, RCM, EAC, KC, VLAREM
• Accuracy	± 0.02 mA	Hazardous	
• HART version	7	• Intrinsically Safe	
• Startup current	3.6 mA	- Europe	ATEX II 1G Ex ia IIC T4 Ga IECEX SIR 18.0013X Ex ia IIC T4 Ga
• Fail-safe	Programmable as high, low, or hold (loss of echo) per NAMUR NE43	- International	FM/cCSA <sub>US</sub> Class I, Div. 1, Groups A, B, C, D, Class II, Div. 1, Groups E, F, G, Class III T4
<b>Performance</b>		- USA/Canada	INMETRO Ex ia IIC T4 Ga
Resolution	≤ 3 mm (0.12 inch)	- Brazil	NEPSI Ex ia IIC T4 Ga
Accuracy		- China	SABS Ex ia IIC Tx Ga
3 m (10 ft)	10 mm (0.39 inch)	- South Africa	EAC Ex 1G Ex ia IIC T4 Ga
6 m (20 ft), 12 m (40 ft)	± the greater of 0.15 % of range or 6 mm (0.25 inch) [valid from 0.25 m (0.82 ft)]	- Russia	KOSHA KSs Ex ia IIC T4
Non-repeatability	≤ 3 mm (0.12 inch)	- Korea	
Blanking distance	0.2 m (0.66 ft)	• Non-incendive	
Update time	≤ 4 s	- USA	FM, Class I, Div. 2, Groups A, B, C, D Tx
Temperature compensation	Built-in to compensate over temperature range	Marine	Lloyd's Register, American Bureau of Shipping (ABS), DNV GL, Bureau Veritas, CCS
Beam angle	10°	Metrological	MCERTS, CPA, Kazakhstan pattern approval
<b>Rated operating conditions</b>			
Ambient conditions			
• Location	Indoor/outdoor		
• Ambient temperature	• Storage: -40 ... +85 °C (-40 ... +185 °F) • Operating: -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)		
Display	-20 ... +80 °C (-4 ... +176 °F)		
<b>Design</b>			
Material (enclosure)	PBT (Polybutylene Terephthalate)		
Degree of protection	Type 4X, Type 6, IP66, IP68		
Weight	0.93 kg (2.1 lb)		
Cable inlet	2 x M20 x 1.5 cable gland or 1 x ½" NPT thread		
Material (transducer)	ETFE (Ethylene Tetrafluoroethylene) or PVDF (Polyvinylidene Fluoride) Buna-N seal		

Selection and ordering data	Article No.	Order code
<b>SITRANS Probe LU240 Ultrasonic level transmitter</b> Continuous, non-contact, up to 12 m (40 ft) range. Monitors level, volume, and volume flow (model dependent) in liquids, slurries, and solids. With easy to use quick start wizards. <a href="#">Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</a>	<b>7ML51-</b> 	<b>Further designs</b> 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. 32 characters) specify in plain text <b>Y15</b> <b>Certificates</b> Test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000 <b>C11</b> Certificate EN 10204-2.2 <b>C14</b> <b>Approvals<sup>3)</sup></b> ATEX, SABs, IECEx - 1G, EAC Ex, Ex ia IIC T4 Ga <b>E31</b> FM non-incendive - Class I, Div. 2, Groups A, B, C, D T5 (Ta = 80 °C), T6 (Ta = 40 °C) <sup>1)</sup> <b>E32</b> NEPSI, KCs, IECEx - Ex ia IIC T4 Ga <b>E33</b> cCSA <sub>US</sub> , KCs, FM - Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G, T4, INMETRO, IECEx - Ex ia IIC T4 Ga <sup>1)</sup> <b>E34</b> <b>Marine approvals<sup>4)</sup></b> DNV-GL Det Norske Veritas/Germanischer Lloyd <b>E50</b> LR Lloyds Register <b>E51</b> BV Bureau Veritas <b>E52</b> ABS American Bureau of Shipping <b>E53</b> China Classification Society (CCS) <b>E58</b> For customs, contact a local sales person. For more information please visit <a href="http://www.usa.siemens.com/level">http://www.usa.siemens.com/level</a> .
<b>Communications</b> HART (4 ... 20 mA) level, volume, volume flow <sup>5)</sup> 4 ... 20 mA level <sup>6)</sup>	<b>0</b>  <b>7</b>	
<b>Ingress protection</b> IP66, IP68, Type 4X, 6	<b>1</b>	
<b>Measurement range/wetted parts</b> 200 ... 3 000 mm (7.87 ... 118.11 inch), PVDF Copolymer 200 ... 3 000 mm (7.87 ... 118.11 inch), ETFE 200 ... 6 000 mm (7.87 ... 236.22 inch), PVDF Copolymer 200 ... 6 000 mm (7.87 ... 236.22 inch), ETFE 200 ... 12 000 mm (7.87 ... 472.44 inch), PVDF Copolymer 200 ... 12 000 mm (7.87 ... 472.44 inch), ETFE	<b>B</b> <b>C</b> <b>D</b> <b>E</b> <b>G</b> <b>H</b>	
<b>Process connection</b> 2" NPT [(Taper), ASME B1.20.1] R 2" [(BSPT), EN 10226] G 2" [(BSPP), EN ISO 228-1]	<b>D</b> <b>E</b> <b>F</b>	
<b>Non-wetted parts</b> Plastic (PBT/PC material)	<b>7</b>	
<b>Type of protection</b> Non-Ex (ordinary locations) cCSA <sub>US</sub> , CE, KC, RCM, EAC Non-Ex (ordinary locations) cCSA <sub>US</sub> , FM, CE, KC, RCM, EAC <sup>1)</sup> Ex i (ia) (Ex-Zone 0/Div. 1)/IS, FM NI (Class I, Div. 2) <sup>2)</sup>	<b>A</b> <b>B</b> <b>C</b>	
<b>Electrical connections/cable entries</b> 2 x M20 x 1.5 (one general purpose Polyamide cable gland and one Polyamide blocking plug provided) 1 x 1/2" NPT (no gland cable provided) For custom electrical connections/cable entries, contact a local sales person. For more information please visit: <a href="http://www.usa.siemens.com/level">http://www.usa.siemens.com/level</a>	<b>F</b> <b>K</b>	
<b>Local HMI</b> Without display (blind lid of PBT/PC material) With display (blind lid of PBT/PC material) With display (clear lid of PC material)	<b>0</b> <b>1</b> <b>3</b>	
		<b>Operating Instructions</b> All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>
		<b>Accessories</b> Tag, stainless steel, 12 x 45 mm, one text line (max. 16 characters) <b>7ML1930-1AC</b> Stainless steel FMS200 universal box bracket mounting kit <b>7ML1830-1BK</b> 3" ASME/DIN Universal mounting adapter, 2" NPT, ETFE <b>7ML1830-1BT</b> 3" ASME/DIN Universal mounting adapter, 2" BSP, ETFE <b>7ML1830-1BU</b> 2" NPT nylon plastic locknut <b>7ML1830-1DT</b> 2" BSP nylon plastic locknut <b>7ML1830-1DQ</b> Cable Gland Polyamide - General Purpose (-20 ... +60 °C) <b>A5E34457564</b>
		<b>Spare Parts</b> Spare lid, clear <b>A5E44267491</b> Spare lid, blind <b>A5E44267497</b> Spare o-ring for lid <b>A5E44267501</b> Spare segmented display and 4-button HMI <b>A5E44809382</b>

<sup>1)</sup> Available only with Electrical connections/cable entries option K only.

<sup>2)</sup> Available only with order codes E31, E32, E33, and E34.

<sup>3)</sup> Order codes E31, E32, E33, E34 only available with Type of protection option C.

<sup>4)</sup> Order codes E50, E51, E54, E53, E58 only available with Communications option 0.

<sup>5)</sup> Available only with Measurement range/wetted parts options D, E, G, and H.

<sup>6)</sup> Available only with Measurement range/wetted parts options B and C.

## Level measurement

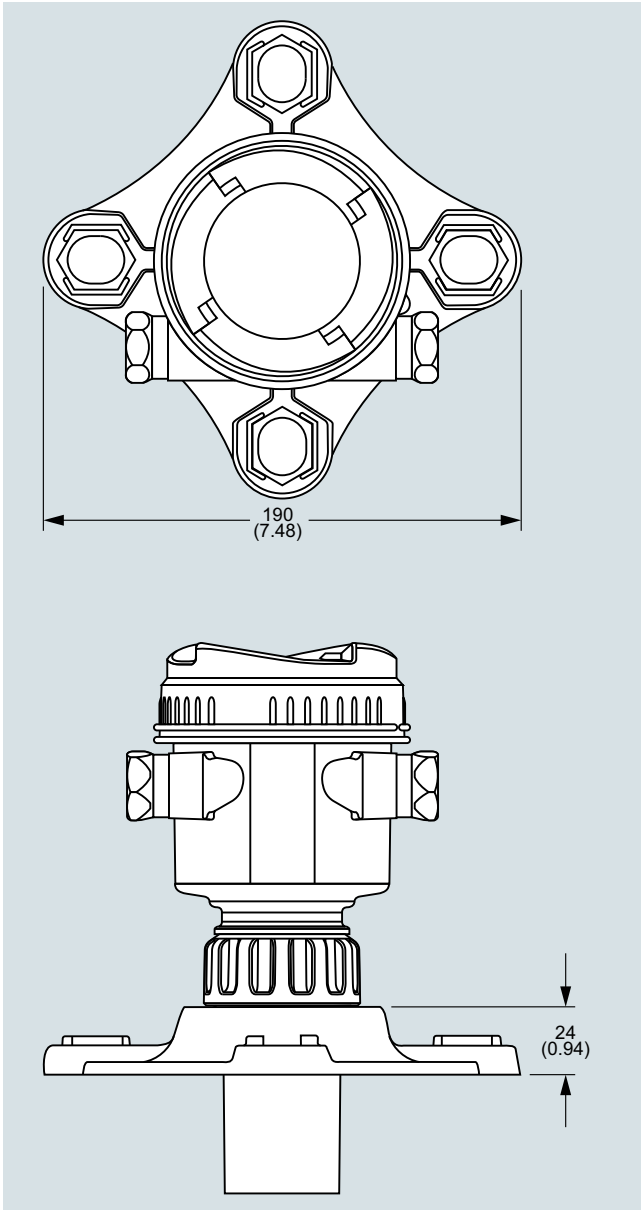
Continuous level measurement

Ultrasonic transmitters

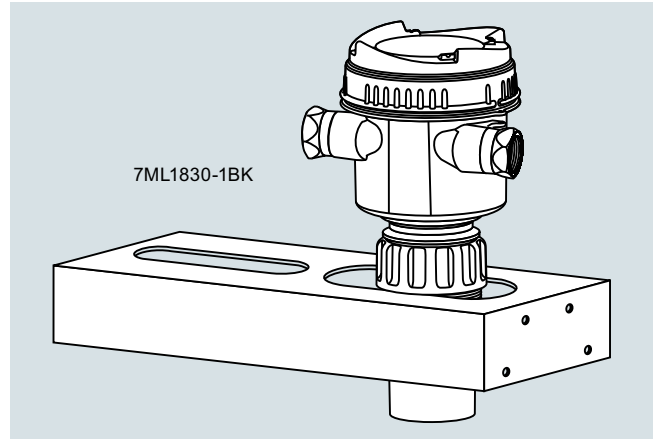
### SITRANS Probe LU240

#### Options

4



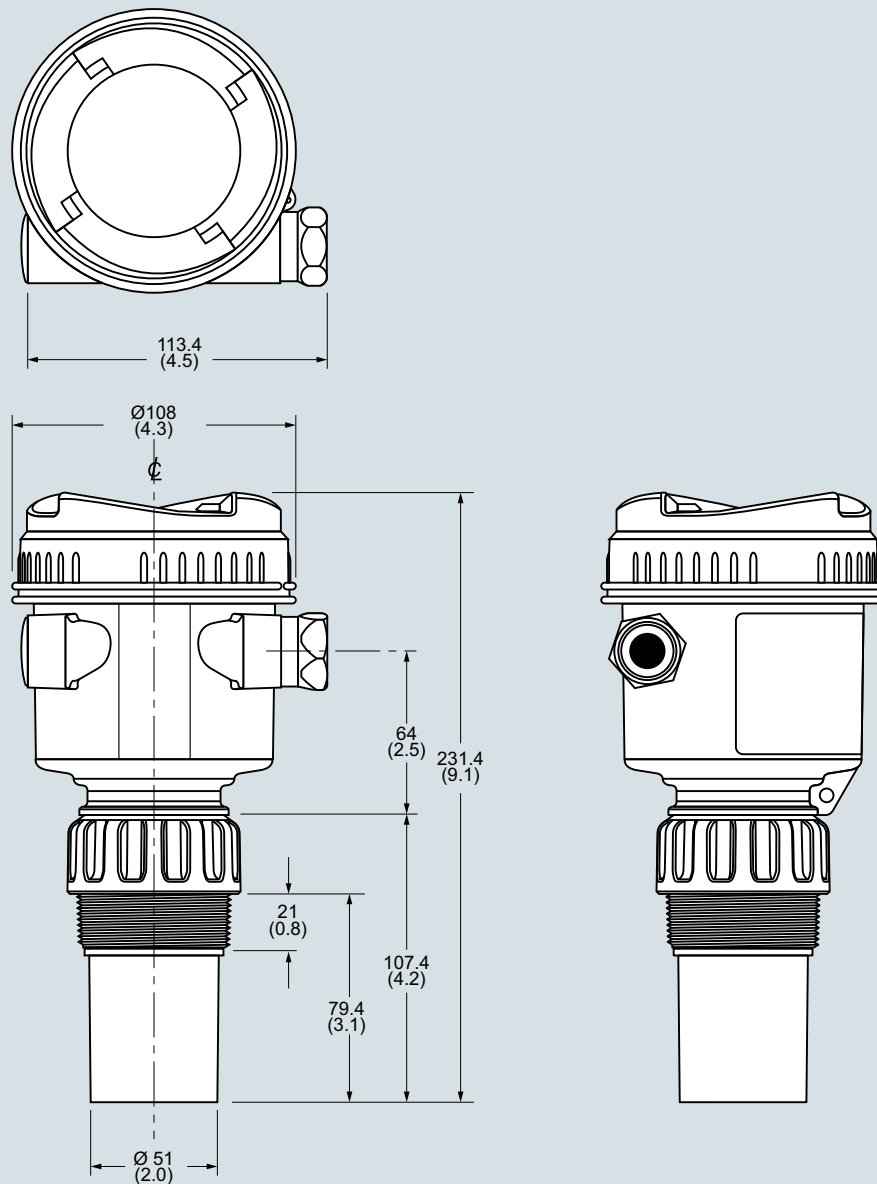
SITRANS Probe LU240 optional flange adapter, dimensions in mm (inch)



SITRANS Probe LU240 with optional FMS 200 universal box bracket



## Dimensional drawings



SITRANS Probe LU240, dimensions in mm (inch)

## Level measurement

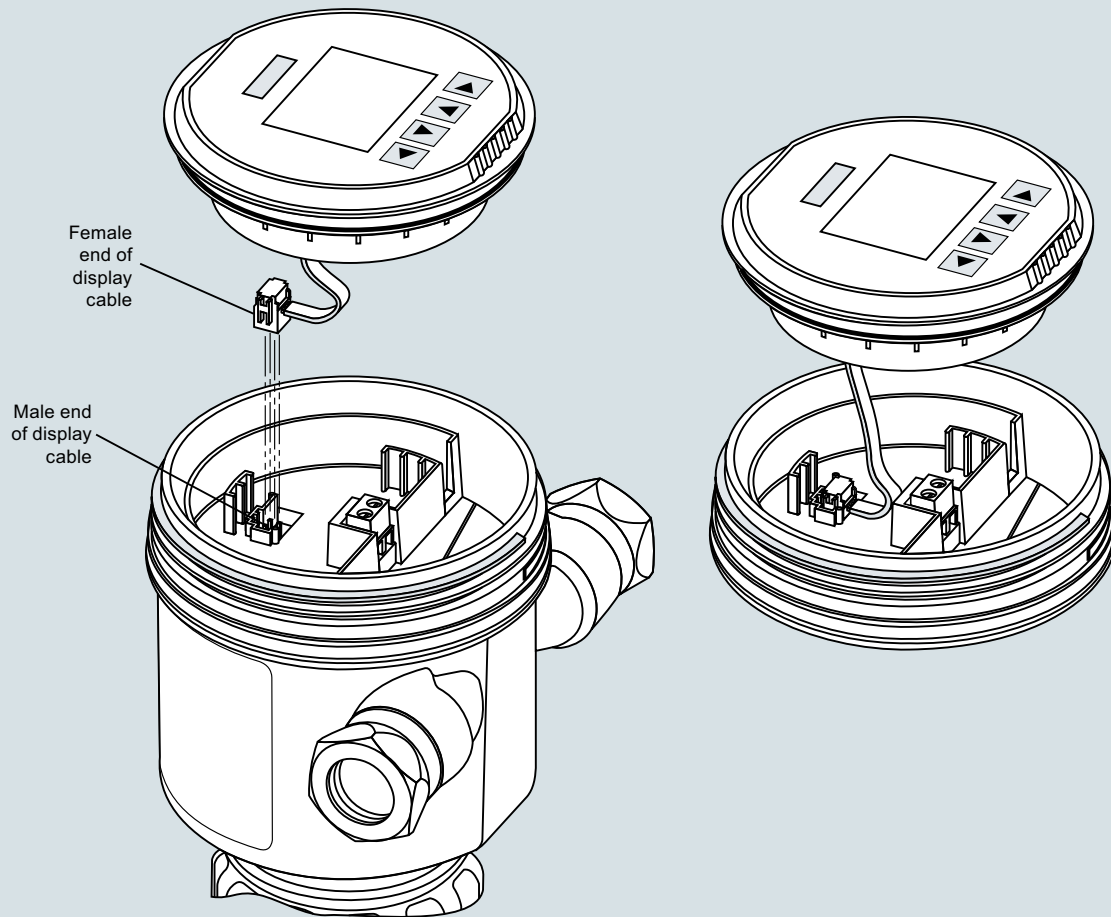
Continuous level measurement

Ultrasonic transmitters

### SITRANS Probe LU240

#### Circuit diagrams

4



SITRANS Probe LU240 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

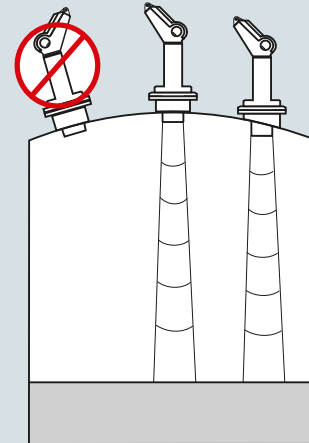
The transducer is available in PVDF copolymer, making the device suitable for use in a wide variety of applications. The Probe is easy to install and maintain, and can be quickly removed for cleaning as required by the food, beverage and pharmaceutical industries.

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.

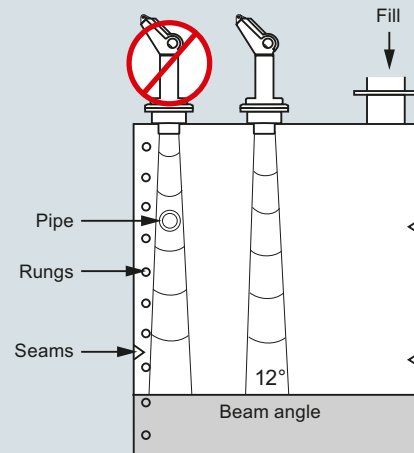
- Key Applications: chemical storage vessels, filter beds, mud pits, liquid storage vessels, food applications

## 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	
<b>Mode of operation</b>	
Measuring principle	Ultrasonic level measurement
<b>Input</b>	
Measuring range	0.25 ... 5 m (0.8 ... 16.4 ft)
Frequency	54 kHz
<b>Output</b>	
mA	4 ... 20 mA
• Span	Proportional/ inversely proportional
• Max. load	750 Ω at 24 V DC
Relay	For level alarm or fault
<b>Power supply</b>	
Supply voltage	18 ... 30 V DC, max. 0.2 A
Max. power consumption	5 W (200 mA at 24 V DC)
<b>Certificates and approvals</b>	
CE, RCM, CSA <sub>US/C</sub> , FM	
<b>Accuracy</b>	
Error in measurement	0.25 % of measuring range (in air)
Resolution	3 mm (0.125 inch)
Temperature compensation	Built in
Echo processing	Sonic Intelligence
<b>Rated operation conditions</b>	
Beam angle	12°
Ambient temperature	
• Standard	-40 ... +60 °C (-40 ... +140 °F)
• Metallic mounting	-20 ... +60 °C (-4 ... +140 °F)
Storage 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
<b>Design</b>	
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"> <li>• 2" NPT [(Taper), ANSI/ASME B1.20.1]</li> <li>• R 2" [(BSPT), EN 10226]</li> <li>• G 2" [(BSPP), EN ISO 228-1]</li> <li>• 4" sanitary</li> </ul>
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 Ultrasonic level transmitter

Continuous, non-contact, 5 m (16.4 ft) range.  
Monitors level for liquids and slurries.  
With 3-wire relay output.

➤ 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

##### 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

##### 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 nylon plastic locknut  
2" BSP nylon plastic locknut  
Plastic M20 cable gland with metal locknut  
SITRANS RD100, loop powered display - see Chapter 7  
SITRANS RD150, remote digital display for 4 ... 20 mA and HART devices - 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  
For applicable back up point level switch see point level measurement section.

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Order code

Y17

Article No.

7ML1830-1BK

7ML1830-1BR

7ML1830-1BT

7ML1830-1BU

7ML1830-1DT

7ML1830-1DQ

7ML1930-1DB

7ML5741-.....-

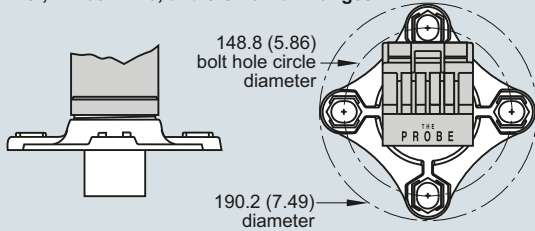
7ML5742-.....-

7ML5740-.....-

7ML5744-.....-

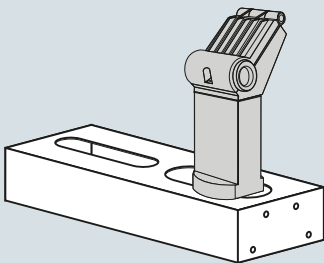
**Options**

**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)

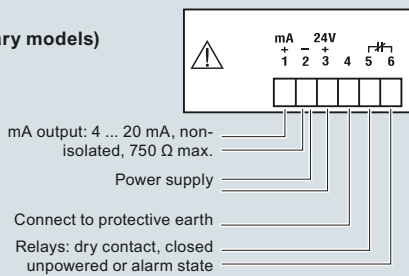
**The Probe with FMS 200 mounting bracket**



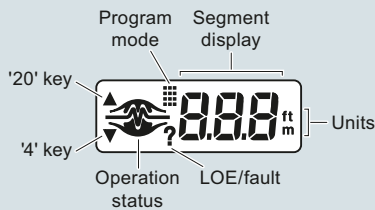
The Probe with optional mounting bracket

**Circuit diagrams**

**3 wire model  
(standard and sanitary models)**



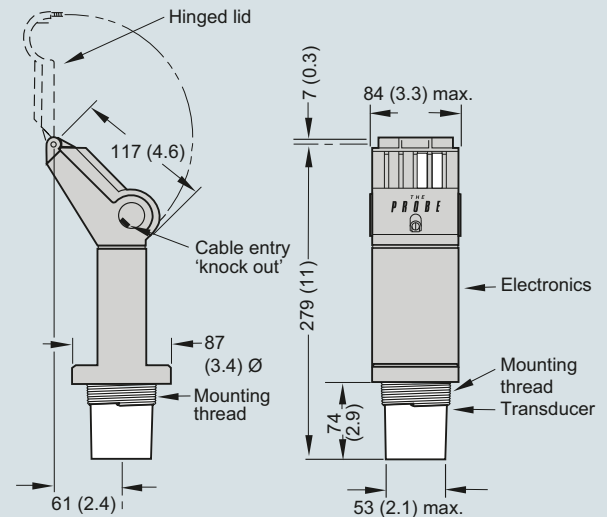
**Display**



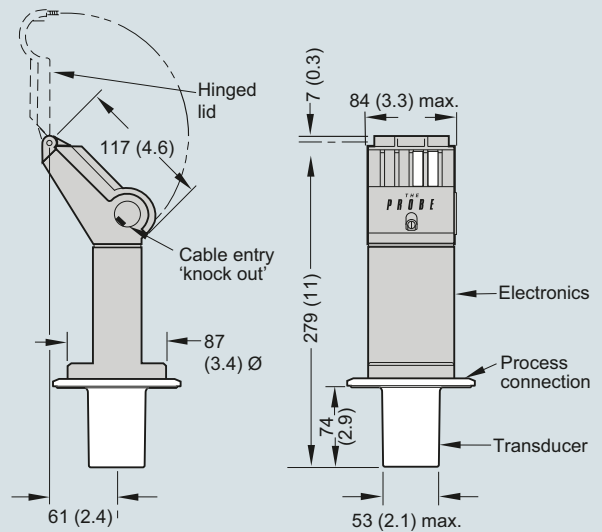
The Probe connections

**Dimensional drawings**

**Standard model**



**Sanitary model**



The Probe, dimensions in mm (inch)

## Level measurement

Continuous level measurement  
Ultrasonic transducers

### 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
<b>Max. range<sup>1)</sup></b>	8 m (26 ft)	10 m (33 ft)	10 m (33 ft)	15 m (50 ft)	30 m (100 ft)
<b>Min. range</b>	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)
<b>Max. temperature</b>	65 °C (149 °F)	73 °C (164 °F)	95 °C (203 °F)	95 °C (203 °F)	95 °C (203 °F)
<b>Min. temperature</b>	-20 °C (-4 °F)	-40 °C (-40 °F)	-40 °C (-40 °F)	-40 °C (-40 °F)	-40 °C (-40 °F)
<b>Typical Applications</b>	Wet wells and open channels	Chemical storage and liquid tanks	Dusty solids and slurries	Deep wet wells and solids	Powders, pellets and solids
<b>Frequency</b>	44 kHz	44 kHz	44 kHz	44 kHz	30 kHz
<b>Beam angle (-3dB)</b>	10°	12°	12°	6°	6°
<b>Thread size</b>	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
<b>Enclosure</b>	<ul style="list-style-type: none"> <li>PVDF Copolymer</li> <li>CSM</li> <li>Option: Flange with PTFE facing</li> </ul>	<ul style="list-style-type: none"> <li>ETFE</li> <li>Option: PVDF</li> </ul>	<ul style="list-style-type: none"> <li>PVDF</li> <li>Option: foam facing</li> <li>Flange with PTFE facing</li> </ul>	<ul style="list-style-type: none"> <li>PVDF</li> <li>Option: foam facing</li> <li>Flange with PTFE facing</li> </ul>	<ul style="list-style-type: none"> <li>PVDF</li> <li>Option: foam facing</li> <li>Flange with PTFE facing</li> </ul>
<b>Compatible with:</b>					
<b>SITRANS LUT400</b>	•	•	•	•	•
<b>HydroRanger 200</b>	•	•	•	•	
<b>MultiRanger 100/200</b>	•	•	•	•	

<sup>1)</sup> Max range is rated for measurement of liquids, recommended range for solids is 50 % of maximum. Application conditions such as extreme dust or angle of repose may reduce the usable maximum range. Consult a local sales person for more details.

#### 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

<b>Mode of operation</b>	
Measuring principle	Ultrasonic transducer
<b>Input</b>	
Measuring range	0.3 ... 10 m (1 ... 33 ft)
<b>Output</b>	
Frequency	44 kHz
Beam angle	12°
<b>Accuracy</b>	
Temperature compensation	Compensated by integral temperature sensor
<b>Rated operating conditions</b>	
Pressure	Normal atmospheric pressure
<b>Ambient conditions</b>	
Ambient temperature	-20 ... +60 °C (-5 ... +140 °F) (ATEX approved model) -40 ... +73 °C (-40 ... +163 °F) (CSA/FM approved model)
Storage temperature	-20 ... +60 °C (-5 ... +140 °F)
<b>Design</b>	
Weight <sup>1)</sup>	1.4 kg (3 lb)
Material (enclosure)	Base and lid made of ETFE or PVDF (epoxy fitted joint) <sup>2)</sup>
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 <sup>2</sup> (20 AWG), PVC sheath
Cable (max. length)	365 m (1 200 ft) with RG 62 A/U coaxial cable
<b>Options</b>	
Flange adapter	3" Universal (fits DN 65, PN 10 and 3" ASME)
<b>Certificates and approvals</b>	
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	

<sup>1)</sup> Approximate shipping weight of transducer with standard cable length

<sup>2)</sup> When measuring chemicals, check compatibility of ETFE or PVDF and epoxy, or mount joint external to process.

**Level measurement**

Continuous level measurement  
Ultrasonic transducers

ST-H

**Selection and ordering data****Article No.****Order code****ST-H Ultrasonic level transducer**

Continuous, non-contact, 0.3 m (1 ft) range,  
for liquids.

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

**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 2" [(BSPP), EN ISO 228-1]

**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)

**Approvals**

CE, FM Class I, II, Div. 1, Groups C ,D ,E ,F, G T4A<sup>3)</sup>

ATEX 2G/INMETRO Ex mb IIC T5 Gb, RCM, KCC  
CSA Class I, II, III, Div. 1, Groups A, B, C, D, E, F,  
G T3<sup>1)</sup>

CE, ATEX 2G/INMETRO Ex mb IIC T5 Gb, RCM,  
KCC<sup>2)</sup>

<sup>1)</sup> Available with Process connection options 0 ... 2 only.

<sup>2)</sup> Available with Process connection options 3 ... 5 only.

<sup>3)</sup> Not suitable for Ketone, Hexane, Ester or Ethyl Acetate atmospheres.

7ML1100-

A A 0

0

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3

4

5

A

B

C

D

E

2

3

4

**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**

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

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

Plastic adapter 1" NPT

Plastic adapter 1" NPT/M20

**Operating Instructions**

All literature is available to download for free, in a  
range of languages, at

<http://www.siemens.com/processinstrumentation/documentation>

Y17

Article No.

7ML1830-1BK

7ML1830-1BT

7ML1830-1BU

7ML1830-1AQ

7ML1830-1AX

7ML1830-1AU

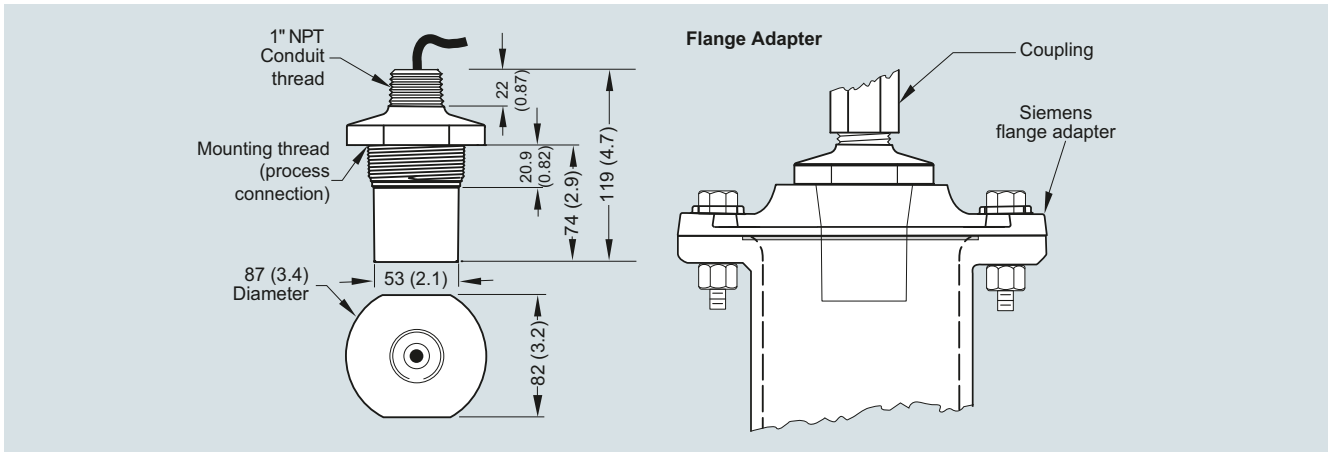
7ML1830-1GN

7ML1930-1FX

7ML1830-1EF

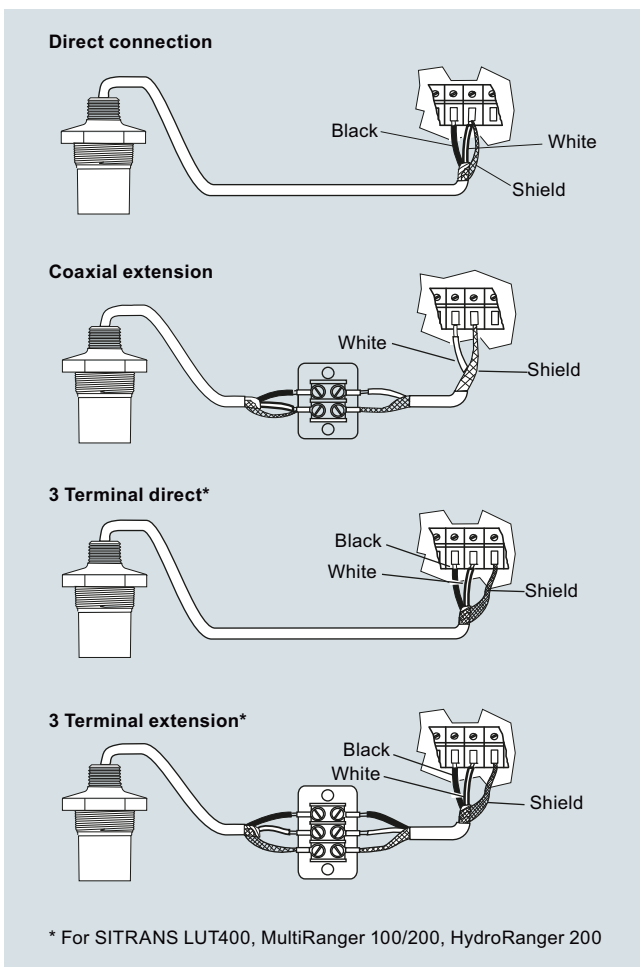


**Dimensional drawings**



ST-H ultrasonic transducer, dimensions in mm (inch)

**Circuit diagrams**



ST-H ultrasonic transducer connections

## Level measurement

Continuous level measurement  
Ultrasonic transducers

### EchoMax XRS-5

#### 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

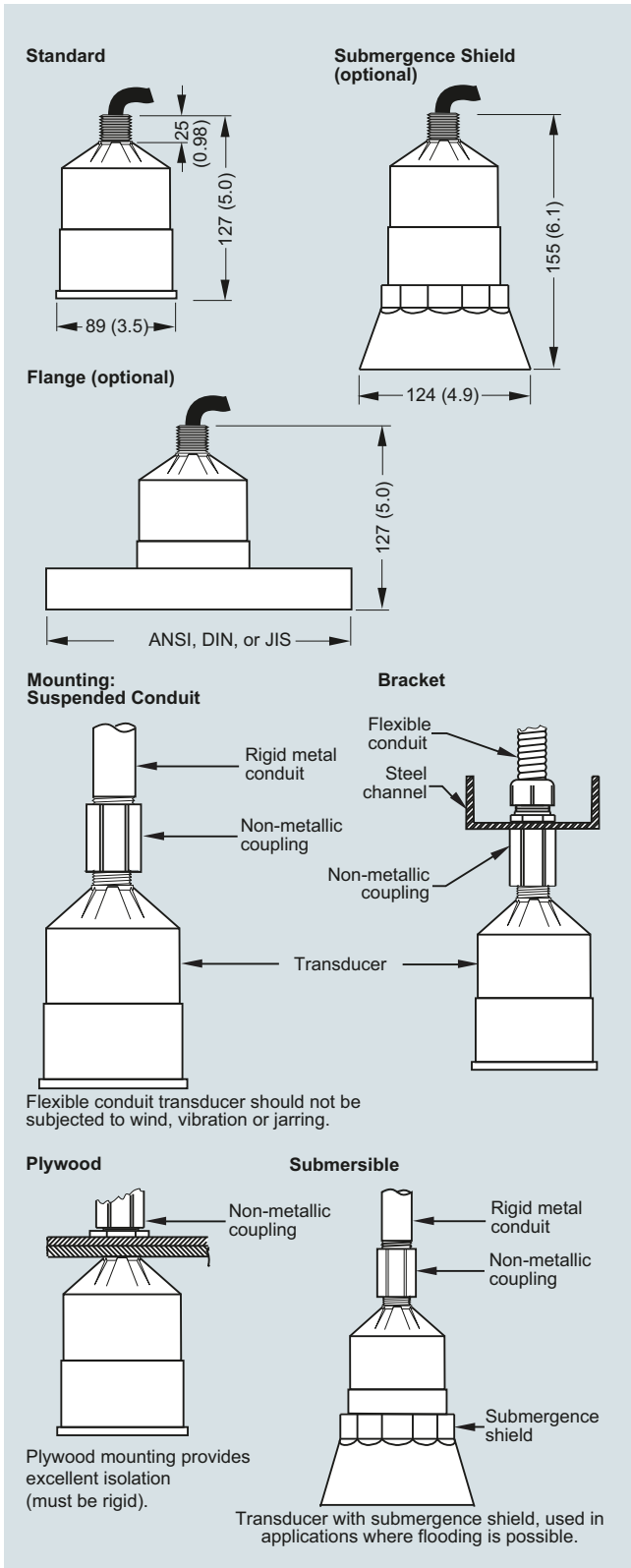
#### Technical specifications

<b>Mode of operation</b>	
Measuring principle	Ultrasonic transducer
<b>Input</b>	
Measuring range	0.3 ... 8 m (1 ... 26 ft), dependent on application
<b>Output</b>	
Frequency	44 kHz
Beam angle	10°
<b>Accuracy</b>	
Temperature error	Compensated by integral temperature sensor
<b>Rated operating conditions</b>	
Vessel pressure	Normal atmospheric pressure
Ambient Conditions	
• Ambient temperature	-20 ... +65 °C (-4 ... +149 °F)
• Storage temperature	-20 ... +65 °C (-4 ... +149 °F)
<b>Design</b>	
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 <sup>2</sup> (20 AWG), PVC sheath
Cable (max. length)	<ul style="list-style-type: none"> <li>• 365 m (1 200 ft) with RG 62 A/U coaxial cable</li> <li>• 365 m (1 200 ft) with 2-core twisted pair, foil shield, 0.5 mm<sup>2</sup> (20 AWG), PVC sheath, only for MultiRanger 100/200</li> </ul>
<b>Options</b>	
Flange version	Factory flange with PTFE face for ASME, EN or JIS configuration
Submergence shield	For applications with flooding possible
<b>Certificates and approvals</b>	
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	

Selection and ordering data	Article No.	Order code
<b>EchoMax XRS-5 Ultrasonic level transducer</b> Continuous, non-contact, 8 m (26 ft) range, for liquids and slurries. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	<b>7ML1106-</b> 	
<b>Process connection</b> 1" NPT [(Taper), ANSI/ASME B1.20.1] R 1" [(BSPT), EN 10226]	1 2	
<b>Cable length</b> 5 m (16.40 ft) 10 m (32.81 ft) 30 m (98.43 ft)	A B C	
<b>Facing</b> Standard (CSM rubber) PTFE (flange versions)	A B	
<b>Approvals</b> 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	2	
<b>Mounting flange (flush mount)</b> 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.	A B C D J K L Q R S	
		<b>Further designs</b> Please add <b>"-Z"</b> 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  <b>Accessories</b> 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" BSP locknut, plastic  1" BSP locknut, flanged, plastic  Plastic adapter 1" BSP - 20 mm  Plastic adapter 1" NPT  Plastic adapter 1" NPT/M20
		<b>Operating Instructions</b> All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>
		<b>Order code</b>  <b>Y17</b>  Article No. <b>7ML1930-1BJ</b>  <b>7ML1830-1BH</b>  <b>7ML1830-1AQ</b>  <b>7ML1830-1AX</b>  <b>7ML1830-1AU</b>  <b>7ML1830-1GN</b>  <b>7ML1830-1BK</b>  <b>7ML1830-1BL</b>  <b>7ML1830-1BM</b>  <b>7ML1830-1BN</b>  <b>7ML1830-1BP</b>  <b>7ML1830-1BQ</b>  <b>7ML1830-1DS</b>  <b>7ML1830-1DR</b>  <b>7ML1830-1DN</b>  <b>7ML1830-1EA</b>  <b>7ML1930-1FX</b>  <b>7ML1830-1EF</b>

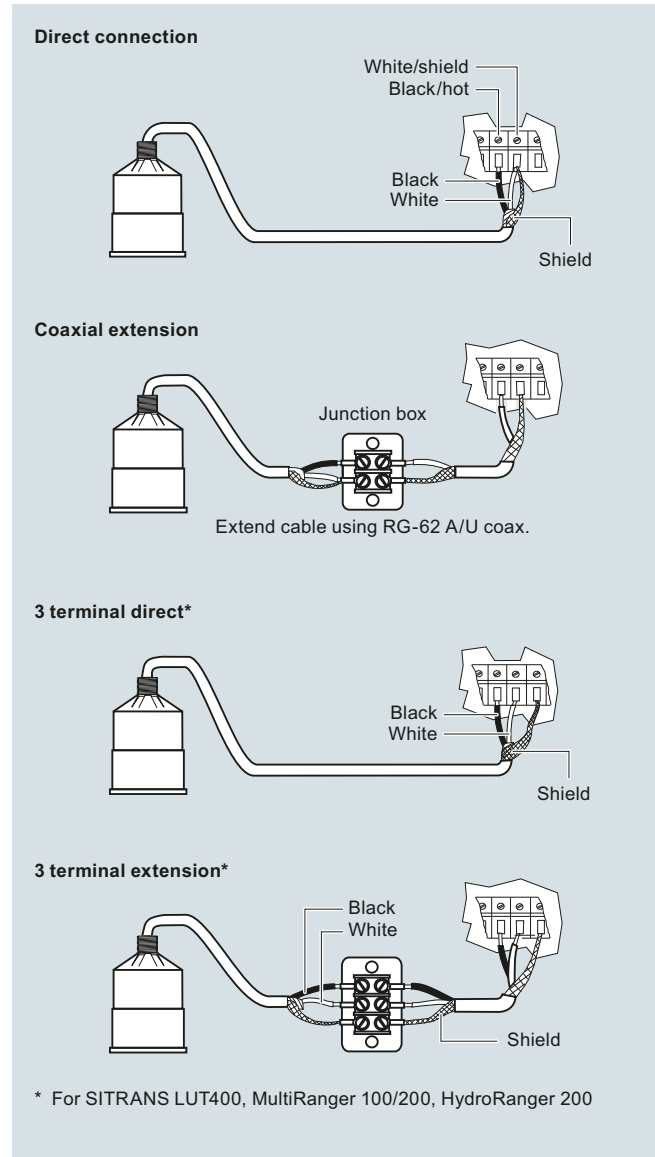


**Dimensional drawings**



XRS-5 ultrasonic transducer, dimensions in mm (inch)

**Circuit diagrams**



XRS-5 ultrasonic transducer connections

## Level measurement

Continuous level measurement  
Ultrasonic transducers

### EchoMax XPS

#### 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.

#### Technical specifications

Input	XPS-10	XPS-15 (standard and F models)	XPS-30
Measuring range <sup>1)</sup>	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)
<b>Output</b>			
Frequency	44 kHz	44 kHz	30 kHz
Beam angle	12°	6°	6°
<b>Environmental</b>			
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)
Storage 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)
<b>Design</b>			
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 <sup>2</sup> (20 AWG) PVC jacket		
Separation	Max. 365 m (1 200 ft)		
<b>Certificates and approvals</b>	<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

<sup>1)</sup> Max range is rated for measurement of liquids, recommended range for solids is 50 % of maximum. 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

### EchoMax XPS

#### Selection and ordering data

#### Article No.

#### Order code

##### EchoMax XPS-10 Ultrasonic level transducer

Continuous, non-contact, 10 m (32.80 ft),  
for liquids and solids.

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

##### Mounting thread and facing

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

1" NPT [(Taper), ANSI/ASME B1.20.1] with  
foam facing<sup>1)</sup>

1" NPT [(Taper), ANSI/ASME B1.20.1] with  
PTFE facing<sup>2)</sup>

R 1" [(BSPT), EN 10226]

R 1" [(BSPT), EN 10226] with foam facing<sup>1)</sup>

R 1" [(BSPT), EN 10226] with PTFE facing<sup>2)</sup>

##### 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)

##### Mounting flange

None

3" ASME, 150 lb, flat faced

4" ASME, 150 lb, flat faced

6" ASME, 150 lb, flat faced

8" 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

JIS10K3B Style

JIS10K4B Style

JIS10K6B Style

(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

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

Div. 1, Groups E, F, G, Class III<sup>3)</sup>

<sup>1)</sup> Not available with flanged versions.

<sup>2)</sup> Available with flanged versions only.

<sup>3)</sup> Valid with mounting thread and facing options 0 ... 2 only.

7ML1115-

0

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4

##### 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

Article No.

7ML1930-1BJ

Submergence shield kit

7ML1830-1BH

Easy Aimer 2, aluminum,  
NPT with 3/4" x 1" PVC coupling

7ML1830-1AQ

Easy Aimer 2, aluminum with M20 adapter and  
1" and 1/2" 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 1/2" BSPT 304 stainless steel couplings

7ML1830-1GN

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" BSP locknut, plastic

7ML1830-1DR

1" BSP locknut, flanged, plastic

7ML1830-1DN

Plastic adapter 1" BSP - 20 mm

7ML1830-1EA

Plastic adapter 1" NPT

7ML1930-1FX

Plastic adapter 1" NPT/M20

7ML1830-1EF



Selection and ordering data	Article No.	Order code
<b>EchoMax XPS-15 Ultrasonic level transducer</b> Continuous, non-contact, 15 m (49.21 ft), for liquids and solids. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML1118- 0	
<b>Mounting thread and facing</b> 1" NPT [(Taper), ANSI/ASME B1.20.1] 1" NPT [(Taper), ANSI/ASME B1.20.1] with foam facing <sup>1)</sup> 1" NPT [(Taper), ANSI/ASME B1.20.1] with PTFE facing <sup>2)</sup> R 1" [(BSPT), EN 10226] R 1" [(BSPT), EN 10226] with foam facing <sup>1)</sup> R 1" [(BSPT), EN 10226] with PTFE facing <sup>2)</sup>	0 1 2 3 4 5	
<b>Cable length</b> 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	
<b>Mounting flange</b> 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	
<b>Approvals</b> 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 III <sup>3)</sup>	3 4	
<b>Further designs</b> 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
<b>Operating Instructions</b> All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>		
<b>Accessories</b> 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 1" BSP locknut, plastic 1" BSP locknut, flanged, plastic Easy Aimer 2, aluminum, NPT with 3/4" x 1" PVC coupling Easy Aimer 2, aluminum with M20 adapter and 1" and 1 1/2" BSPT aluminum couplings Easy Aimer 304, NPT with 1" stainless steel coupling Easy Aimer 304, with M20 adapter and 1" and 1 1/2" BSPT 304 stainless steel couplings Plastic adapter 1" BSP - 20 mm Plastic adapter 1" NPT Plastic adapter 1" NPT/M20		Article No. <b>7ML1930-1BJ</b>  <b>7ML1830-1BJ</b> <b>7ML1830-1BK</b> <b>7ML1830-1BL</b> <b>7ML1830-1BM</b> <b>7ML1830-1BN</b> <b>7ML1830-1BP</b> <b>7ML1830-1BQ</b>  <b>7ML1830-1DS</b> <b>7ML1830-1DR</b> <b>7ML1830-1DN</b> <b>7ML1830-1AQ</b>  <b>7ML1830-1AX</b>  <b>7ML1830-1AU</b> <b>7ML1830-1GN</b>  <b>7ML1830-1EA</b> <b>7ML1930-1FX</b> <b>7ML1830-1EF</b>

<sup>1)</sup> Not available with flanged versions.

<sup>2)</sup> Available with flanged versions only.

<sup>3)</sup> Available with mounting options 0 ... 2 only.

## Level measurement

Continuous level measurement  
Ultrasonic transducers

### EchoMax XPS

#### Selection and ordering data

#### Article No.

#### Order code

##### EchoMax XPS-15F Ultrasonic level transducer

Continuous, non-contact, 15 m (49.21 ft),  
for liquids and solids.

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

##### Mounting thread and facing

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

##### 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)

##### 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.)

##### Approvals

FM Class I, Div. 1, Groups A, B, C, and D, Class II  
Div. 1, Groups E, F, and G, Class III

7ML1171-

0	1	B	C	D	E	F	A	B	C	1
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##### 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

Article No.

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

Easy Aimer 2, aluminum,  
NPT with 3/4" x 1" PVC coupling

7ML1830-1AQ

Easy Aimer 304, NPT with 1" stainless steel coupling

7ML1830-1AU

Selection and ordering data	Article No.	Order code
<b>EchoMax XPS-30 Ultrasonic level transducer</b> Continuous, non-contact, 30 m (98.42 ft) for liquids and solids. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML1123- 0	
<b>Mounting thread and facing</b> 1½" universal thread 1½" universal thread, foam facing <sup>1)</sup> 1½" universal thread, PTFE facing <sup>2)</sup>	0 1 2	
<b>Cable length</b> 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	
<b>Mounting flange</b> 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	
<b>Approvals</b> 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	
		<b>Further designs</b> 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 <b>Y15</b>
		<b>Operating Instructions</b> All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>
		<b>Accessories</b> Article No. Tag, stainless steel with hole, 12 x 45 mm (0.47 x 1.77 inch), one text line for fastening on sensors <b>7ML1930-1BJ</b> 1½" BSPT locknut, plastic <b>7ML1830-1DP</b> Easy Aimer 2, aluminum, NPT with 1½" galvanized coupling <b>7ML1830-1AN</b> Easy Aimer 304, NPT with 1½" stainless steel coupling <b>7ML1830-1AT</b> Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings <b>7ML1830-1AX</b> Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 stainless steel couplings <b>7ML1830-1GN</b> Adapter 1½" BSP <b>7ML1830-1EB</b>

<sup>1)</sup> Not available with flanged versions.

<sup>2)</sup> Available with flanged versions only.

## Level measurement

Continuous level measurement  
Ultrasonic transducers

### EchoMax XPS

#### Selection and ordering data

#### Article No.

#### Order code

##### EchoMax XPS-30C Ultrasonic level transducer

Continuous, non-contact, 30 m (98.42 ft) for liquids and solids.

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

##### Mounting thread and facing

1½" universal thread  
1½" universal thread, foam facing<sup>1)</sup>  
1½" universal thread, PTFE facing<sup>2)</sup>

##### 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)

##### 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.)

##### Approvals

CSA, Class I, Div. 2, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III

- <sup>1)</sup> Not available with flanged version.  
<sup>2)</sup> Available for flanged versions only.

7ML1155-

0	1	2	B	C	E	F	K	A	D	E	J	K	N	P	4
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##### 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

##### Operating Instructions

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/processinstrumentation/documentation>

##### Accessories

Easy Aimer 2, aluminum,  
NPT with 1½" galvanized coupling

Easy Aimer 304,  
NPT with 1½" stainless steel coupling

1½" BSPT locknut, plastic

Adapter 1½" BSP

Y15

Article No.

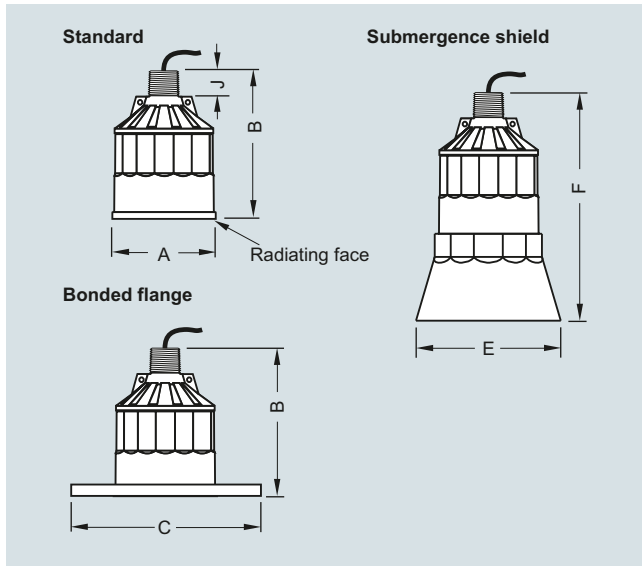
**7ML1830-1AN**

**7ML1830-1AT**

**7ML1830-1DP**

**7ML1830-1EB**

## Dimensional drawings

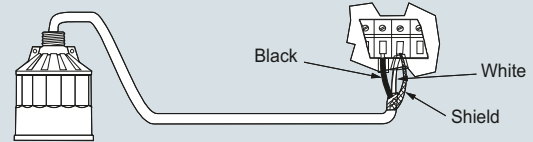


XPS ultrasonic transducer

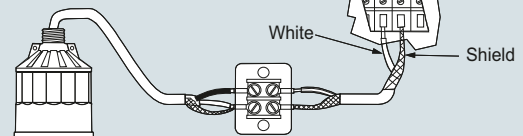
Version			
Dimension	XPS-10	XPS-15	XPS-30
<b>A</b>	88 mm (3.464 inch)	121 mm (4.764 inch)	175 mm (6.890 inch)
<b>B</b>	122 mm (4.803 inch)	132 mm (5.197 inch)	198 mm (7.795 inch)
<b>C</b>	According to ASME, DIN, and JIS		
<b>E</b>	124 mm (4.882 inch)	158 mm (6.220 inch)	n/a
<b>F</b>	152 mm (5.984 inch)	198 mm (7.795 inch)	n/a
<b>J</b>	28 mm (1.1 inch)	28 mm (1.1 inch)	28 mm (1.1 inch)

## Circuit diagrams

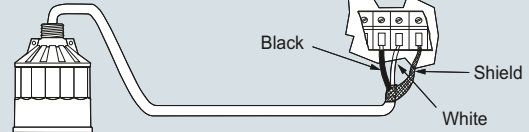
### Direct connection



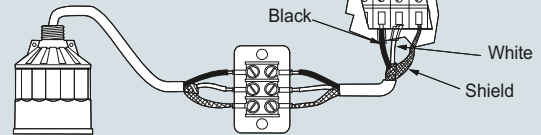
### Coaxial connection



### 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 level sensors

### EA aiming devices

#### Application

##### EA 304 aiming device

The Easy Aimer 304 flange is a stainless steel aiming device for alignment of Siemens level sensors 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.

##### EA 2 aiming device

The Easy Aimer 2 flange is a cast aluminum aiming device for alignment of Siemens level sensors.

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.

#### Selection and ordering data

#### Article No.

##### Easy aimer

Used on solids applications to aim level sensors 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<sup>1)</sup>

**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<sup>1)</sup>

**7ML1830-1AT**

Easy Aimer 304, NPT with 1" stainless steel coupling

**7ML1830-1AU**

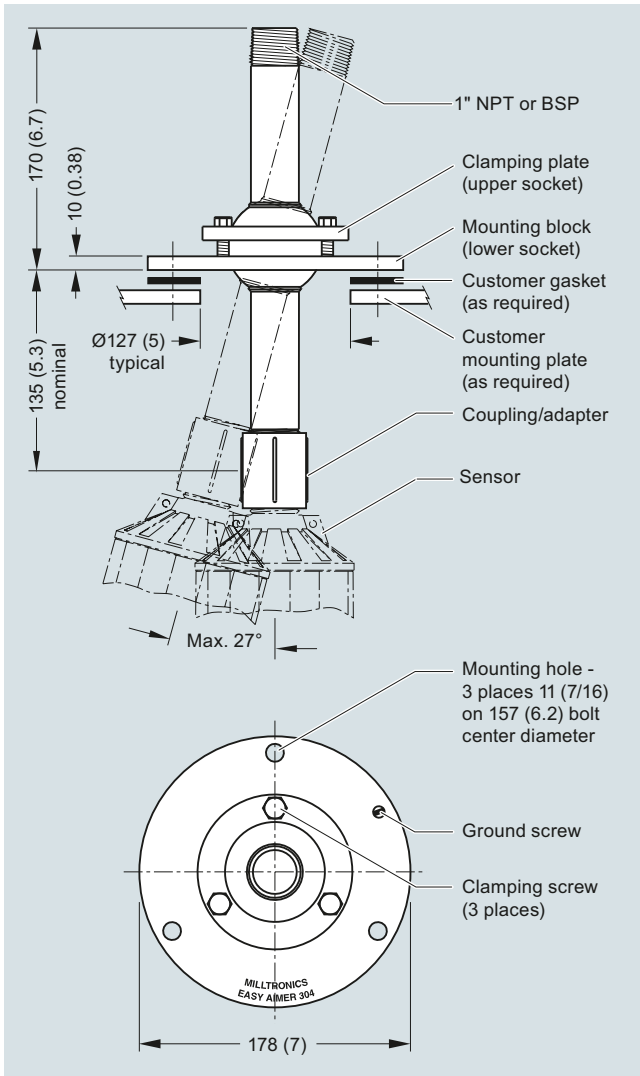
##### Operating Instructions

All literature is available to download for free, in a range of languages, at

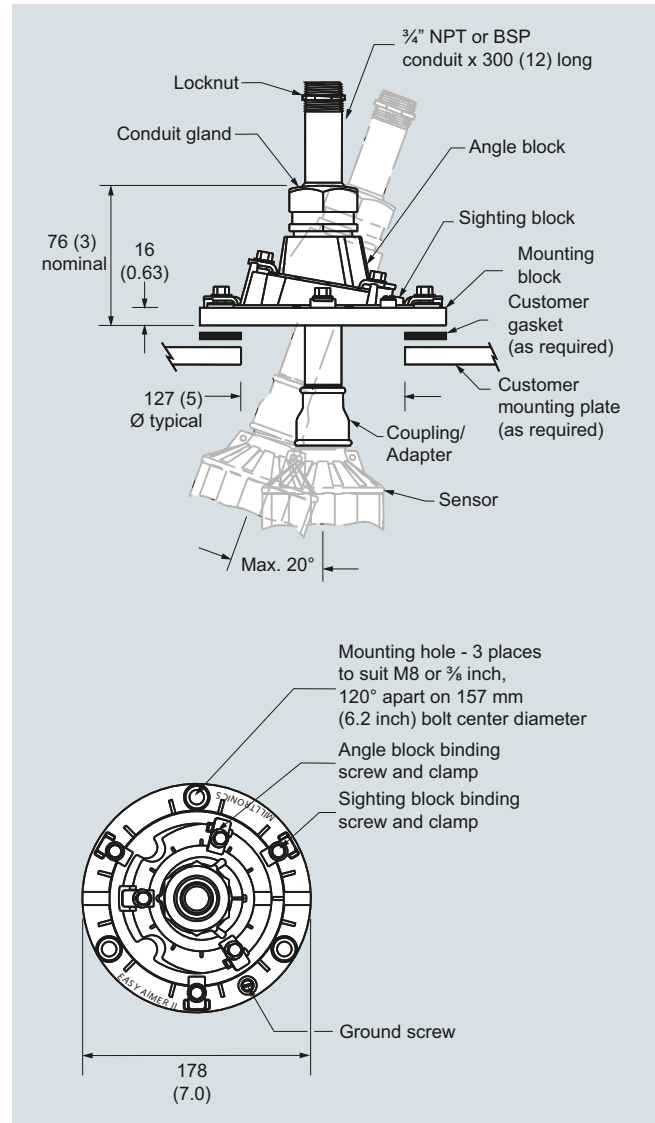
<http://www.siemens.com/processinstrumentation/documentation>

<sup>1)</sup> For use with XPS-30 transducers only.

**Dimensional drawings**



EA 304 aiming device, dimensions in mm (inch)



EA 2 aiming device, dimensions in mm (inch)

## Level measurement

Continuous level measurement  
Accessories for level sensors

### 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).

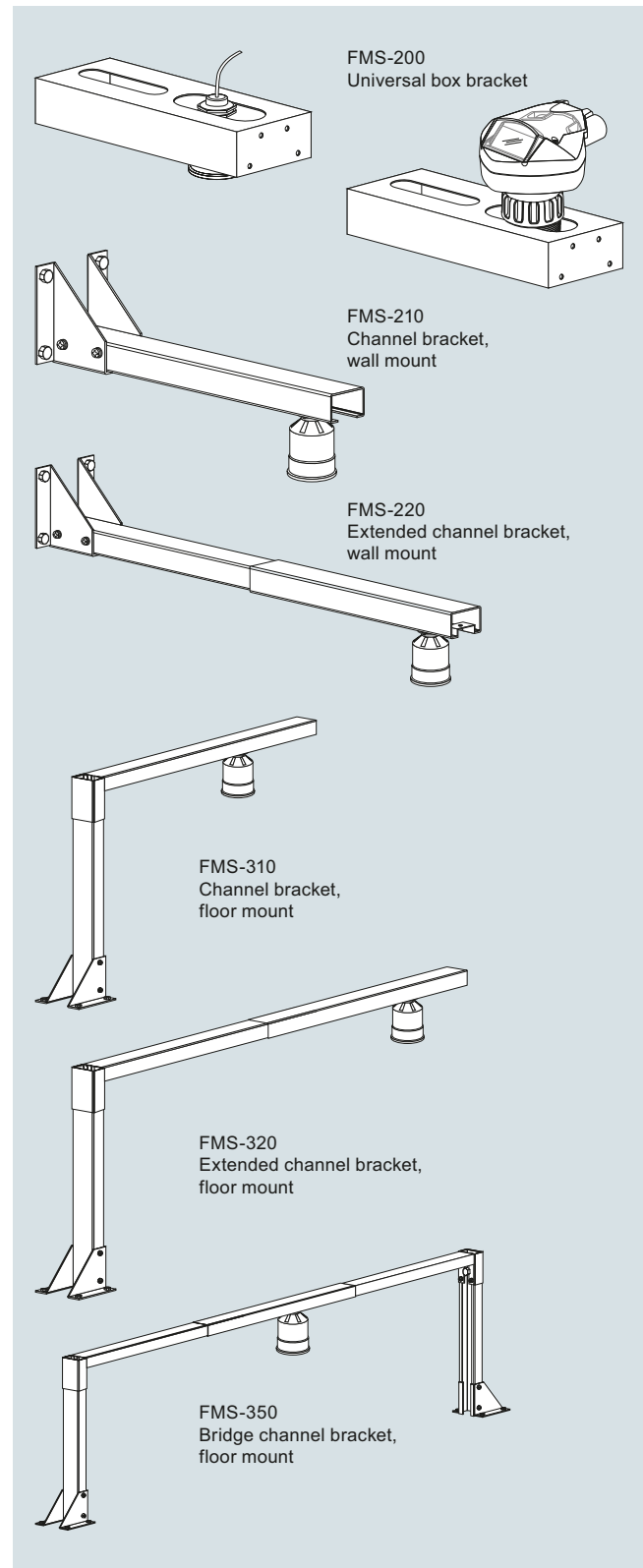
#### **FMS-350** **floor mounting set, bridge**

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



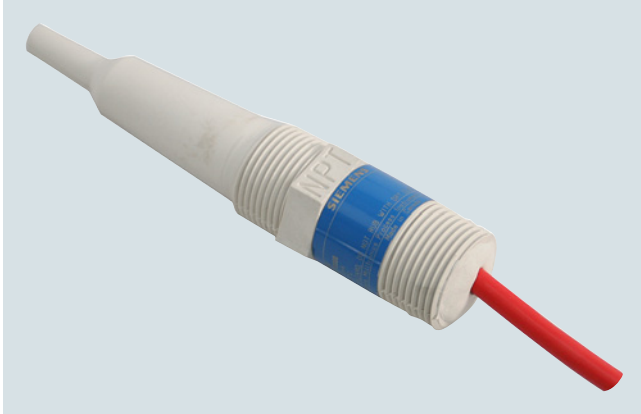
Selection and ordering data	Article No.
<b>Mounting brackets for XPS-10 sensors</b>	
FMS-200 universal box bracket set	<b>7ML1830-1BK</b>
FMS-210 wall mounting set	<b>7ML1830-1BL</b>
FMS-220 extended wall mounting set	<b>7ML1830-1BM</b>
FMS-310 floor mounting set	<b>7ML1830-1BN</b>
FMS-320 extended floor mounting set	<b>7ML1830-1BP</b>
FMS-350 floor mounting set, bridge	<b>7ML1830-1BQ</b>
<i>Additional Operating Instructions</i>	
FMS-200	<b>7ML1998BK61</b>
FMS-210	<b>7ML19985BL61</b>
FMS-220	<b>7ML19985BM61</b>
FMS-310	<b>7ML19985BN61</b>
FMS-320	<b>7ML19985BP61</b>
FMS-350	<b>7ML19985BQ61</b>
<p>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  <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a></p>	

## Level measurement

Continuous level measurement  
Accessories for level sensors

### 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.

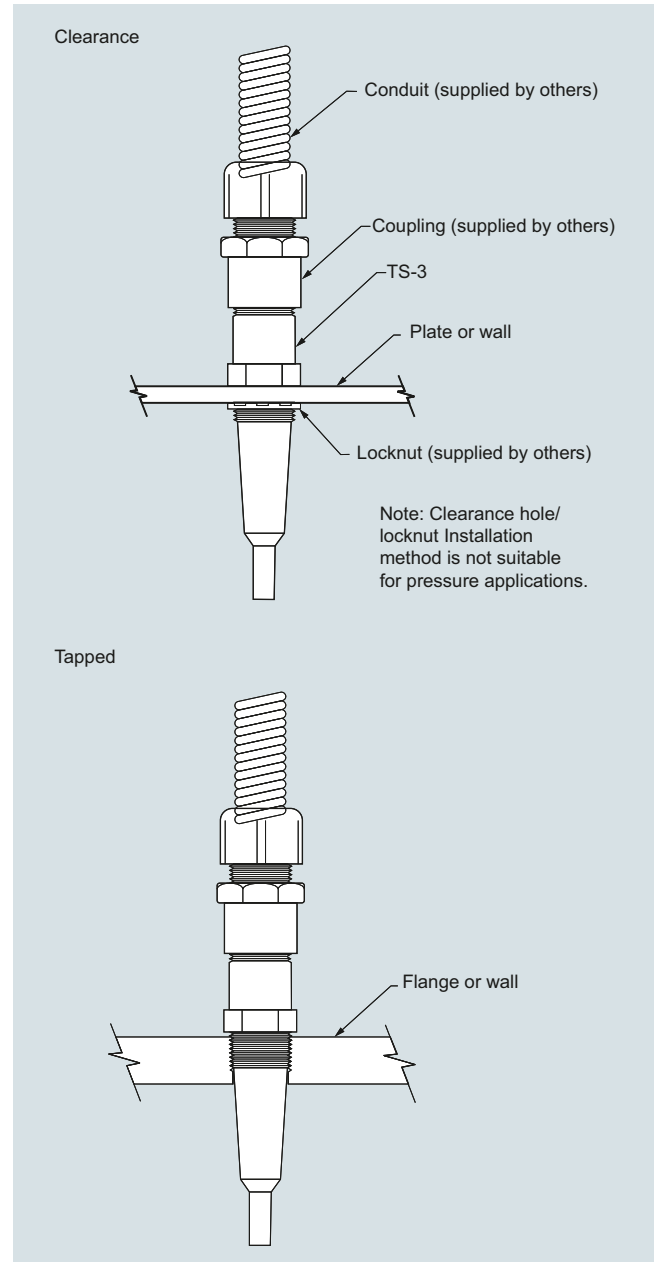
The TS-3 is used in conjunction with ultrasonic transducers that do not have an integral temperature sensor. It is also recommended in cases where the integral temperature sensor of the transducer cannot be used.

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



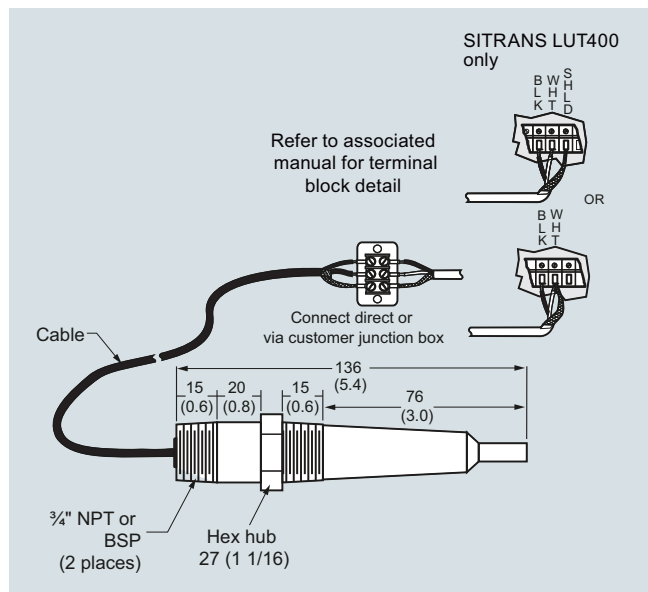
TS-3 temperature sensor

#### 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 <sup>1)</sup>
Cable connection	2-core, 0.5 mm <sup>2</sup> (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

<sup>1)</sup> 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**  
Continuous, non-contact, sensor for use with ultrasonic level controllers.  
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 level transmitters

### Introduction

#### 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 LR100 is a 2 wire loop powered radar transmitter for continuous level measurement of liquids and slurries to a range of 8 m (26 ft).

SITRANS LR110 is a compact radar transmitter for continuous level measurement of liquids, slurries, and solids to a range of 15 m (49.2 ft).

SITRANS LR120 is a compact radar transmitter for continuous level measurement of liquids and solids to a range of 30 m (98.4 ft).

SITRANS LR140 is a 2 wire loop powered radar transmitter for continuous level measurement of liquids and slurries to a range of 8 m (26 ft).

SITRANS LR150 is a compact radar transmitter for continuous level measurement of liquids, slurries, and solids to a range of 15 m (49.2 ft), with optional HMI.

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 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.

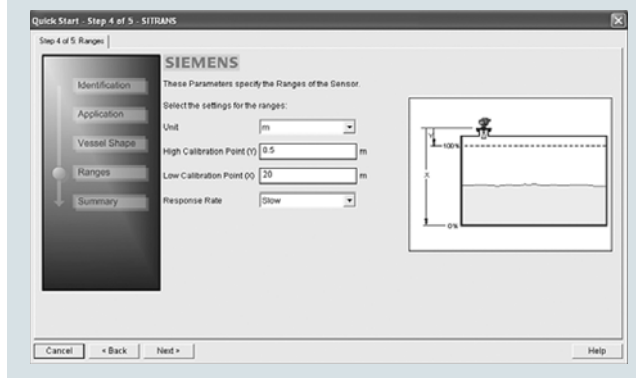
#### Auto False-Echo Suppression

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, and LR560)  
Quick to configure – Quick Start Wizard via SIMATIC PDM guides you during setup



## 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.

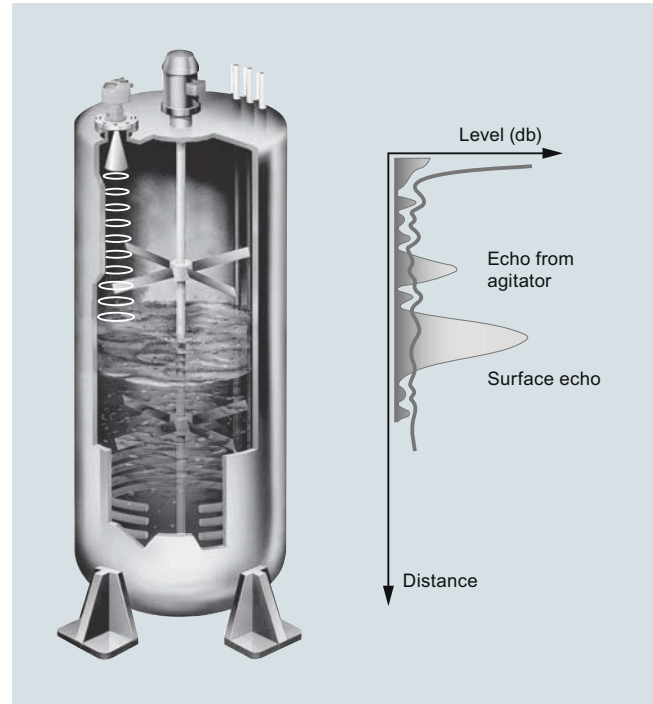
Siemens offers pulse radar transmitters (SITRANS Probe LR, SITRANS LR200, SITRANS LR250) and FMCW (Frequency Modulated Continuous Wave) radar transmitters (SITRANS LR100, SITRANS LR110, SITRANS LR120, SITRANS LR140, SITRANS LR150, SITRANS LR460, SITRANS LR560).

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 level transmitters

### Introduction

### Technical specifications

#### Radar Selection Guide

Criteria	SITRANS Probe LR	SITRANS LR200	SITRANS LR100	SITRANS LR110	SITRANS LR120
<b>Typical industries</b>	Chemicals, petrochemicals, water/waste-water, drilling mud	Chemicals, petrochemicals, aluminum, wastewater	Chemicals, petrochemicals, mining, food and beverage	Chemicals, petrochemicals, mining, food and beverage	Chemicals, petrochemicals, mining, food and beverage
<b>Typical applications</b>	Liquids, storage vessels, wet wells, drilling mud tanks	Liquids, process vessels with agitators, buildup, high temperatures	Liquid storage vessels, non-intrusively through plastic tanks, chemicals, aggregates	Liquid storage vessels, non-intrusively through plastic tanks, chemicals, aggregates	Liquid storage vessels, non-intrusively through plastic tanks, chemicals, aggregates
<b>Range</b>	0.3 ... 20 m (1 ... 65 ft)	0.4 ... 20 m (1.3 ... 65 ft)	0 ... 8 m (0 ... 26 ft)	0 ... 15 m (0 ... 49.2 ft)	0 ... 30 m (0 ... 98.4 ft)
<b>Frequency</b>	6.3 GHz	6.3 GHz	80 GHz nominal	80 GHz nominal	80 GHz nominal
<b>Performance accuracy</b>	0.1 % of range or 10 mm (0.4 inch)	0.1 % of range or 10 mm (0.4 inch)	± 5 mm	± 2 mm	± 2 mm
<b>Temperature</b>	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 ... +60 °C (-40 ... +140 °F) Process: -40 ... +60 °C (-40 ... +140 °F)	Ambient: -40 ... +80 °C (-40 ... +176 °F) Process: -40 ... +80 °C (-40 ... +176 °F)	Ambient: -40 ... +80 °C (-40 ... +176 °F) Process: -40 ... +80 °C (-40 ... +176 °F)
<b>Output/communications/remote configuration and diagnostics</b>	<ul style="list-style-type: none"> <li>• 4 ... 20 mA/HART</li> <li>• SIMATIC PDM</li> </ul>	<ul style="list-style-type: none"> <li>• 4 ... 20 mA/HART</li> <li>• PROFIBUS PA</li> <li>• SIMATIC PDM</li> <li>• AMS</li> <li>• SITRANS DTM/FDT for PACTware, Fieldcare, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• 4 ... 20 mA</li> <li>• SITRANS mobile IQ</li> </ul>	<ul style="list-style-type: none"> <li>• 4 ... 20 mA/HART</li> <li>• Modbus RTU</li> <li>• SITRANS mobile IQ</li> <li>• SIMATIC PDM</li> <li>• AMS</li> <li>• SITRANS DTM/FDT for PACTware, Fieldcare</li> </ul>	<ul style="list-style-type: none"> <li>• 4 ... 20 mA/HART</li> <li>• Modbus RTU</li> <li>• SITRANS mobile IQ</li> <li>• SIMATIC PDM</li> <li>• AMS</li> <li>• SITRANS DTM/FDT for PACTware, Fieldcare</li> </ul>
<b>Power</b>	<ul style="list-style-type: none"> <li>• 24 V DC nominal</li> <li>• Loop powered</li> </ul>	<ul style="list-style-type: none"> <li>• 24 V DC nominal</li> <li>• Loop powered</li> </ul>	<ul style="list-style-type: none"> <li>• 12 ... 35 V DC</li> <li>• Loop powered</li> </ul>	HART: <ul style="list-style-type: none"> <li>• 12 ... 35 V DC</li> <li>• Loop powered</li> </ul> Modbus: <ul style="list-style-type: none"> <li>• 8 ... 30 V DC</li> <li>• Loop powered</li> </ul>	HART: <ul style="list-style-type: none"> <li>• 12 ... 35 V DC</li> <li>• Loop powered</li> </ul> Modbus: <ul style="list-style-type: none"> <li>• 12 ... 35 V DC</li> <li>• Loop powered</li> </ul>
<b>Approvals</b>	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	General Purpose CE, CSA, FM, RCM	Hazardous ATEX, IECEx, CE, CSA, FM, RCM	Hazardous ATEX, IECEx, CE, CSA, FM, RCM

#### Technical specifications (continued)

Criteria	SITRANS LR140	SITRANS LR150	SITRANS LR250	SITRANS LR460	SITRANS LR560
<b>Typical industries</b>	Chemicals, petrochemicals, mining, food and beverage	Chemicals, petrochemicals, mining, food and beverage	Chemicals, petrochemicals, oil and gas, mining, marine, food and beverage, pharmaceutical	Cement, power generation, food processing, mineral processing, mining	Cement, chemical, power generation, grain, food processing, mineral processing, mining
<b>Typical applications</b>	Liquid storage vessels, non-intrusively through plastic tanks, chemicals, aggregates	Liquid storage vessels, non-intrusively through plastic tanks, chemicals, aggregates	Liquids, storage and process vessels with agitators, vaporous liquids, high temperatures, low dielectric media, crude oil produced water	Cement, fly ash, grain, coal, flour, plastics	Cement, fly ash, chemical fertilizer, grain, coal, flour, plastics, environmental water level monitoring
<b>Range</b>	8 m (26.2 ft)	15 m (49.2 ft)	50 mm (2 inch) from end of horn to 20 m (65 ft), horn dependent	100 m (328 ft)	40 m (131 ft) 100 m (328 ft)
<b>Frequency</b>	80 GHz nominal	80 GHz nominal	K-band (25.0 GHz)	24 ... 25 GHz FMCW	78 ... 79 GHz
<b>Performance accuracy</b>	5 mm	2 mm	≤ 3 mm (0.118 inch)	0.25 %	5 mm (0.2 inch)
<b>Temperature</b>	Ambient: -40 ... +60 °C (-40 ... +140 °F) Process: -40 ... +60 °C (-40 ... +140 °F)	Ambient: -40 ... +70 °C (-40 ... +158 °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: 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)
<b>Output/communications/remote configuration and diagnostics</b>	<ul style="list-style-type: none"> <li>• 4 ... 20 mA</li> <li>• SITRANS mobile IQ</li> </ul>	<ul style="list-style-type: none"> <li>• 4 ... 20 mA/HART</li> <li>• SITRANS mobile IQ</li> <li>• SIMATIC PDM</li> <li>• AMS</li> <li>• SITRANS DTM/FDT for PACTware, Fieldcare</li> </ul>	<ul style="list-style-type: none"> <li>• 4 ... 20 mA/HART</li> <li>• PROFIBUS PA</li> <li>• FOUNDATION Fieldbus</li> <li>• SIMATIC PDM</li> <li>• AMS</li> <li>• SITRANS DTM/FDT for PACTware, Fieldcare, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• 4 ... 20 mA/HART</li> <li>• PROFIBUS PA</li> <li>• SIMATIC PDM</li> </ul>	<ul style="list-style-type: none"> <li>• 4 ... 20 mA/HART</li> <li>• PROFIBUS PA</li> <li>• SIMATIC PDM</li> <li>• AMS</li> <li>• SITRANS DTM/FDT for PACTware, Fieldcare, etc.</li> </ul>
<b>Power</b>	<ul style="list-style-type: none"> <li>• 12 ... 35 V DC</li> <li>• Loop powered</li> </ul>	HART: <ul style="list-style-type: none"> <li>• 12 ... 35 V DC</li> <li>• Loop powered</li> </ul>	<ul style="list-style-type: none"> <li>• 24 V DC nominal</li> <li>• Loop powered</li> </ul>	<ul style="list-style-type: none"> <li>• 100 ... 230 V AC, ± 15 %, 50/60 Hz, 6 W</li> <li>• 24 V DC, +25/-20 %, 6 W</li> </ul>	<ul style="list-style-type: none"> <li>• 24 V DC nominal</li> <li>• Loop powered</li> </ul>
<b>Approvals</b>	General purpose CE, CSA, FM, RCM	Hazardous ATEX, IECEx, CE, CSA, FM, RCM	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, IECEx, EAC	CE, RCM, FCC, Industry Canada, RED  ATEX, CSA, FM, INMETRO, IECEx, NEPSI, EAC

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS Probe LR

#### Overview



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

#### Benefits

- Uni-Construction polypropylene rod antenna standard
- Easy installation and simple startup
- Programming using infrared Intrinsically Safe handheld programmer, SIMATIC PDM or HART handheld communicator
- Communication using HART
- 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.

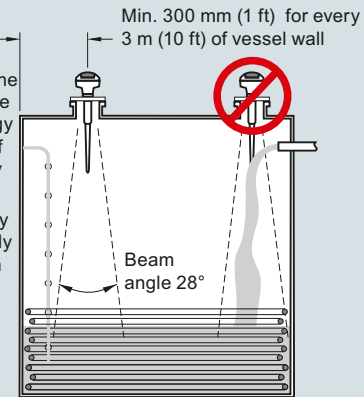
- Key Applications: chemical storage, wastewater wet well, and drilling mud

#### Configuration

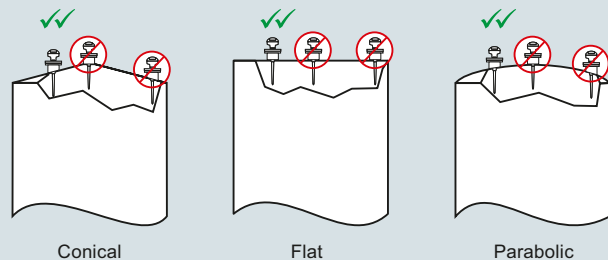
##### Installation

##### Note:

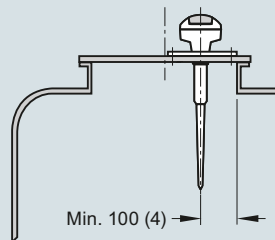
- Beam angle is the width of the cone where the energy density is half of the peak energy density.
- The peak energy density is directly in front of and in line with the rod antenna.



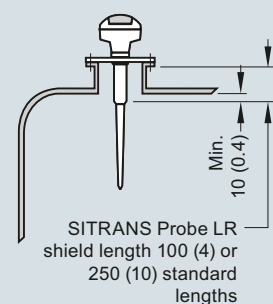
##### Mounting unit on vessel



##### Mounting on a manhole cover



##### Mounting on a nozzle



SITRANS Probe LR installation, dimensions in mm (inch)



#### Technical specifications

<b>Mode of operation</b>		<b>Power supply</b>	
Measuring principle	Pulse radar level measurement		<ul style="list-style-type: none"> <li>Nominal 24 V DC with max. 550 Ω, maximum 30 V DC</li> <li>4 ... 20 mA</li> </ul>
Frequency	C-band, approx. 6 GHz	<b>Certificates and approvals</b>	
Measuring range	0.3 ... 20 m (1.0 ... 65 ft)	General	CSA <sub>US/C</sub> , CE, FM, RCM
<b>Output</b>		Marine	<ul style="list-style-type: none"> <li>Lloyd's Register of Shipping</li> <li>ABS Type Approval</li> </ul>
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"> <li>Intrinsically Safe (Brazil)</li> <li>Intrinsically Safe (Canada)</li> </ul>	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"> <li>Intrinsically Safe (Europe)</li> <li>Intrinsically Safe (International)</li> <li>Intrinsically Safe (Russia/Kazakhstan)</li> <li>Intrinsically Safe (USA)</li> </ul>	IECEX Ex ia IIC T4 EAC Ex ia
<b>Performance (reference conditions)</b>			FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III
Accuracy	± the greater of 0.1 % of range or 10 mm (0.4 inch)	<b>Programming</b>	
<ul style="list-style-type: none"> <li>From end of antenna to 600 mm (23.62 inch)</li> <li>Remainder of range 10 mm (0.4 inch) or 0.1 % of span (whichever is greater)</li> </ul>	40 mm (1.57 inch)	Handheld programmer	HART communicator 375
Influence of ambient temperature	0.003 %/K	PC	SIMATIC PDM
Repeatability	± 5 mm (2 inch)	Intrinsically safe Siemens handheld programmer (optional)	Infrared receiver
Fail-safe	mA signal programmable as high, low or hold (LOE)	<ul style="list-style-type: none"> <li>Approvals (handheld programmer)</li> </ul>	ATEX II 1G EEx ia IIC T4 CSA and FM Class I, Div. 1, Groups A, B, C, D, T6 at max. ambient
<b>Rated operating conditions</b>		Display (local)	Multi-segment alphanumeric liquid crystal with bar graph (representing level) available in four languages
Installation conditions			
<ul style="list-style-type: none"> <li>Location</li> </ul>	Indoor/outdoor		
Ambient conditions (enclosure)			
<ul style="list-style-type: none"> <li>Ambient temperature</li> <li>Storage temperature</li> <li>Installation category</li> <li>Pollution degree</li> </ul>	-40 ... +80 °C (-40 ... +176 °F) -40 ... +80 °C (-40 ... +176 °F) I 4		
<b>Medium conditions</b>			
Dielectric constant $\epsilon_r$	> 3.0		
Vessel temperature	-40 ... +80 °C (-40 ... +176 °F)		
Vessel pressure	3 bar g (43.5 psi g)		
<b>Design</b>			
Enclosure			
<ul style="list-style-type: none"> <li>Body construction</li> <li>Lid construction</li> <li>Cable inlet</li> </ul>	PBT (Polybutylene Terephthalate) PEI (Polyether Imide) 2 x M20 x 1.5 or 2 x ½" 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"> <li>Material</li> <li>Dimensions</li> </ul>	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	1½" NPT [(Taper), ANSI/ASME B1.20.1] R 1½" [(BSPT), EN 10226] G 1½" [(BSPP), EN ISO 228-1]		

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS Probe LR

#### Selection and ordering data

#### Article No.

#### Order code

##### SITRANS Probe LR Radar level transmitter

Continuous, non-contact, 20 m (66 ft) range, for liquids and slurries.

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<sub>US/C</sub>, 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

7ML5430-

0

1

2

A

B

C

D

E

F

A

B

C

D

E

F

A

B

C

D

E

F

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A

B

##### 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 RD150, remote digital display for 4 ... 20 mA and HART devices - 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

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

Y15

C11

Article No.

7ML5830-2AH

7MF4997-1DB

7ML1930-1AP

7ML5741-.....-

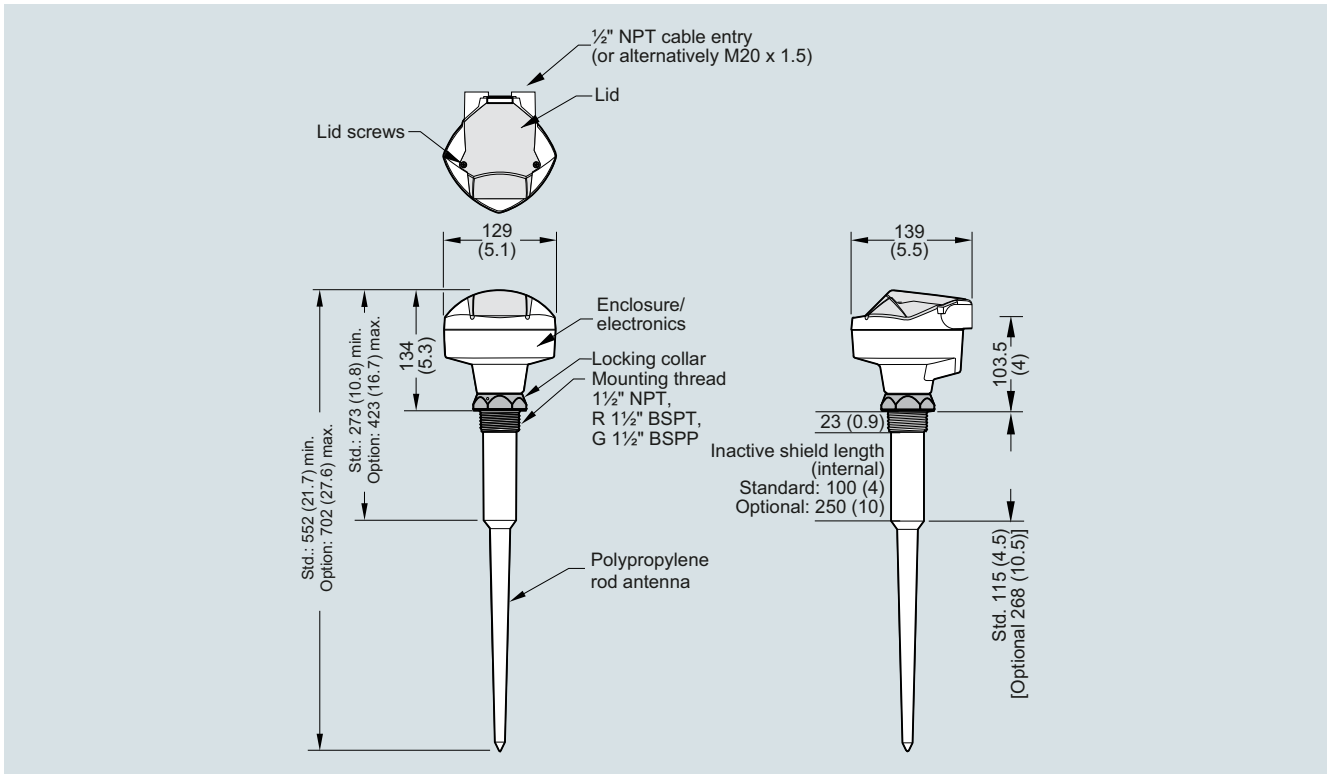
7ML5742-.....-

7ML5740-.....-

7ML5744-.....-

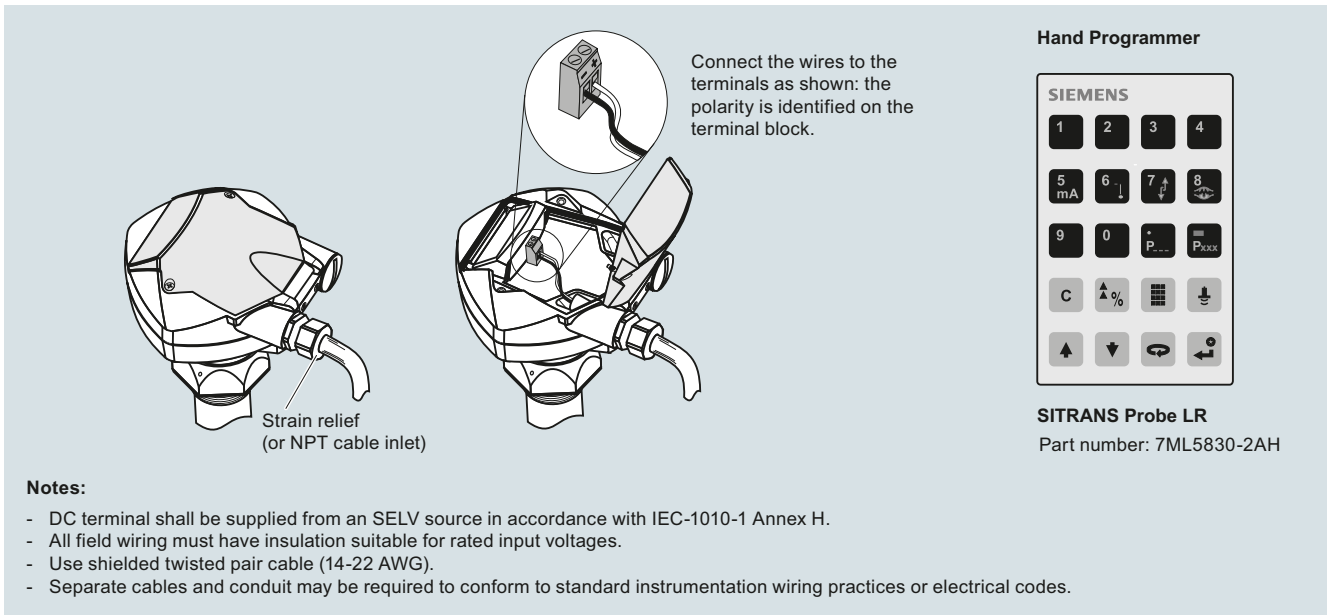
7ML1830-1KB

**Dimensional drawings**



SITRANS Probe LR, dimensions in mm (inch)

**Circuit diagrams**



SITRANS Probe LR connections

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR100

#### Overview



SITRANS LR100 is a 2 wire loop powered radar transmitter for continuous level measurement of liquids and slurries to a range of 8 m (26 ft).

#### Benefits

- Bluetooth connectivity for easy setup with SITRANS mobile IQ
- Chemically resistant PVDF enclosure
- W band FMCW radar yields narrow beam with small antenna for superior performance in short range applications
- Approved for open air applications outside of a tank
- Compact design fits in limited space installations

#### Application

SITRANS LR100 is a W band FMCW radar level transmitter, packaged in a hermetically sealed PVDF enclosure for years of trouble-free reliable measurement service.

4 to 20 mA loop powered, it provides accurate level measurement to ranges of 8 m (26 ft). Measurement is possible non-intrusively through plastic vessel tops for easy installation. Programming is convenient using the Bluetooth connection and SITRANS mobile IQ application on your smart device.

#### Technical specifications

<b>Mode of operation</b>	
Measuring principle	W band FMCW radar
Measuring range	0 ... 8 m (0 ... 26 ft)
Frequency	80 GHz nominal
Beam angle	8°
<b>Power Supply</b>	
Voltage	12 ... 35 V DC
Current	4 ... 20 mA
<b>Accuracy</b>	
	± 5 mm
<b>Rated operating conditions</b>	
Vessel pressure	-1 ... +3 bar (14.50 ... 43.51 psi g)
Ambient temperature	-40 ... +60 °C (-40 ... +140 °F)
Process temperature	-40 ... +60 °C (-40 ... +140 °F)
Storage temperature	-40 ... +80 °C (-40 ... +176 °F)
<b>Design</b>	
Weight	0.5 kg (1.1 lb), plus 0.1 kg/m (0.2 lb/ft) cable length
Material (enclosure)	PVDF
Process connection	1-1/2" NPT, 1-1/2" BSPT, or 1-1/2" BSPP
Degree of protection	IP66/IP68
Cable connection	<ul style="list-style-type: none"> <li>• 8 m (26 ft) long, 2 conductor, twisted with shield 18 AWG, PVC jacket</li> <li>• 1" NPT or 1" BSPT threaded connection</li> </ul>
<b>Certificates and approvals</b>	
	Ordinary locations, CE, $C_{FMUS}$ , $C_{CSAUS}$ , RCM, FCC, Industry Canada
<b>Programming</b>	
SITRANS mobile IQ App	SITRANS mobile IQ is a Bluetooth app that provides an intuitive interface to quickly configure, set up and monitor SITRANS LR100 series. For more information: <a href="http://www.siemens.com/mobileIQ">http://www.siemens.com/mobileIQ</a>

## Selection and ordering data

## Article No.

**SITRANS LR100 Radar level transmitter****7ML530**

Continuous, non-contact, 8 m (26 ft) range, for liquids and slurries, 8 m integrated cable connection

7 - 1 B 7 0 6 - 0 A A 0

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

**Process connection**

1-½" NPT [(Taper), ASME B1.20.1]/electrical connection 1" NPT  
R 1-½" [(BSPT), EN 10226]/electrical connection 1" BSPT  
G 1-½" [(BSPP), EN ISO 228-1]/electrical connection 1" BSPT

A

B

C

**Further designs**

Order code

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

Tag (device parameter, max. 32 characters) plate stainless steel 304/1.4301

**Y15****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.

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**

FMS-200 universal box bracket, mounting kit

**7ML1830-1BK**

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**

1" NPT locknut, plastic

**7ML1830-1DS**

1" BSP locknut, plastic

**7ML1830-1DR**

Plastic adapter 1" BSP - 20 mm

**7ML1830-1EA**

Plastic adapter 1" NPT

**7ML1930-1FX**

Plastic adapter 1" NPT/M20

**7ML1830-1EF**

SIMATIC RTU3010C compact, remote data manager with alarming

**6NH3112-0BA00-0XX0**

SIMATIC RTU3030C compact, remote data manager with alarming

**6NH3112-3BA00-0XX0**

SITRANS RD100, loop powered display - see Chapter 7

**7ML5741-.....-**

SITRANS RD150, remote digital display for 4 to 20 mA and HART devices - see Chapter 7

**7ML5742-.....-**

SITRANS RD200, universal input display with Modbus conversion - see Chapter 7

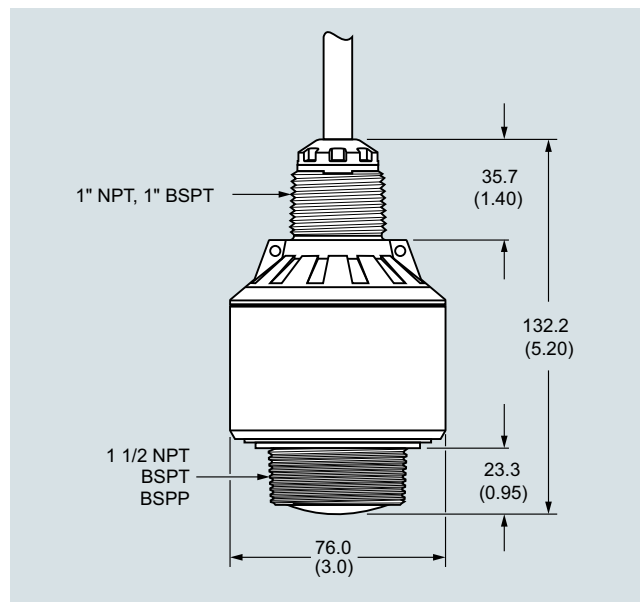
**7ML5740-.....-**

SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7

**7ML5744-.....-**

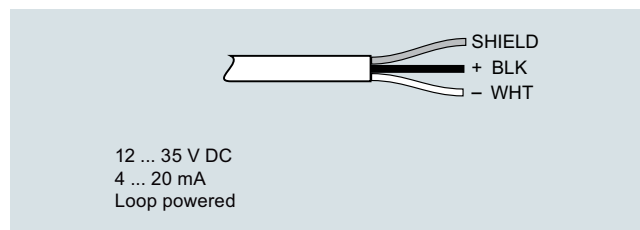
For applicable back up point level switch - see point level measurement section

## Dimensional drawings



SITRANS LR100, dimensions in mm (inch)

## Circuit diagrams



SITRANS LR100 connections

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR110

#### Overview



SITRANS LR110 is a compact radar transmitter for continuous level measurement of liquids, slurries, or solids to a range of 15 m (49.2 ft).

#### Benefits

- Bluetooth connectivity for easy setup with SITRANS mobile IQ
- Chemically resistant PVDF enclosure
- HART 7.0 or Modbus RTU (in preparation) communication for intelligent integration into your application
- W band FMCW radar yields narrow beam with small antenna for superior performance in short range applications
- Approved for open air applications outside of a tank
- 2 mm accuracy and zero near range distance yields optimum inventory management capability
- Compact design fits in limited space installations
- Hazardous area variants available for safe use in explosive gas or dust environments.

#### Application

SITRANS LR110 is a W band FMCW radar level transmitter, packaged in a hermetically sealed PVDF enclosure for years of trouble-free reliable measurement service.

4 to 20 mA loop powered with HART [optional 4-wire Modbus RTU (in preparation)], providing accurate level measurement to ranges of 15 m (49.2 ft). Measurement is possible non-intrusively through plastic vessel tops for easy installation. Programming is convenient using the Bluetooth connection and SITRANS mobile IQ application on your smart device.

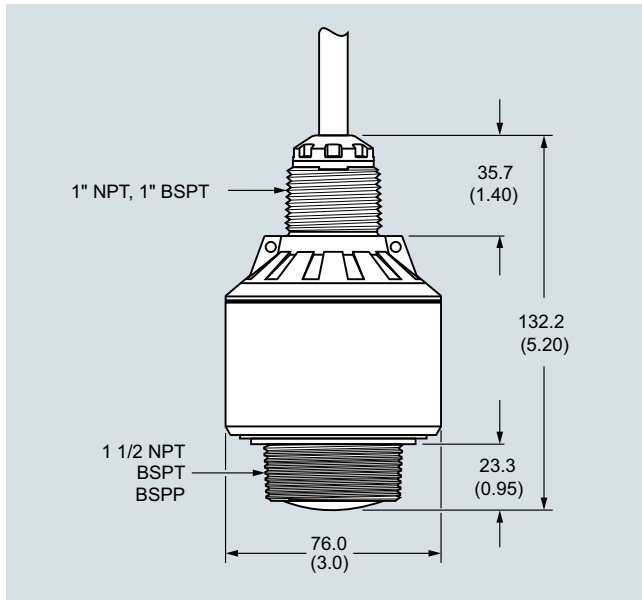
#### Technical specifications

<b>Mode of operation</b>	
Measuring principle	W band FMCW radar
Measuring range	0 ... 15 m (0 ... 49.2 ft)
Frequency	80 GHz nominal
Beam angle	8°
<b>Power Supply</b>	
HART	
• Voltage	12 ... 35 V DC
• Current	4 ... 20 mA
Modbus (in preparation)	
• Voltage	8 ... 30 V DC
• Current	38 mA at 8 V DC/17 mA at 30 V DC
<b>Communications</b>	
4 ... 20 mA	HART 7.0
Modbus (4-wire option) (in preparation)	RTU
<b>Accuracy</b>	
	± 2 mm (range 0.25 ... 0.15 m), ± 10 mm (range 0 ... 0.25 m)
<b>Rated operating conditions</b>	
Vessel pressure	-1 ... +3 bar (14.50 ... 43.51 psi g)
Ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
Process temperature	-40 ... +80 °C (-40 ... +176 °F)
Storage temperature	-40 ... +80 °C (-40 ... +176 °F)
<b>Design</b>	
Weight	0.5 kg (1.1 lb), plus 0.1 kg/m (0.2 lb/ft) cable length
Material (enclosure)	PVDF
Process connection	1-½" NPT, 1-½" BSPT or 1-½" BSPP
Degree of protection	IP66/IP68
Cable connection	1" NPT or 1" BSPT threaded connection
• HART	Length options: 5 ... 100 m (16.4 ... 328.1 ft), 2 conductor, twisted with shield 18 AWG, PVC jacket
• Modbus version (in preparation)	Length options: 5 ... 100 m (16.4 ... 328.1 ft), 4 conductor, twisted pairs, 22 AWG, polyurethane jacket
<b>Certificates and approvals</b>	
	CE, cFM <sub>US</sub> , cCSA <sub>US</sub> , ATEX, IECEx, RCM, FCC, Industry Canada, INMETRO, NEPSI, FDA(EG)1935/2004
<b>Programming</b>	
SITRANS mobile IQ App	SITRANS mobile IQ is a Bluetooth app that provides an intuitive interface to quickly configure, set up and monitor SITRANS LR100 series. For more information: <a href="http://www.siemens.com/mobileIQ">http://www.siemens.com/mobileIQ</a>
SIMATIC PDM	SIMATIC PDM allows for remote PC configuration and diagnostics (for installation on a network).

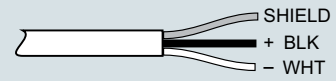
Selection and ordering data	Article No.	Order code
<b>SITRANS LR110 Radar level transmitter</b> Continuous, non-contact, 15 m (49.2 ft) range, for liquids, slurries, or solids, integrated cable connection <a href="#">Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</a>	<b>7ML531-</b> - - 0 6 - 0 - A 0	
<b>Communications</b> HART (4 ... 20 mA)	0	
<b>Bluetooth function</b> Disabled Enabled	0 1	
<b>Cable length</b> 5 m 10 m 30 m 50 m 100 m	A B C D E	
<b>Process connection</b> 1-1/2" NPT [(Taper), ASME B1.20.1]/electrical connection 1" NPT R 1-1/2" [(BSPT), EN 10226]/electrical connection 1" BSPT G 1-1/2" [(BSPP), EN ISO 228-1]/electrical connection 1" BSPT	A B C	
<b>Type of protection</b> Non Ex (ordinary locations/Class I, Div. 1) CE, cFM <sub>US</sub> , cCSA <sub>US</sub> , RCM <sup>2)</sup> Ex i (ia) (Gas Ex-Zone 0/Class 1, Div. 1) Dust Ex-Zone 20, 21, Class II & III Div. 1 <sup>1)</sup> Ex Zone 1, 1/2, Zone 21, 22, (Class I, Div. 2), Class II & III, Div. 2 via encapsulation <sup>3)</sup>	A B G	
		<b>Further designs</b> Please add "-Z" to Article No. and specify Order code(s). Tag (device parameter, max. 32 characters) plate stainless steel 304/1.4301 cFM <sub>US</sub> , cCSA <sub>US</sub> , ATEX, IECEx INMETRO <sup>4)</sup> NEPSI ATEX, IECEx WHG and Vlaren
		<b>Operating Instructions</b> All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>
		<b>Accessories</b> Easy Aimer 2, aluminum, NPT with 3/4" x 1" PVC coupling Easy Aimer 2, aluminum with M20 adapter and 1" and 1 1/2" BSPT aluminum couplings Easy Aimer 304, NPT with 1" stainless steel coupling Easy Aimer 304, with M20 adapter and 1" and 1 1/2" 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" BSP locknut, plastic Plastic adapter 1" BSP - 20 mm Plastic adapter 1" NPT Plastic adapter 1" NPT/M20 SIMATIC RTU3010C compact, remote data manager with alarming SIMATIC RTU3030C compact, remote data manager with alarming Intrinsically Safe barrier SITRANS RD100, loop powered display - see Chapter 7 SITRANS RD150, remote digital display for 4 to 20 mA and HART devices - 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 For applicable back up point level switch - see point level measurement section
		Article No. <b>7ML1830-1AQ</b> <b>7ML1830-1AX</b> <b>7ML1830-1AU</b> <b>7ML1830-1GN</b> <b>7ML1830-1BK</b> <b>7ML1830-1BL</b> <b>7ML1830-1BM</b> <b>7ML1830-1BN</b> <b>7ML1830-1BP</b> <b>7ML1830-1BQ</b> <b>7ML1830-1DS</b> <b>7ML1830-1DR</b> <b>7ML1830-1EA</b> <b>7ML1830-1FX</b> <b>7ML1830-1EF</b> <b>6NH3112-0BA00-0XX0</b> <b>6NH3112-3BA00-0XX0</b> <b>7NG4124-1AA00</b> <b>7ML5741-.....-</b> <b>7ML5742-.....-</b> <b>7ML5740-.....-</b> <b>7ML5744-.....-</b>
		<sup>1)</sup> Must be ordered in combination with order codes E49, E25, E27, or E47. <sup>2)</sup> Cannot be ordered in combination with order codes E49, E25, E27, or E47. <sup>3)</sup> Available only with Order code E47. <sup>4)</sup> MASC approval is also included when ordered with Type of protection option G.

**Level measurement**

Continuous level measurement  
Radar level transmitters

**SITRANS LR110****Dimensional drawings**

SITRANS LR110, dimensions in mm (inch)

**Circuit diagrams**

12 ... 35 V DC  
4 ... 20 mA  
Loop powered

SITRANS LR120 Connections



## Overview



SITRANS LR120 is a compact radar transmitter for continuous level measurement of liquids and solids to a range of 30 m (98.4 ft).

## Benefits

- Bluetooth connectivity for easy setup with SITRANS mobile IQ
- Chemically resistant PVDF enclosure
- HART 7.0 or Modbus RTU (in preparation) communication for intelligent integration into your application
- W band FMCW radar yields narrow beam with small antenna for superior performance in applications with obstructions
- Approved for open air applications outside of a tank
- 2 mm accuracy and zero near range distance yields optimum inventory management capability
- Submergence shield accessory prevents build up on sensor during flooding conditions
- Hazardous area variants available for safe use in explosive gas or dust environments

## Application

SITRANS LR120 is a W band FMCW radar level transmitter, packaged in a hermetically sealed PVDF enclosure for years of trouble-free reliable measurement service.

4 to 20 mA loop powered with HART [optional 4-wire Modbus RTU (in preparation)], providing accurate level measurement to ranges of 30 m (98.4 ft). Its long range, narrow beam make LR120 suitable for wet wells with obstructions or solids level measurement, for example aggregates or plastic pellets. Programming is convenient using the Bluetooth connection and SITRANS mobile IQ application on your smart device.

## Technical specifications

<b>Mode of operation</b>	
Measuring principle	W band FMCW radar
Measuring range	0 ... 30 m (0 ... 98.4 ft)
Frequency	80 GHz nominal
Beam angle	4°
<b>Power Supply</b>	
HART	
• Voltage	12 ... 35 V DC
• Current	4 ... 20 mA
Modbus (in preparation)	
• Voltage	8 ... 30 V DC
• Current	38 mA at 8 V DC/17 mA at 30 V DC
<b>Communications</b>	
4 ... 20 mA	HART 7.0
Modbus (4-wire option) (in preparation)	RTU
<b>Accuracy</b>	
	± 2 mm (range 0.25 ... 30 m), ± 10 mm (range 0 ... 0.25 m)
<b>Rated operating conditions</b>	
Vessel pressure	-1 ... +3 bar (14.50 ... 43.51 psi g)
Ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
Process temperature	-40 ... +80 °C (-40 ... +176 °F)
Storage temperature	-40 ... +80 °C (-40 ... +176 °F)
<b>Design</b>	
Weight	0.7 kg (1.5 lb), plus 0.1 kg/m (0.2 lb/ft) cable length
Material	
• Enclosure	PVDF
• Submergence shield	<ul style="list-style-type: none"> <li>• Polypropylene</li> <li>• Silicone O-ring</li> </ul>
Degree of protection	IP66/IP68
Cable connection	1" NPT or 1" BSPT threaded connection
• HART	Length options: 5 ... 100 m (16.4 ... 328.1 ft), 2 conductor, twisted with shield 18 AWG, PVC jacket
• Modbus version (in preparation)	Length options: 5 ... 100 m (16.4 ... 328.1 ft), 4 conductor, twisted pairs, 22 AWG, polyurethane jacket
<b>Certificates and approvals</b>	
	CE, cFM <sub>US</sub> , cCSA <sub>US</sub> , ATEX, IECEX, RCM, FCC, Industry Canada, INMETRO, NEPSI, FDA(EG)1935/2004
<b>Programming</b>	
SITRANS mobile IQ app	SITRANS mobile IQ is a Bluetooth app that provides an intuitive interface to quickly configure, set up and monitor SITRANS LR100 series. For more information: <a href="http://www.siemens.com/mobileIQ">http://www.siemens.com/mobileIQ</a>
SIMATIC PDM	SIMATIC PDM allows for remote PC configuration and diagnostics (for installation on a network).

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR120

#### Selection and ordering data

#### Article No.

#### Order code

#### SITRANS LR120 Radar level transmitter

Continuous, non-contact, 30 m (98.4 ft) range, for liquids, slurries, and solids, integrated cable connection

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

#### Communications

HART (4 ... 20 mA)

#### Bluetooth function

Disabled

Enabled

#### Cable length

5 m

10 m

30 m

50 m

100 m

#### Type of protection

Non Ex (ordinary locations) cFM<sub>US</sub>, cCSA<sub>US</sub>, CE, RCM<sup>2)</sup>

Ex i (ia) (Gas Ex-Zone 0/Class I, Div. 1) Dust Ex-Zone 20, 21, Class II & III Div. 1<sup>1)</sup>

Ex Zone 1, 1/2, 2, Zone 21, 22, via encapsulation<sup>3)</sup>

#### Electrical connection of the cable entry

1" BSPT

1" NPT

7ML532-	-	A	0	6	-	0	0
		A	0	6	-	0	0
	0						
		0					
		1					
			A				
			B				
			C				
			D				
			E				
						A	
						B	
						G	
							H
							P

#### Further designs

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

Tag (device parameter, max. 32 characters) plate stainless steel 304/1.4301

cFM<sub>US</sub>, cCSA<sub>US</sub>, ATEX, IECEx

INMETRO<sup>4)</sup>

NEPSI

ATEX, IECEx

WHG and VlareM

#### Operating Instructions

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/processinstrumentation/documentation>

#### Accessories

Submergence shield kit

Easy Aimer 2, aluminum, NPT with 3/4" x 1" PVC coupling

Easy Aimer 2, aluminum with M20 adapter and 1" and 1/2" BSPT aluminum couplings

Easy Aimer 304, NPT with 1" stainless steel coupling

Easy Aimer 304, with M20 adapter and 1" and 1/2" 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" BSP locknut, plastic

Plastic adapter 1" BSP - 20 mm

Plastic adapter 1" NPT

Plastic adapter 1" NPT/M20

SIMATIC RTU3010C compact, remote data manager with alarming

SIMATIC RTU3030C compact, remote data manager with alarming

Intrinsically Safe barrier

SITRANS RD100, loop powered display - see Chapter 7

SITRANS RD150, remote digital display for 4 to 20 mA and HART devices - 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

For applicable back up point level switch - see point level measurement section

<sup>1)</sup> Must be ordered in combination with order codes E49, E25, E27, or E47.

<sup>2)</sup> Not available in combination with order codes E49, E25, E27, or E47.

<sup>3)</sup> Available only with Order code E47.

<sup>4)</sup> MASC approval is also included when ordered with Type of protection option G.

#### Article No.

A5E49069764

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

6NH3112-0BA00-0XX0

6NH3112-3BA00-0XX0

7NG4124-1AA00

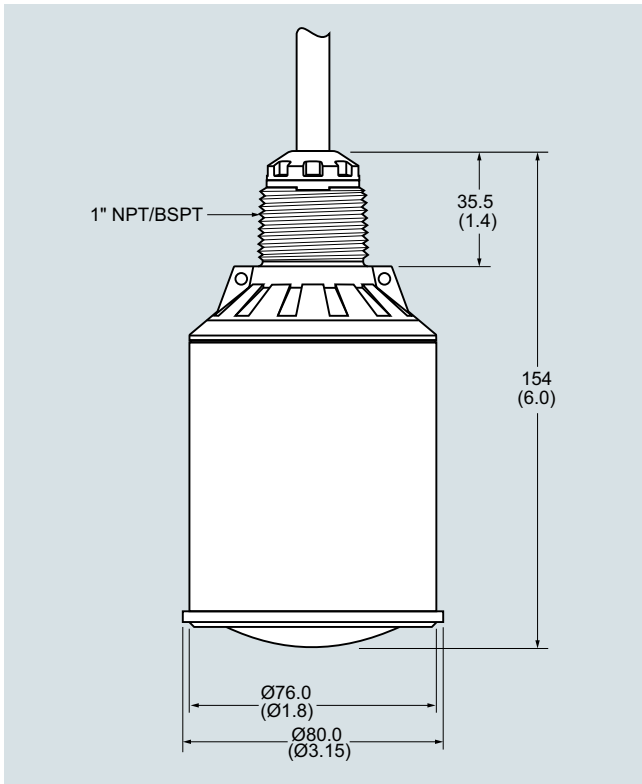
7ML5741-.....-

7ML5742-.....-

7ML5740-.....-

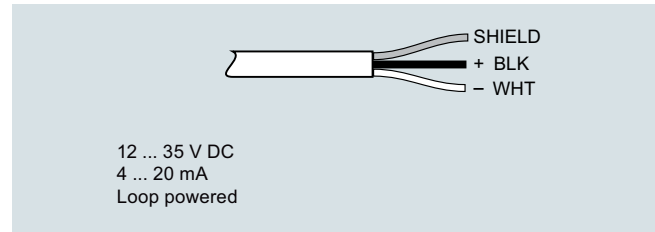
7ML5744-.....-

**Dimensional drawings**

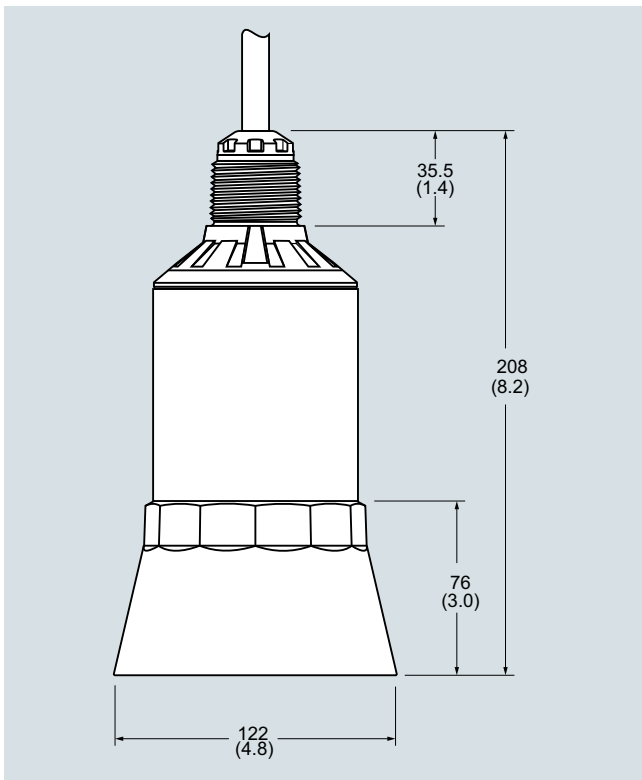


SITRANS LR120, dimensions in mm (inch)

**Circuit diagrams**



SITRANS LR120 Connections



SITRANS LR120 Submergence shield accessory, dimensions in mm (inch)

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR140

#### Overview



SITRANS LR140 is a 2 wire loop powered radar transmitter for continuous level measurement of liquids and slurries to a range of 8 m (26 ft).

#### Benefits

- Bluetooth connectivity for easy setup with SITRANS mobile IQ.
- Chemically resistant PVDF sensor.
- W band FMCW radar yields narrow beam with small antenna for superior performance in short range applications.
- Approved for open air applications outside of a tank.
- Compact design fits in limited space installations.

#### Application

SITRANS LR140 is a W band FMCW radar level transmitter, packaged in a chemically resistant enclosure with PVDF sensor for years of trouble-free reliable measurement service.

4 to 20 mA loop powered, it provides accurate level measurement to ranges of 8 m (26 ft). Measurement is possible, non-intrusively, through plastic vessel tops for easy installation. Programming is convenient using the Bluetooth connection and SITRANS mobile IQ application on your smart device.

#### Technical specifications

Mode of operation	
Measuring principle	W band FMCW radar
Measuring range	0 ... 8 m (0 ... 26 ft)
Frequency	80 GHz nominal
Beam angle	8°
Power Supply	
Voltage	12 ... 35 V DC
Current	4 ... 20 mA
Accuracy	
	± 5 mm
Rated operating conditions	
Vessel pressure	-1 ... +3 bar (14.50 ... 43.51 psi g)
Ambient temperature	-40 ... +60 °C (-40 ... +140 °F)
Process temperature	-40 ... +60 °C (-40 ... +140 °F)
Storage temperature	-40 ... +80 °C (-40 ... +176 °F)

#### Technical specifications (continued)

Design	
Weight	0.5 kg (1.1 lb), plus 0.1 kg/m (0.2 lb/ft) cable length
Material (sensor)	PVDF
Material (enclosure)	PBT
Process connection	1-½" NPT, 1-½" BSPT, or 1-½" BSPP
Degree of protection	IP66/IP67
Certificates and approvals	
	General Purpose, CE
Programming	
SITRANS mobile IQ App	SITRANS mobile IQ is a Bluetooth app that provides an intuitive interface to quickly configure, set up and monitor SITRANS LR100 series. For more information: <a href="http://www.siemens.com/mobileIQ">http://www.siemens.com/mobileIQ</a>

#### Selection and ordering data

#### Article No.

SITRANS LR140 Radar level transmitter	7ML533
Non-contact, 8 m (26.2 ft) range, for liquids and solids.	7 - 1 A 0 7 - 4 A 0
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Process connection	
1-½" NPT	A
R 1-½" (BSPT)	B
G 1-½" (BSPP)	C
Electrical connections/Cable entry	
M20	F
½" NPT	K

#### Further designs

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

Tag (device parameter, max. 32 characters) plate stainless steel 304/1.4301

#### Operating Instructions

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/processinstrumentation/documentation>

#### Accessories

SIMATIC RTU3010C compact, remote data manager with alarming

SIMATIC RTU3030C compact, remote data manager with alarming

SITRANS RD100, loop powered display - see Chapter 7

SITRANS RD150, remote digital display for 4 to 20 mA and HART devices - 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

For applicable back up point level switch - see point level measurement section

#### Order code

Y15

#### Article No.

6NH3112-0BA00-0XX0

6NH3112-3BA00-0XX0

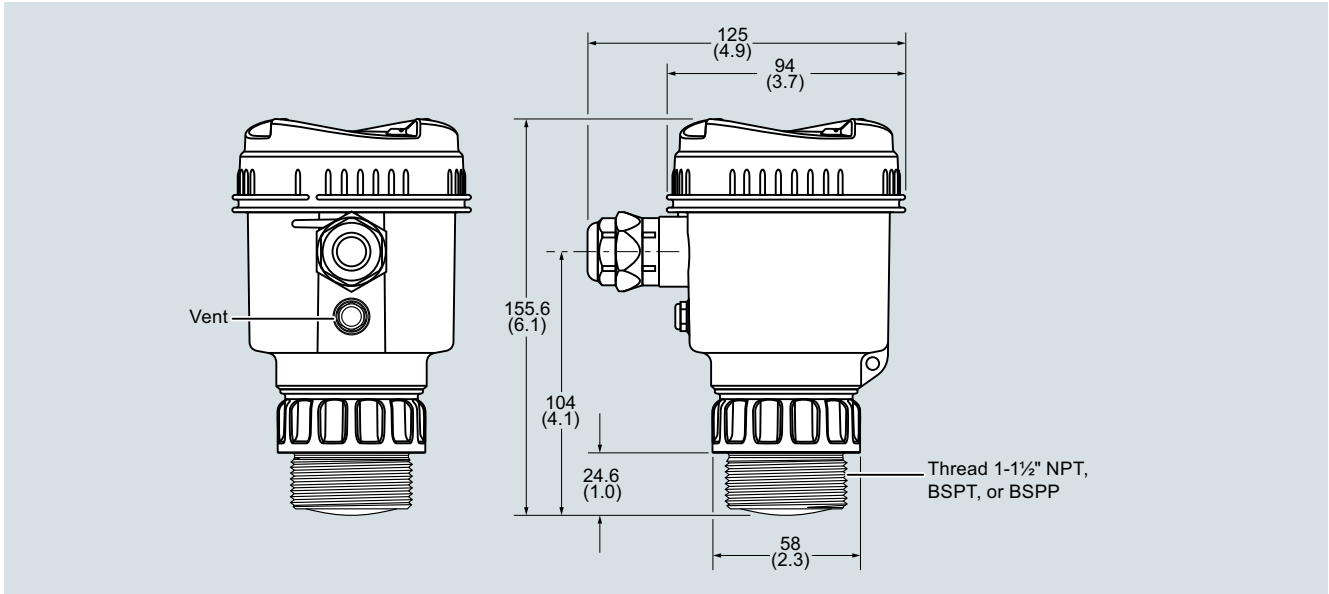
7ML5741-.....-

7ML5742-.....-

7ML5740-.....-

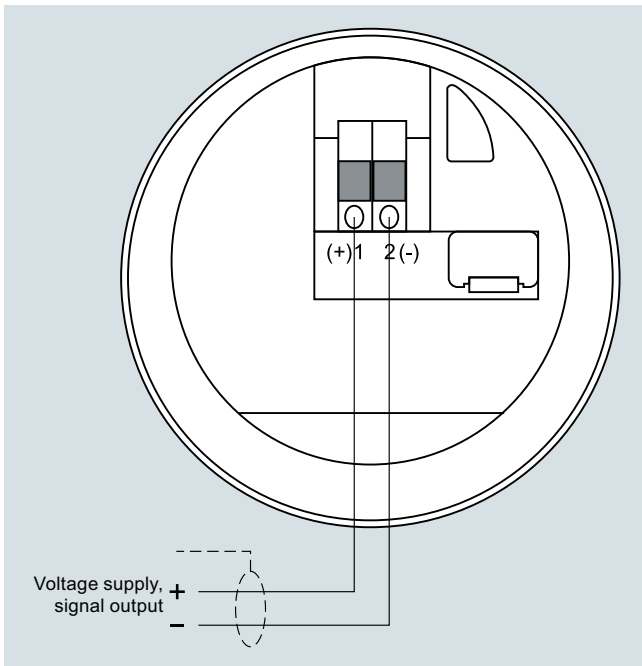
7ML5744-.....-

**Dimensional drawings**



SITRANS LR140, dimensions in mm (inch)

**Circuit diagrams**



SITRANS LR140 connections

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR150

#### Overview



SITRANS LR150 is a compact radar transmitter for continuous level measurement of liquids, slurries, and solids to a range of 15 m (49.2 ft).

#### Benefits

- Bluetooth connectivity for easy setup with SITRANS mobile IQ.
- Optional HMI with pushbutton programming and local diagnostic data.
- Chemically resistant PVDF sensor.
- HART 7.0 communication for intelligent integration into your application.
- W band FMCW radar yields narrow beam with small antenna for superior performance in short range applications.
- Approved for open air applications outside of a tank.
- 2 mm accuracy and zero near range distance yields optimum inventory management capability.
- Compact design fits in limited space installations.
- Hazardous area variants available for safe use in explosive gas or dust environments (pending).

#### Application

SITRANS LR150 is a W band FMCW radar level transmitter, with a chemically resistant PVDF sensor, for years of trouble-free, reliable measurement service.

4 to 20 mA loop powered with HART, providing accurate level measurement to ranges of 15 m (49.2 ft). Measurement is possible, non-intrusively, through plastic vessel tops for easy installation. Programming is convenient using the Bluetooth connection and SITRANS mobile IQ application on your smart device or locally with an optional HMI.

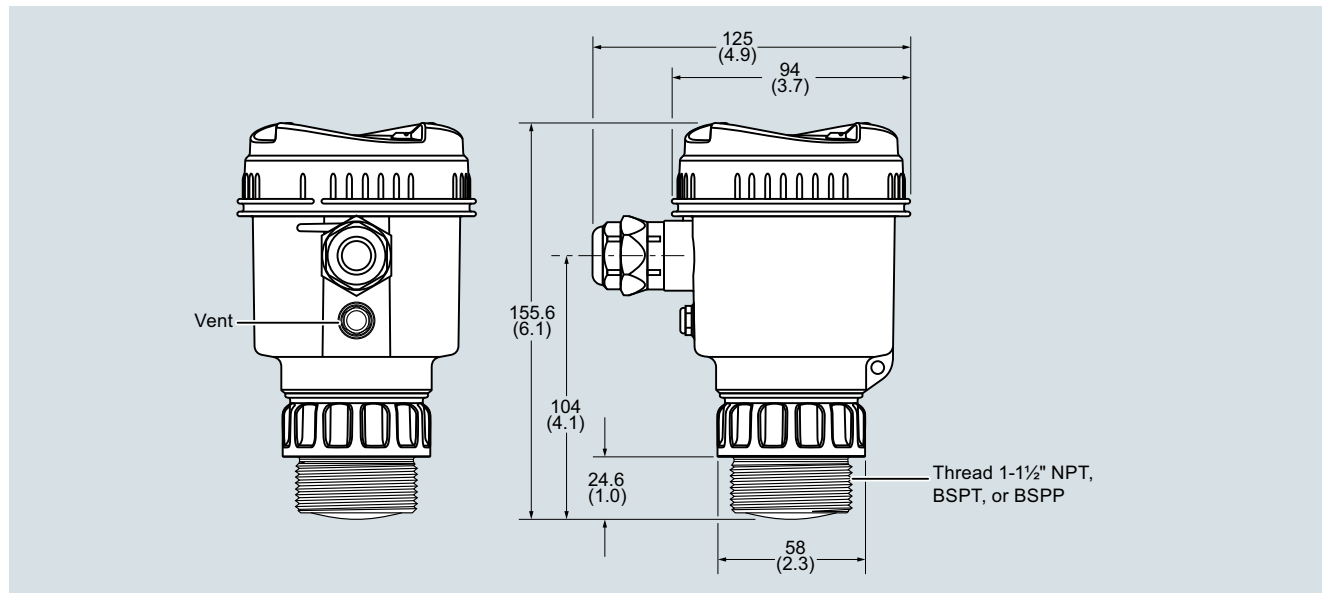
#### Technical specifications

<b>Mode of operation</b>	
Measuring principle	W band FMCW radar
Measuring range	0 ... 15 m (0 ... 49.2 ft)
Frequency	80 GHz nominal
Beam angle	8°
<b>Power Supply</b>	
HART	
• Voltage	12 ... 35 V DC
• Current	4 ... 20 mA
<b>Communications</b>	
4 ... 20 mA	HART 7.0
<b>Accuracy</b>	
	± 2 mm
<b>Rated operating conditions</b>	
Vessel pressure	-1 ... +3 bar (14.50 ... 43.51 psi g)
Ambient temperature	-40 ... +70 °C (-40 ... +158 °F)
Process temperature	-40 ... +70 °C (-40 ... +158 °F)
Storage temperature	-40 ... +80 °C (-40 ... +176 °F)
<b>Design</b>	
Weight	0.5 kg (1.1 lb)
Material (sensor)	PVDF
Material (enclosure)	PBT
Process connection	1-½" NPT, 1-½" BSPT or 1-½" BSPP
Degree of protection	IP66/IP67
Cable inlet	M20 or ½" NPT
<b>Certificates and approvals</b>	
	CE
<b>Programming</b>	
SITRANS mobile IQ App	SITRANS mobile IQ is a Bluetooth app that provides an intuitive interface to quickly configure, set up and monitor SITRANS LR100 series (available for Android, Apple and Windows devices). For more information: <a href="http://www.siemens.com/mobileIQ">http://www.siemens.com/mobileIQ</a>
Optional HMI	4 button with display of variables and diagnostic data
SIMATIC PDM	SIMATIC PDM allows for remote PC configuration and diagnostics (for installation on a network).

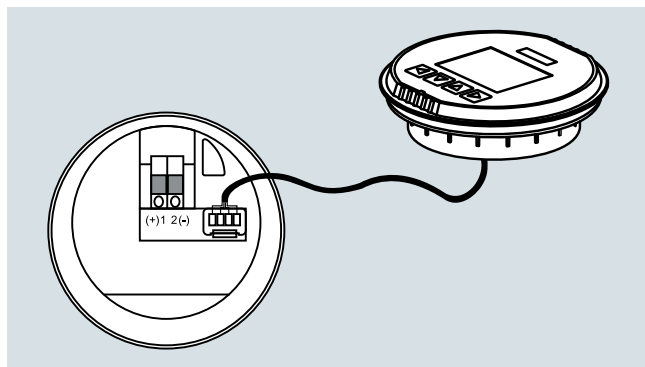
Selection and ordering data	Article No.	Order code
<b>SITRANS LR150 Radar level transmitter</b> Non-contact, 15 m (49.2 ft) range, for liquids and solids. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	<b>7ML534</b> 0 - A A 0 7 - 4	<b>Further designs</b> Please add "-Z" to Article No. and specify Order code(s).
<b>Bluetooth function</b> Disabled Enabled	0 1	<b>Operating Instructions</b> All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>
<b>Process connection</b> 1-½" NPT R 1-½" (BSPT) G 1-½" (BSPP)	A B C	<b>Accessories</b> SIMATIC RTU3030C compact, remote data manager with alarming Intrinsically Safe barrier SITRANS RD100, loop powered display - see Chapter 7 SITRANS RD150, remote digital display for 4 to 20 mA and HART devices - 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 For applicable back up point level switch -see point level measurement section
<b>Type of protection</b> Non Ex (ordinary locations)	A	Article No. <b>6NH3112-3BA00-0XX0</b> <b>7NG4124-1AA00</b> <b>7ML5741-.....-</b>
<b>Electrical connections/cable entry</b> M20 ½" NPT	F K	<b>7ML5742-.....-</b> <b>7ML5740-.....-</b> <b>7ML5744-.....-</b>
<b>Local HMI</b> Without display (closed lid of PBT/PC material) With display (closed lid of PBT/PC material) With display (clear lid with plastic window of PC material)	0 1 3	

**Level measurement**

Continuous level measurement  
Radar level transmitters

**SITRANS LR150****Dimensional drawings**

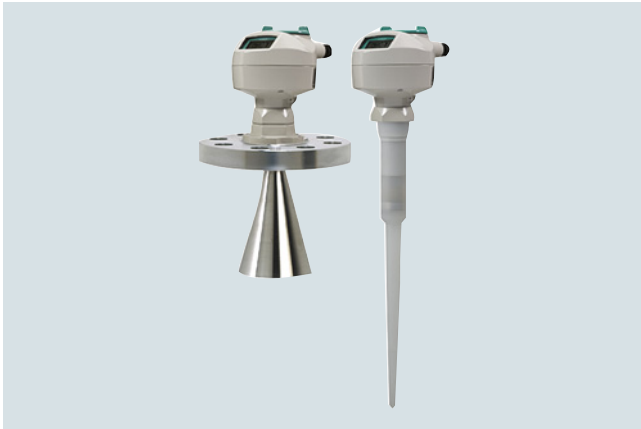
SITRANS LR150, dimensions in mm (inch)

**Circuit diagrams**

SITRANS LR150 connections



## 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

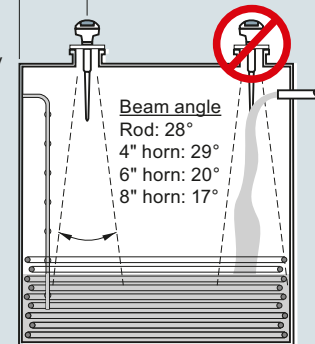
## Configuration

### Installation

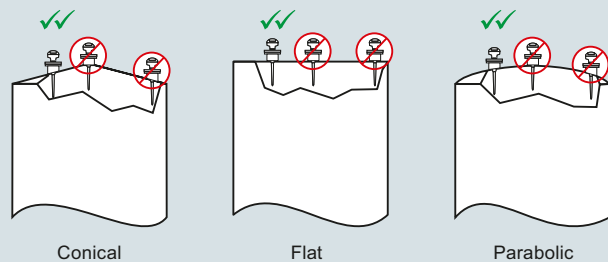
Min. 300 mm (1 ft) for every 3 m (10 ft) of vessel wall.

#### Note:

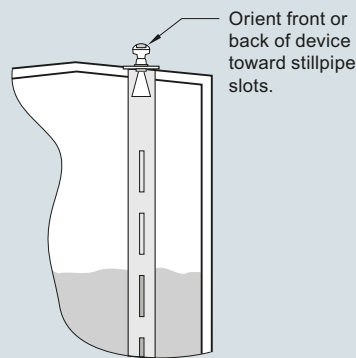
- Beam angle is the width of the cone where the energy density is half of the peak energy density.
- Beam angle for horn antenna dependent on horn size
- The peak energy density is directly in front of and in line with the rod antenna.
- There is a signal transmitted outside of the beam angle; therefore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



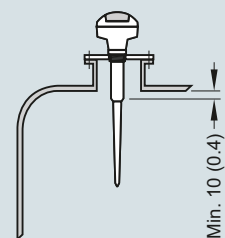
### Mounting unit on vessel



### Mounting unit on stilling well



### Mounting on a nozzle



SITRANS LR200 installation, dimensions in mm (inch)

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR200

#### Integration



SITRANS LR200 with flange adapter for connection to optional antennas.



Horn with waveguide extension. Used for high temperature isolation, long standpipes, and clearing tank obstructions.



Flat faced flange connection with PTFE rod antenna.



Shielded rod antenna with a stainless steel shield eliminates standpipe interference. Various lengths available.

Antenna configurations for SITRANS LR200

Antenna types	Flat Faced Flange with Rod	Shielded Rod	Horn (4", 6", 8" sizes available)
<b>Connection type</b>	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)
<b>Wetted parts</b>	PTFE	PTFE, 316L stainless steel, FKM O-ring	316L stainless steel PTFE, FKM O-ring
<b>Extensions</b>	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
<b>Dielectric constant</b>	> 3	> 3	> 3
<b>Insertion length (max.)</b>	41 cm (16.3 inch)	Variable	Variable with extension
<b>Purging option (liquid or gas)</b>	No	No	Yes
<b>Sliding waveguide option for digesters<sup>1)</sup></b>	Yes	No	Yes
<b>Weight<sup>2)</sup></b>	6.5 kg (14.3 lb)	5.0 kg (11 lb)	7.5 kg (16.5 lb)

<sup>1)</sup> Maximum pressure 0.5 bar g at 60 °C (7.25 psi g at 140 °F)

<sup>2)</sup> Not including extensions, includes SITRANS LR200 and smallest process connection

## Technical specifications

<b>Mode of operation</b>		<b>Power supply</b>		
Measuring principle	Radar level measurement	4 ... 20 mA/HART	Nominal 24 V DC (max. 30 V DC) with max. 550 Ω Nominal 24 V DC (max. 30 V DC) with max. 250 Ω	
Frequency	C-band, approx. 6 GHz	<ul style="list-style-type: none"> <li>General Purpose, Non-incendive, Intrinsically Safe</li> <li>Flame proof, Increased safety, Explosion proof</li> </ul>		
Measuring range	0.3 ... 20 m (1.0 ... 65 ft)	PROFIBUS PA	<ul style="list-style-type: none"> <li>10.5 mA</li> <li>Per IEC 61158-2</li> </ul>	
<b>Output</b>		<b>Certificates and approvals</b>		
Analog output	4 ... 20 mA	General	CSA <sub>US/C</sub> , CE, FM, RCM	
Accuracy	± 0.02 mA	Marine	<ul style="list-style-type: none"> <li>Lloyd's Register of Shipping</li> <li>ABS Type Approval</li> </ul>	
Span	Proportional or inversely proportional	Radio	FCC, Industry Canada, and European (RED), RCM	
Communications	HART Optional: PROFIBUS PA (Profile 3.0, Class B)	Hazardous	<ul style="list-style-type: none"> <li>Intrinsically Safe (Brazil)</li> <li>Explosion Proof (Canada/USA)</li> </ul>	
Fail-safe	Programmable as high, low or hold (Loss of Echo)	<ul style="list-style-type: none"> <li>Intrinsically Safe (Canada/USA)</li> <li>Non-incendive (USA)</li> <li>Flame Proof/Increased Safety (China)</li> <li>Flame Proof (Europe)</li> <li>Increased Safety (Europe)</li> <li>Intrinsically Safe (Europe)</li> <li>Intrinsically Safe (International)</li> <li>Intrinsically Safe (Russia/Kazakhstan)</li> </ul>	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	
<b>Performance (according to reference conditions IEC60770-1)</b>		<b>Programming</b>		
From end of antenna to 600 mm	40 mm (1.57 inch)	Intrinsically Safe Siemens handheld programmer	Infrared receiver	
Remainder of range	10 mm (0.4 inch) or 0.1 % of span (whichever is greater)	<ul style="list-style-type: none"> <li>Approvals for handheld programmer</li> </ul>	IS model: ATEX II 1GD Ex ia IIC T4 Ga Ex iaD 20 T135 °C T <sub>a</sub> = -20 ... +50 °C CSA/FM Class I, II, and III, Div. 1, Groups A, B, C, D, E, F, G, T6 T <sub>a</sub> = +50 °C	
<b>Rated operating conditions</b>		Handheld communicator	HART communicator 375	
Installation conditions	Indoor/outdoor	PC	<ul style="list-style-type: none"> <li>SIMATIC PDM</li> <li>AMS</li> <li>SITRANS DTM (for connecting to FDT such as PACTware or Fieldcare)</li> </ul>	
<ul style="list-style-type: none"> <li>Location</li> </ul>		Display (local)	Multi-segment alphanumeric liquid crystal with bar graph (representing level) available in four languages	
Ambient conditions (enclosure)		<ul style="list-style-type: none"> <li>Ambient temperature</li> <li>Storage temperature</li> <li>Installation category</li> <li>Pollution degree</li> </ul>		
<ul style="list-style-type: none"> <li>Ambient temperature</li> <li>Storage temperature</li> <li>Installation category</li> <li>Pollution degree</li> </ul>				
<ul style="list-style-type: none"> <li>Ambient temperature</li> <li>Storage temperature</li> <li>Installation category</li> <li>Pollution degree</li> </ul>				
<b>Medium conditions</b>				
Dielectric constant $\epsilon_r$	$\epsilon_r > 1.6$ (for $\epsilon_r < 3$ , use stillpipe)			
Vessel temperature and pressure	Varies with connection type; see Pressure/Temperature curves for more information			
<b>Design</b>				
Enclosure	Aluminum, polyester powder coated 2 x M20 x 1.5 or 2 x 1/2" NPT			
<ul style="list-style-type: none"> <li>Material</li> <li>Cable inlet</li> </ul>				
Degree of protection	Type 4X/NEMA 4X, Type 6/ NEMA 6, IP67, IP68			
Weight	< 2.82 kg (6.21 lb) (polypropylene rod antenna)			
Display (local)	Multi-segment alphanumeric liquid crystal with bar graph (representing level) available in four languages			
Antenna	Polypropylene rod, hermetically sealed construction, optional PTFE 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			
<ul style="list-style-type: none"> <li>Material</li> </ul>				
<ul style="list-style-type: none"> <li>Dimensions</li> </ul>				
<ul style="list-style-type: none"> <li>Optional rods and horn</li> </ul>				
Process connections	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			
<ul style="list-style-type: none"> <li>Process connection</li> </ul>				
<ul style="list-style-type: none"> <li>Flange connection</li> </ul>				

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR200

#### Selection and ordering data

#### Article No.

#### Order code

##### SITRANS LR200 Radar level transmitter with polypropylene rod

Continuous, non-contact, 20 m (66 ft) range, for liquids and slurries.

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

##### Enclosure/Cable inlet

Aluminum, epoxy painted

2 x 1/2" NPT

2 x M20 x 1.5

##### Polypropylene antenna type - (Max. 3 Bar pressure and 80 °C)

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

c/w integral 100 mm shield

R 1 1/2" [(BSPT), EN 10226],

c/w integral 100 mm shield

G 1 1/2" [(BSPP), EN ISO 228-1],

c/w integral 100 mm shield

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

c/w integral 250 mm shield

R 1 1/2" [(BSPT), EN 10226],

c/w integral 250 mm shield

G 1 1/2" [(BSPP), EN ISO 228-1],

c/w integral 250 mm shield

##### Approvals

General Purpose, CE, RED, RCM

General Purpose, CSA, FM, Industry Canada, FCC

Intrinsically Safe, CSA Class I, II, Div. 1,

Groups A, B, C, D, E, F, G, Industry Canada

Intrinsically Safe, FM Class I, II, Div. 1,

Groups A, B, C, D, E, F, G, FCC

Intrinsically Safe, IECEx/ATEX II 1G Ex ia IIC T4,

INMETRO Ex ia IIC T4, CE, RED, RCM; EAC

Non incandive, FM Class I, Div. 2,

Groups A, B, C, D, FCC<sup>1)</sup>

Increased Safety, ATEX II 1/2G

Ex e mb ia IIC T4 Ga/Gb, CE, RED, RCM; EAC<sup>2)3)</sup>

Flame Proof, ATEX II 1/2G Ex d mb ia IIC T4 Ga/Gb,

CE, RED, RCM; EAC<sup>3)</sup>

Explosion Proof, CSA/FM Class I, II, III,

Groups A, B, C, D, E, F, G, Industry Canada,

FCC<sup>1)3)</sup>

##### Communication/Output

PROFIBUS PA

4 ... 20 mA, HART, start-up at < 3.6 mA

<sup>1)</sup> Available with enclosure option 2 only.

<sup>2)</sup> Available with enclosure option 3 only.

<sup>3)</sup> Available with communication option 3 only.

7ML5422-

0

2

3

A

B

C

D

E

F

A

B

C

D

E

F

G

H

J

2

3

#### 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

Namur NE43 compliant, device preset to failsafe < 3.6 mA<sup>1)</sup>

N07

#### 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, EEx ia

Article No.

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<sup>2)</sup>

7ML1930-1AP

One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), PROFIBUS PA<sup>2)</sup>

7ML1930-1AQ

One general purpose polymeric cable gland M20 x 1.5, rated -20 ... +80 °C (-40 ... +176 °F)

7ML1930-1AM

SITRANS RD100, loop powered display - see Chapter 7

7ML5741-.....-

SITRANS RD150, remote digital display for 4 ... 20 mA and HART devices - see Chapter 7

7ML5742-.....-

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-.....-

For applicable back up point level switch - see point level measurement section

<sup>1)</sup> Available with communication option 3 only.

<sup>2)</sup> Product shipped with plastic cable gland, rated to -20 °C. If -40 °C rating required, then metallic cable gland is recommended.

Selection and ordering data	Article No.	Article No.
<b>SITRANS LR200 Radar level transmitter with PTFE rod</b> Continuous, non-contact, 20 m (66 ft) range, for liquids and slurries. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5423-	7ML5423-
<b>Antenna material (uses antenna adapter)</b> PTFE, uses antenna adapter and additional process connection below	1	
<b>Process connection (refer to Pressure/Temperature curves, page 4/259)</b> Flanges (316L stainless steel) DN 50 PN 16, Type A, flat faced DN 80 PN 16, Type A, flat faced DN 100 PN 16, Type A, flat faced DN 150 PN 16, Type A, flat faced 2" ASME 150 lb, flat faced 3" ASME 150 lb, flat faced 4" ASME 150 lb, flat faced 6" ASME 150 lb, flat faced DN 50 PN 40, flat faced DN 80 PN 40, flat faced DN 100 PN 40, flat faced DN 150 PN 40, flat faced 2" ASME 300 lb, flat faced, available with Pressure rating option 1 only due to flange hole spacing 3" ASME 300 lb, flat faced 4" ASME 300 lb, flat faced 6" ASME 300 lb, flat faced JIS DN 50 10K JIS DN 80 10K JIS DN 100 10K JIS DN 150 10K (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] 2" NPT [(Taper), ANSI/ASME B1.20.1] R 1½" [(BSPT), EN 10226] R 2" [(BSPT), EN 10226] G 1½" [(BSPP), EN ISO 228-1] G 2" [(BSPP), EN ISO 228-1]	A A B A C A D A F B G B H B J B A C B C C C D C F D G D H D J D A E B E C E D E L A M A L C M C L E M E	2 3 B C A B C D E F G H J 0 1
<b>Antenna extensions or Inactive shield length</b> No antenna extension 50 mm (2 inch) extension, PTFE 100 mm (4 inch) extension, PTFE 100 mm (4 inch) extension, 316L stainless steel shield <sup>1)</sup> 150 mm (6 inch) extension, 316L stainless steel shield <sup>1)</sup> 200 mm (8 inch) extension, 316L stainless steel shield <sup>1)</sup> 250 mm (10 inch) extension, 316L stainless steel shield <sup>1)</sup>	0 1 2 3 4 5 6	
<b>Process seal/gasket</b> Integral Gasket, for flat faced flange process connections only, not for Antenna extension options 3 ... 6 FKM O-ring, not available for combination of flat faced flanges with Antenna extension options 0, 1 or 2	0 1	
<b>SITRANS LR200 Radar level transmitter with PTFE rod</b> Continuous, non-contact, 20 m (66 ft) range, for liquids and slurries.		7ML5423-
<b>Enclosure/Cable inlet</b> Aluminum, Epoxy painted 2 x ½" NPT 2 x M20 x 1.5		2 3
<b>Communication/Output</b> PROFIBUS PA 4 ... 20 mA, HART, start-up at < 3.6 mA		B C
<b>Approvals</b> General Purpose, CE, RED, RCM General Purpose, CSA, FM, Industry Canada, FCC Intrinsically Safe, CSA Class I, II, Div. 1, Groups A, B, C, D, E, F, G, Industry Canada Intrinsically Safe, FM Class I, II, Div. 1, Groups A, B, C, D, E, F, G, FCC Intrinsically Safe, IECEx/ATEX II 1G Ex ia IIC T4, INMETRO Ex ia IIC T4, CE, RED, RCM; EAC Non incandive, FM Class I, Div. 2, Groups A, B, C, D, FCC <sup>2)</sup> Increased Safety, ATEX II ½G Ex e mb ia IIC T4 Ga/Gb, CE, RED, RCM; EAC <sup>3)4)</sup> Flame Proof, ATEX II ½G Ex d mb ia IIC T4 Ga/Gb, CE, RED, RCM; EAC <sup>4)</sup> Explosion Proof, CSA/FM Class I, II, III, Groups A, B, C, D, E, F, G, Industry Canada, FCC <sup>2)4)</sup>		A B C D E F G H J
<b>Pressure rating</b> Rating per Pressure/Temperature curves in manual 0.5 bar g (7.25 psi g) maximum		0 1
<sup>1)</sup> Available with process connection options BA, CA, DA, GB, HB, JB, BC, CC, DC, GD, HD, JD, BE, CE, DE, MA, MC, ME only. <sup>2)</sup> Available with enclosure option 2 only. <sup>3)</sup> Available with enclosure option 3 only. <sup>4)</sup> Available with communication option C only.		

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR200

#### Selection and ordering data

#### Order code

#### Article No

##### 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<sup>3</sup>)

**N07**

##### Operating Instructions

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range of languages, at

<http://www.siemens.com/processinstrumentation/documentation>

##### Accessories

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 RD150, remote digital display for  
4 ... 20 mA and HART devices - see Chapter 7

**7ML5742-.....-**

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-.....-**

For applicable back up point level switch - see  
point level measurement section

Selection and ordering data	Article No.	Article No.	
<b>SITRANS LR200 Radar level transmitter with horn</b> Continuous, non-contact, 20 m (66 ft) range, for liquids and slurries. <a href="#">Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</a>	7ML5425-	7ML5425-	
<b>Antenna material (uses antenna adapter)</b> 316L stainless steel with PTFE cone emitter 316L stainless steel with PTFE cone emitter and purge connection with 1/8" NPT inlet <sup>1)</sup>	0 1		
<b>Process connection (refer to Pressure/Temperature curves, page 4/259)</b> Flanges (316L stainless steel) DN 50 PN 16 EN 1092-1 Type A flat faced <sup>1)</sup> DN 80 PN 16 EN 1092-1 Type A flat faced DN 100 PN 16 EN 1092-1 Type A flat faced DN 150 PN 16 EN 1092-1 Type A flat faced DN 200 PN 16 EN 1092-1 Type A flat faced DN 80 PN 10/16 DIN EN 1092-1 Type B1 raised face <sup>2)</sup> DN 100 PN 10/16 DIN EN 1092-1 Type B1 raised face <sup>3)</sup> DN 150 PN 10/16 DIN EN 1092-1 Type B1 raised face <sup>3)</sup> DN 200 PN 16 DIN EN 1092-1 Type B1 raised face <sup>3)</sup> 2" ASME 150 lb, flat faced <sup>1)</sup> 3" ASME 150 lb, flat faced 4" ASME 150 lb, flat faced 6" ASME 150 lb, flat faced 8" ASME 150 lb, flat faced DN 50 PN 40, flat faced <sup>3)</sup> DN 80 PN 40, flat faced <sup>3)</sup> DN 100 PN 40, flat faced <sup>3)</sup> DN 80 PN 25/40 DIN EN 1092-1 Type B1 raised face <sup>3)</sup> DN 100 PN 25/40 DIN EN 1092-1 Type B1 raised face <sup>3)</sup> DN 150 PN 25/40 DIN EN 1092-1 Type B1 raised face <sup>3)</sup> 2" ASME 300 lb, flat faced <sup>1)3)</sup> 3" ASME 300 lb, flat faced <sup>3)</sup> 4" ASME 300 lb, flat faced <sup>3)</sup> JIS DN 50 10K <sup>1)</sup> JIS DN 80 10K JIS DN 100 10K JIS DN 150 10K JIS DN 200 10K (Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5, or EN 1092-1, or JIS B 2220 standard.)	A A B A C A D A E A B F C F D F E F F B G B H B J B K B A C B C C C C G D G E G F D G D H D A E B E C E D E E E	<b>Process seal/gasket</b> FKM (-40 ... +200 °C)	0
		<b>Enclosure/Cable inlet</b> Aluminum, Epoxy painted 2 x 1/2" NPT 2 x M20 x 1.5	2 3
		<b>Horn size/Waveguide options</b> 80 mm (3 inch) horn <sup>3)</sup> 100 mm (4 inch) horn <sup>4)</sup> 150 mm (6 inch) horn 200 mm (8 inch) horn 100 mm (4 inch) horn with 100 mm (4 inch) waveguide extension <sup>4)</sup> 100 mm (4 inch) horn with 150 mm (6 inch) waveguide extension <sup>4)</sup> 100 mm (4 inch) horn with 200 mm (8 inch) waveguide extension <sup>4)</sup> 100 mm (4 inch) horn with 250 mm (10 inch) waveguide extension <sup>4)</sup> 150 mm (6 inch) horn with 100 mm (4 inch) waveguide extension 150 mm (6 inch) horn with 150 mm (6 inch) waveguide extension 150 mm (6 inch) horn with 200 mm (8 inch) waveguide extension 150 mm (6 inch) horn with 250 mm (10 inch) waveguide extension 200 mm (8 inch) horn with 100 mm (4 inch) waveguide extension 200 mm (8 inch) horn with 150 mm (6 inch) waveguide extension 200 mm (8 inch) horn with 200 mm (8 inch) waveguide extension 200 mm (8 inch) horn with 250 mm (10 inch) waveguide extension	B C D E F G H J K L M N P Q R S
<b>Communication/Output</b> PROFIBUS PA 4 ... 20 mA, HART, start-up at < 3.6 mA	1 2		

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR200

#### Selection and ordering data

#### Article No.

#### Order code

##### SITRANS LR200 Radar level transmitter with horn

Continuous, non-contact, 20 m (66 ft) range, for liquids and slurries.

##### Approvals

General Purpose, CE, RED, RCM  
General Purpose, CSA, FM, Industry Canada, FCC  
Intrinsically Safe, CSA Class I, II, Div. 1, Groups A, B, C, D, E, F, G, Industry Canada  
Intrinsically Safe, FM Class I, II, Div. 1, Groups A, B, C, D, E, F, G, FCC  
Intrinsically Safe, IECEx/ATEX II 1G Ex ia IIC T4, INMETRO Ex ia IIC T4, CE, RED, RCM; EAC  
Non incensive, FM Class I, Div. 2, Groups A, B, C, D, FCC<sup>4)</sup>  
Increased Safety, ATEX II ½G Ex e mb ia IIC T4 Ga/Gb, CE, RED, RCM; EAC<sup>5)6)</sup>  
Flame Proof, ATEX II ½G Ex d mb ia IIC T4 Ga/Gb, CE, RED, RCM; EAC<sup>7)</sup>  
Explosion Proof, CSA/FM Class I, II, III, Groups A, B, C, D, E, F, G, Industry Canada, FCC<sup>5)7)</sup>

##### Pressure rating

Rating per Pressure/Temperature curves in manual  
0.5 bar g (7.25 psi g) maximum

- 1) Available with pressure rating option 1 only.
- 2) Available with Antenna Material options 0 and 1 only.
- 3) For stillpipe applications only.
- 4) Available with enclosure option 2 only.
- 5) Available with enclosure option 3 only.
- 6) Available with communication option 2 only.
- 7) Available with Communication/Output option 2 only.

Article No.	Order code
7ML5425-	
0	
1	
A	
B	
C	
D	
E	
F	
G	
H	
J	

##### 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<sup>1)</sup>

N07

##### Operating Instructions

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<http://www.siemens.com/processinstrumentation/documentation>

##### Accessories

Handheld programmer, Intrinsically safe, EEx ia HART modem/USB (for use with a PC and SIMATIC PDM)

Article No.

7ML1930-1BK

7MF4997-1DB

One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), HART<sup>2)</sup>

7ML1930-1AP

One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), PROFIBUS PA<sup>3)</sup>

7ML1930-1AQ

One general purpose polymeric cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F)

7ML1930-1AM

SITRANS RD100, loop powered display - see Chapter 7

7ML5741-.....-

SITRANS RD150, remote digital display for 4 ... 20 mA and HART devices - see Chapter 7

7ML5742-.....-

SITRANS RD200, universal input display with Modbus conversion - see Chapter 7

7ML5740-.....-


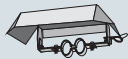


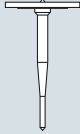

SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7

7ML5744-.....-

For applicable back up point level switch - see point level measurement section

- 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.



Selection and ordering data	Article No.	Article No.
<b>SITRANS LR200 Specials</b>		
<b>SITRANS LR200 PROFIBUS PA aluminum enclosure kit with electronics and covers (7ML5422, 7ML5423, 7ML5424, 7ML5425), calibrated for use with standard rod antenna</b>		
	<b>A5E01483420</b>	<b>A5E39142556</b>
SITRANS LR200 aluminum enclosure with board stack, LUI display, 5.8 GHz, M20 cable inlet, approval option E, with PROFIBUS PA communication, no process connection.	<b>A5E01483440</b>	
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.	<b>A5E01483440</b>	<b>PBD-25500K02A</b>
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.	<b>A5E01483456</b>	<b>PBD-25500K03A</b>
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.	<b>A5E01483547</b>	<b>PBD-25500K05A</b>
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.	<b>A5E01483559</b>	
<b>SITRANS LR200 HART aluminum enclosure kit with electronics and covers (7ML5422, 7ML5423, 7ML5424, 7ML5425), calibrated for use with standard rod antenna</b>		
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.	<b>A5E02956419</b>	<b>PBD-51003K020AAAA</b>
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.	<b>A5E02956420</b>	<b>PBD-51003K050AJAA</b>
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.	<b>A5E02956421</b>	<b>PBD-51003K050AOAA</b>
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.	<b>A5E02956422</b>	
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.	<b>A5E03617085</b>	
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.	<b>A5E03617086</b>	<b>PBD-51004K2AAA</b>
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.	<b>A5E03617087</b>	<b>PBD-51004K3AAA</b>
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.	<b>A5E03617088</b>	
		<b>Sun shield for SITRANS LR200 enclosure, stainless steel</b>
		<b>SITRANS LR200 horn antenna kits with mounting screws (no emitter supplied)</b>
		80 mm (3 inch) horn antenna kit
		100 mm (4 inch) horn antenna kit
		150 mm (6 inch) horn antenna kit
		<b>SITRANS LR200 Extension Kits for Horn Antenna with mounting screw</b>
		100 mm (4 inch) extension kit for horn antenna
		150 mm (6 inch) extension kit for horn antenna
		200 mm (8 inch) extension kit for horn antenna
		250 mm (10 inch) extension kit for horn antenna
		500 mm (20 inch) extension kit for horn antenna
		1 000 mm (40 inch) extension kit for horn antenna
		<b>SITRANS LR200 flanged rod antenna kit with 316L stainless steel flat faced flanges</b>
		Flanged PTFE rod antenna kit, 2" ASME, 150 lb. See drawing 51003 on <a href="http://www.siemens.com/radar">http://www.siemens.com/radar</a> <sup>1)4)</sup>
		Flanged PTFE rod antenna kit, DN 50 PN16. See drawing 51003 on <a href="http://www.siemens.com/radar">http://www.siemens.com/radar</a> . <sup>1)4)</sup>
		Flanged PTFE rod antenna kit, JIS 10K DN 50. See drawing 51003 on <a href="http://www.siemens.com/radar">http://www.siemens.com/radar</a> . <sup>1)4)</sup>
		<b>SITRANS LR200 PTFE rod antenna kit with 316L stainless steel 1 1/2" pipe thread process connection</b>
		PTFE rod antenna kit, R 1 1/2" (BSPT), EN 10226 316L stainless steel process connection, FKM O-ring. See drawing 51004 on <a href="http://www.siemens.com/radar">http://www.siemens.com/radar</a> . <sup>4)</sup>
		PTFE rod antenna kit, 1 1/2" G 316L stainless steel process connection, FKM O-ring. See drawing 51004 on <a href="http://www.siemens.com/radar">http://www.siemens.com/radar</a> . <sup>4)</sup>

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR200

#### Selection and ordering data

##### SITRANS LR200 PTFE rod antenna kit with 316L stainless steel 2" pipe thread process connection

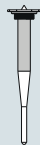


PTFE rod antenna kit, 2" NPT 316L stainless steel process connection, FKM O-ring. See drawing 51005 on <http://www.siemens.com/radar>.<sup>4)</sup>

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>.<sup>4)</sup>

PTFE rod antenna kit, 2" G 316L stainless steel process connection, FKM O-ring. See drawing 51005 on <http://www.siemens.com/radar>.<sup>4)</sup>

##### SITRANS LR200 PTFE rod antenna kit (100 mm shield) with 316L stainless steel 2" pipe thread process connection



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>.<sup>3)4)</sup>

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>.<sup>3)4)</sup>

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>.<sup>3)4)</sup>

##### SITRANS LR200 horn antenna kit with 316L stainless steel flat faced flange, with PTFE emitter (without waveguide)



Horn antenna kit, 2" ASME 316L stainless steel flange 3" horn, PTFE emitter<sup>1)2)</sup>

Horn antenna kit, 2" ASME 316L stainless steel flange 4" horn, PTFE emitter<sup>1)2)</sup>

Horn antenna kit, 2" ASME 316L stainless steel flange 6" horn, PTFE emitter<sup>1)2)</sup>

Horn antenna kit, 2" ASME 316L stainless steel flange 8" horn, PTFE emitter<sup>1)2)</sup>

Horn antenna kit, DN 50 PN 16 316L stainless steel flange 80 mm horn, PTFE emitter<sup>1)2)</sup>

Horn antenna kit, DN 50 PN 16 316L stainless steel flange 100 mm horn, PTFE emitter<sup>1)2)</sup>

Horn antenna kit, DN 50 PN 16 316L stainless steel flange 150 mm horn, PTFE emitter<sup>1)2)</sup>

Horn antenna kit, DN 50 PN 16 316L stainless steel flange 200 mm horn, PTFE emitter<sup>1)2)</sup>

#### Article No.

**PBD-51005K1AAA**

**PBD-51005K2AAA**

**PBD-51005K3AAA**

**PBD-51002K0100AAA**

**PBD-51002K0100BAA**

**PBD-51002K0100CAA**

**PBD-51006K020AAAA**

**PBD-51006K020AABA**

**PBD-51006K020ACAA**

**PBD-51006K020AADA**

**PBD-51006K050AJAA**

**PBD-51006K050AJBA**

**PBD-51006K050AJCA**

**PBD-51006K050AJDA**

#### 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.<sup>1)4)</sup>

PTFE shielded rod antenna kit, flanged, DN 80 PN 16 316L stainless steel flange, 100 mm 316L stainless steel shield.<sup>1)4)</sup>

PTFE shielded rod antenna kit, flanged, 3" ASME 150 lb 316L stainless steel flange, 150 mm 316L stainless steel shield.<sup>1)4)</sup>

PTFE shielded rod antenna kit, flanged, DN 80 PN 16 316L stainless steel flange, 150 mm 316L stainless steel shield.<sup>1)4)</sup>

PTFE shielded rod antenna kit, flanged, 3" ASME 150 lb 316L stainless steel flange, 200 mm 316L stainless steel shield.<sup>1)4)</sup>

PTFE shielded rod antenna kit, flanged, DN 80 PN 16 316L stainless steel flange, 200 mm 316L stainless steel shield.<sup>1)4)</sup>

PTFE shielded rod antenna kit, flanged, 3" ASME 150 lb 316L stainless steel flange, 250 mm 316L stainless steel shield.<sup>1)4)</sup>

PTFE shielded rod antenna kit, flanged, DN 80 PN 16 316L stainless steel flange, 250 mm 316L stainless steel shield.<sup>1)4)</sup>

#### PTFE paste

Kit, PTFE paste, Tube, 250 mL

#### Cable gland

One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), HART

One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), PROFIBUS PA

**PBD-51014K0100AAA**

**PBD-51014K0100EJA**

**PBD-51014K0150AAA**

**PBD-51014K0150EJA**

**PBD-51014K0200AAA**

**PBD-51014K0200EJA**

**PBD-51014K0250AAA**

**PBD-51014K0250EJA**

**PBD-51036065**

**7ML1930-1AP**

**7ML1930-1AQ**

<sup>1)</sup> Available in flange sizes including ASME, DIN and JIS. Please consult a local sales person for details.

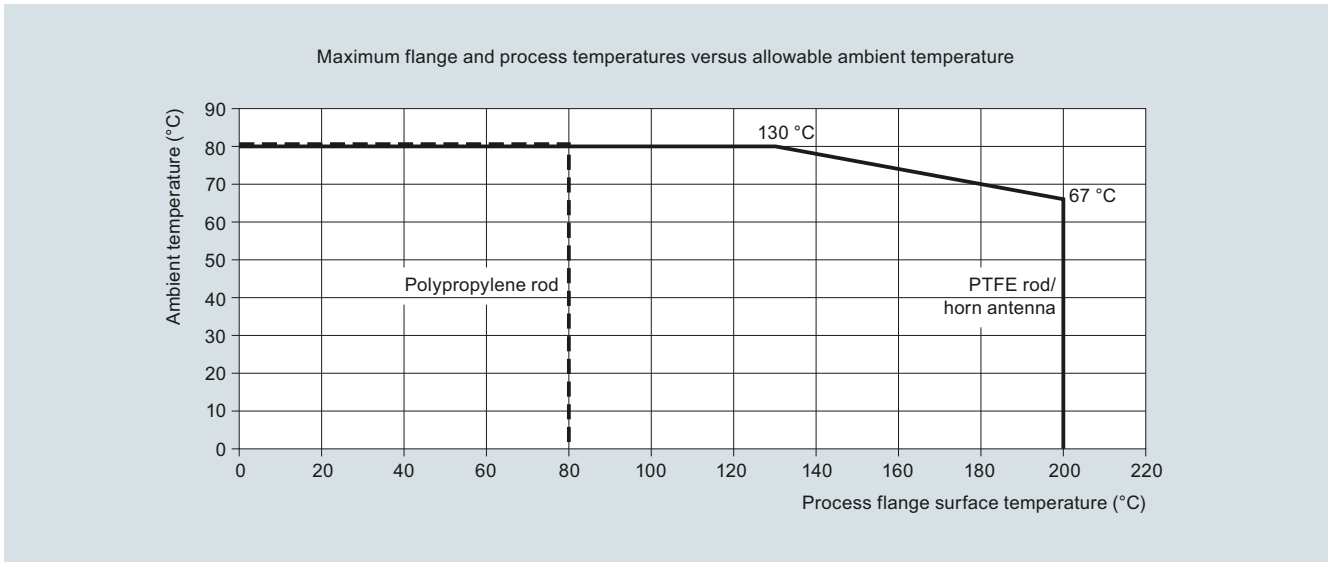
<sup>2)</sup> Available with no pressure rating. Please consult a local sales person for details.

<sup>3)</sup> Available in other shield lengths. Please consult a local sales person for details.

<sup>4)</sup> 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.usa.siemens.com/level>.

**Characteristic curves**



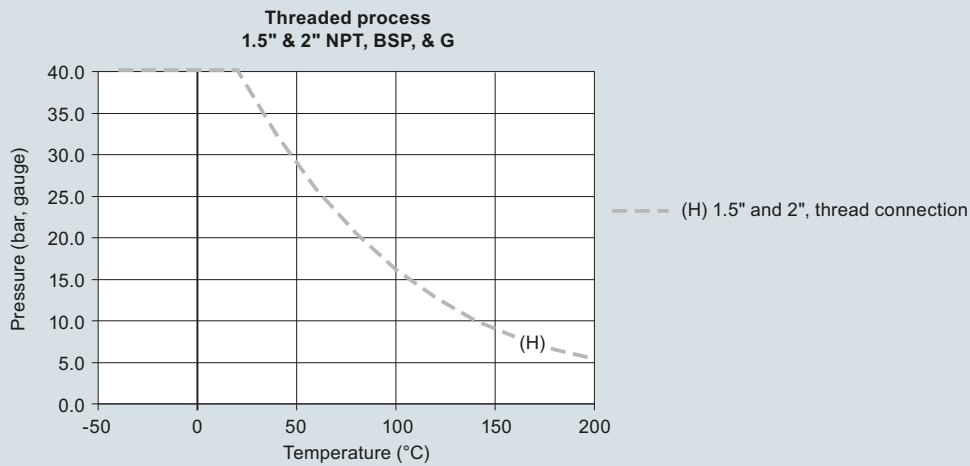
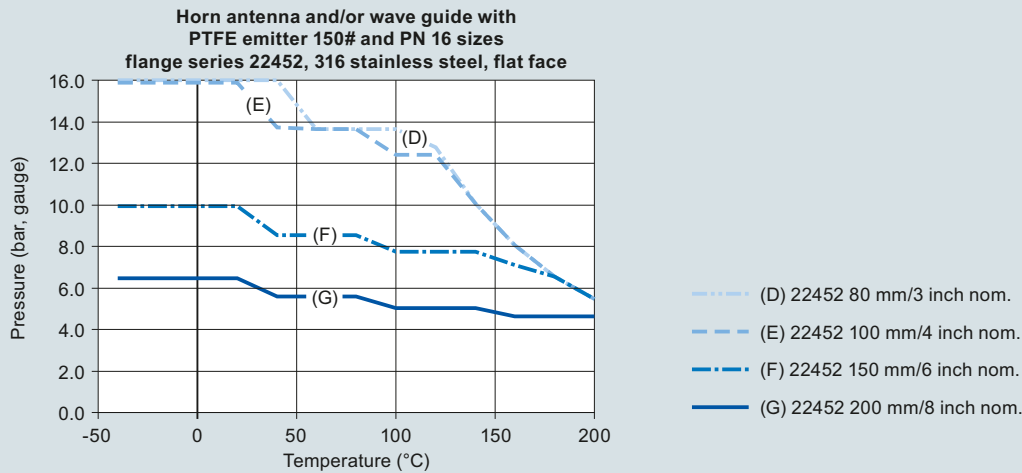
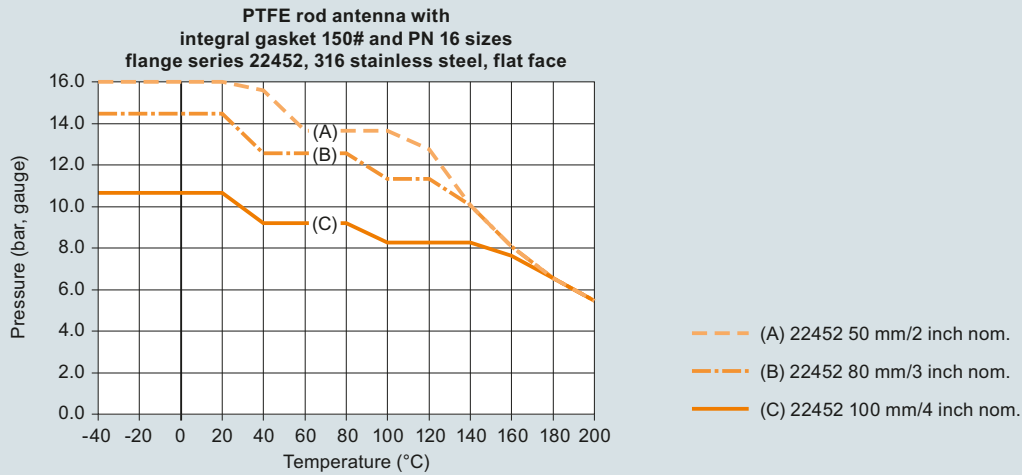
SITRANS LR200 ambient/process flange surface temperature curve

## Level measurement

Continuous level measurement  
Radar level transmitters

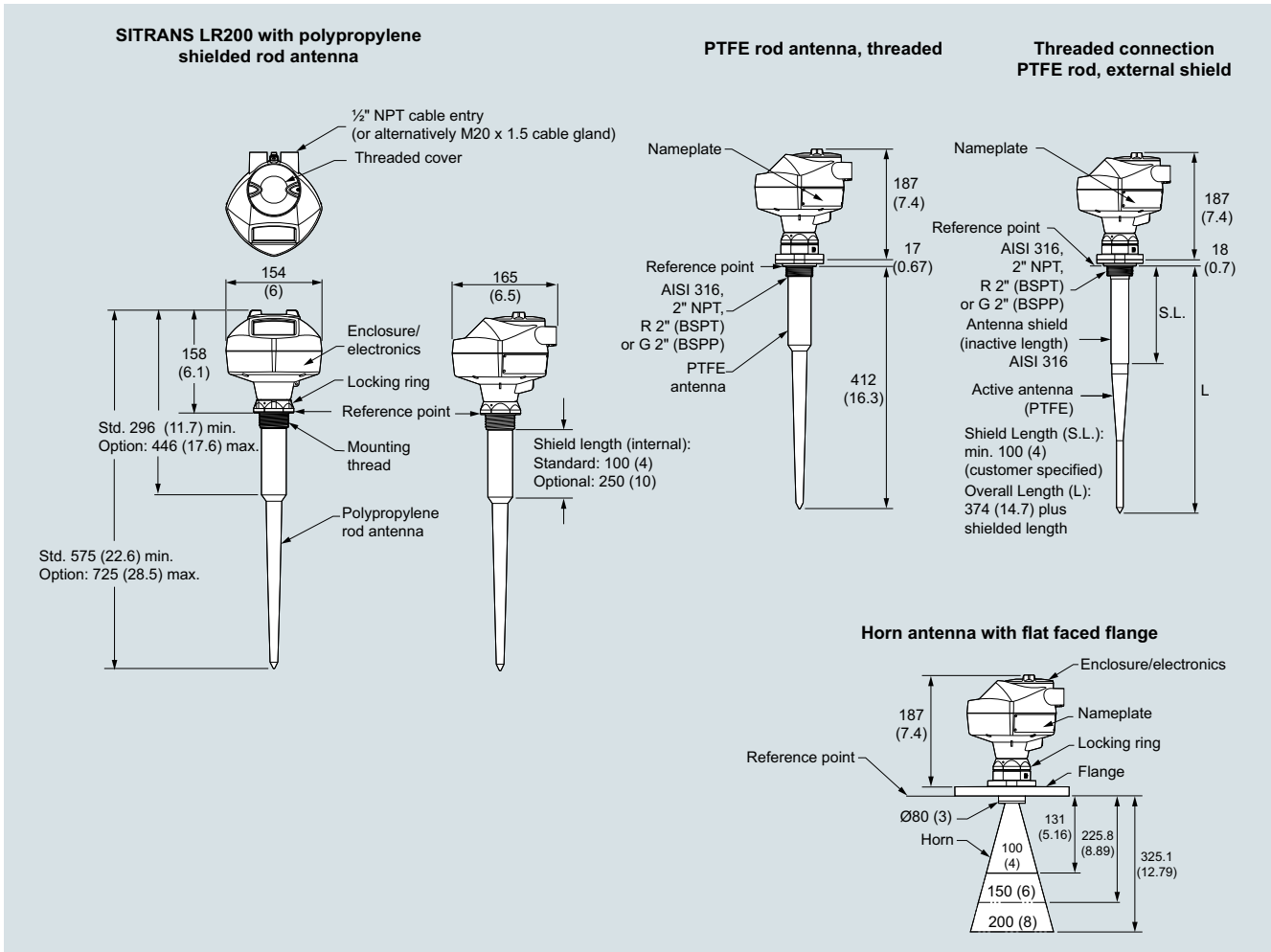
### SITRANS LR200

#### Characteristic curves (continued)



SITRANS LR200 process pressure/temperature derating curves

**Dimensional drawings**



SITRANS LR200, dimensions in mm (inch)

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR200

#### Circuit diagrams

4

Connect the wires to the terminals as shown: the polarity is identified on the terminal block.

Shield for HART and PROFIBUS PA intrinsically safe versions only.

Gland may or may not be provided, depending on approval option.

**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

## 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 saving 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.

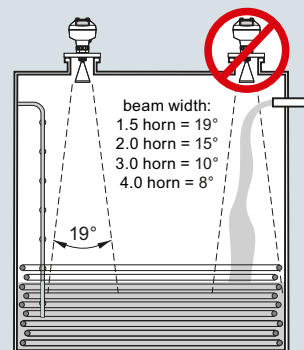
- Key Applications: liquid bulk storage tanks, process vessels, vaporous liquids, high temperatures, low dielectric media and applications with functional safety requirements

## Configuration

### Installation

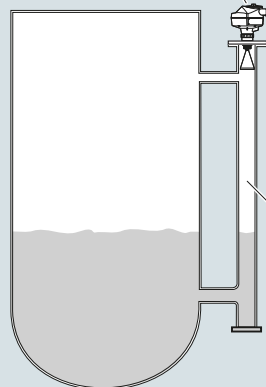
#### Note:

- 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

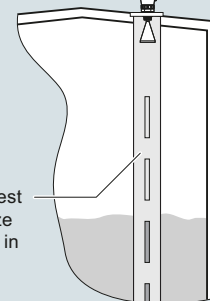
Orient front or back of device toward vent.



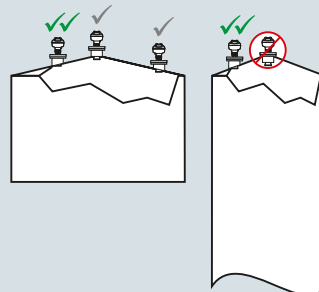
### Mounting on stilling well

Orient front or back of device toward stillpipe slots.

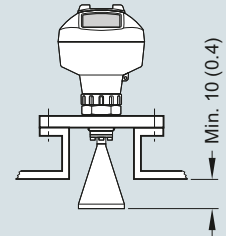
Use largest horn size possible in pipe.



### Mounting on vessel



### Mounting on a nozzle



SITRANS LR250 installation, dimensions in mm (inch)

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR250 Horn Antenna

#### Technical specifications

##### Mode of operation

Measuring principle	Radar level measurement
Frequency	K-band (25.0 GHz)
Minimum measuring range	50 mm (2 inch) from end of antenna
Maximum measuring range	20 m (65 ft), antenna dependent

##### Output

HART	Version 5.1
• Analog output	4 ... 20 mA
• Accuracy	± 0.02 mA
• Fail-safe	<ul style="list-style-type: none"> <li>Programmable as high low or hold (loss of echo)</li> <li>NE 43 programmable</li> </ul>
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)

Maximum measured error	3 mm (0.118 inch)
Influence of ambient temperature	< 0.003 %/K

##### Rated operating conditions

Installation conditions	Indoor/outdoor
• Location	
Ambient conditions (enclosure)	
• Ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
• Storage temperature	-40 ... +80 °C (-40 ... +176 °F)
• Installation category	I
• Pollution degree	4

##### Medium conditions

Dielectric constant $\epsilon_r$	> 1.6, antenna and application dependent
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)
Process pressure	Up to 40 bar g (580 psi g), process connection and temperature dependent. See Pressure/Temperature curves for more information

##### Design

Enclosure	Aluminum, polyester powder-coated
• Material	
• Cable inlet	2 x M20 x 1.5 or 2 x ½" NPT
Degree of protection	Type 4X/NEMA 4X, Type 6/NEMA 6, IP67, IP68
Weight	< 3 kg (6.6 lb) 3.75 mm (1½ inch) threaded connection with 1½" horn antenna
Display (local)	Graphic local user interface including quick start wizard and echo profile display
Antenna	316L stainless steel
• Material	
• 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	1½", 2" or 3" NPT [(Taper), ANSI/ASME B1.20.1] R 1½", 2" or 3" [(BSPT), EN 10226] G 1½", 2" or 3" [(BSPP), EN ISO 228-1]
• Process connection	
• Flange connection	2", 3", 4" (ANSI 150, 300 lb), 50, 80, 100 mm (PN 16, 40, JIS 10K)

##### Power supply

4 ... 20 mA/HART	Nominal 24 V DC (max. 30 V DC) with max. 550 Ω
PROFIBUS PA	<ul style="list-style-type: none"> <li>15 mA</li> <li>Per IEC 61158-2</li> </ul>
FOUNDATION Fieldbus	<ul style="list-style-type: none"> <li>20.0 mA</li> <li>Per IEC 61158-2</li> </ul>

##### Certificates and approvals

General	CSA <sub>US/C</sub> , CE, FM, RCM
Radio	FCC, Industry Canada, RED, RCM
Hazardous	
• Explosion Proof (Brazil)	INMETRO Ex d ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da
• Increased Safety (Brazil)	INMETRO Ex e ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da
• Intrinsically Safe (Brazil)	INMETRO Ex ia IIC T4 Ga, Ex ia ta IIIC T100 °C Da
• 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
• 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
• Non-incendive (Canada/USA)	CSA/FM Class I, Div. 2, Groups A, B, C, D T5
• Flame Proof/Increased Safety (China)	NEPSI Ex d ia mb IIC T4 Ga/Gb, Ex e ia mb IIC T4 Ga/Gb, Ex ia d tD A20 IP67 T100 °C
• Intrinsically Safe (China)	NEPSI Ex ia IIC T4 Ga, Ex ia d tD A20 IP67 T100 °C
• Non-sparking (China)	NEPSI Ex nA IIC T4 Gc
• Intrinsically Safe (Europe)	ATEX II 1G Ex ia IIC T4 Ga ATEX II 1D Ex ia IIIC T100 °C Da ATEX II 3G Ex nA IIC T4 Gc
• Non-sparking (Europe)	IECEX/ATEX II 1/2 GD, 1D, 2D, Ex d mb ia IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da
• Flame Proof (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
• Increased Safety (International/Europe)	IECEX/ATEX II 1 G Ex ia IIC T4 Ga, IECEX/ATEX II 1D Ex ia ta IIIC T100 °C Da
• Intrinsically Safe (International)	EAC Ex d
• Explosion Proof (Russia/Kazakhstan)	EAC Ex e
• Increased Safety (Russia/Kazakhstan)	EAC Ex ia
• Intrinsically Safe (Russia/Kazakhstan)	<ul style="list-style-type: none"> <li>Lloyd's Register of Shipping</li> <li>ABS Type Approval</li> <li>Bureau Veritas</li> </ul>
• Marine	SIL-2 suitable in accordance with IEC 61508/61511
• Functional Safety	

##### 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 <sub>a</sub> = -20 ... +50 °C CSA/FM Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G, T6 T <sub>a</sub> = +50 °C IECEX SIR 09.0073
Handheld communicator	HART communicator 375/475
PC	<ul style="list-style-type: none"> <li>SIMATIC PDM</li> <li>Emerson AMS</li> <li>SITRANS DTM (for connection into FDT such as PACTware or Fieldcare)</li> </ul>
Display (local)	Graphic local user interface including quick start wizard and echo profile displays



## Level measurement

### Continuous level measurement

#### Radar level transmitters

#### SITRANS LR250 Horn Antenna

# 4

#### Selection and ordering data

#### Article No.

##### SITRANS LR250 Radar level transmitter

Continuous, non-contact, 20 m (66 ft) range, for liquids and slurries.

➤ 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 seal<sup>1)</sup>

316L (1.4435 or 1.4404) stainless steel, PTFE emitter, FFKM seal<sup>1)</sup>

##### Process Connection Type

###### Threaded connection 316L

1½" NPT (ASME B1.20.1) (tapered thread)<sup>3)</sup>

R 1½" [(BSPT), EN 10226-1] (tapered thread)<sup>3)</sup>

G 1½" [(BSPP), EN ISO 228-1] (parallel thread)<sup>3)</sup>

2" NPT (ASME B1.20.1) (tapered thread)<sup>4)</sup>

R 2" [(BSPT), EN 10226-1] (tapered thread)<sup>4)</sup>

G 2" [(BSPP), EN ISO 228-1] (parallel thread)<sup>4)</sup>

3" NPT (ASME B1.20.1) (tapered thread)<sup>4)</sup>

R 3" [(BSPT), EN 10226-1] (tapered thread)<sup>4)</sup>

G 3" [(BSPP), EN ISO 228-1] (parallel thread)<sup>4)</sup>

###### Flanged connection 316L

2" Class 150 ASME B16.5, raised face<sup>4)</sup>

3" Class 150 ASME B16.5, raised face<sup>4)</sup>

4" Class 150 ASME B16.5, raised face<sup>4)</sup>

2" Class 300 ASME B16.5, raised face<sup>4)</sup>

3" Class 300 ASME B16.5, raised face<sup>4)</sup>

4" Class 300 ASME B16.5, raised face<sup>4)</sup>

50A 10K JIS B 2220 flat face<sup>4)</sup>

80A 10K JIS B 2220 flat face<sup>4)</sup>

100A 10K JIS B 2220 flat face<sup>4)</sup>

DN 50 PN 16 EN 1092-1 Type B1 raised face<sup>4)</sup>

DN 80 PN 16 EN 1092-1 Type B1 raised face<sup>4)</sup>

DN 100 PN 16 EN 1092-1 Type B1 raised face<sup>4)</sup>

DN 150 PN 16 EN 1092-1 Type B1 raised face<sup>4)</sup>

DN 50 PN 40 EN 1092-1 Type B1 raised face<sup>4)</sup>

DN 80 PN 40 EN 1092-1 Type B1 raised face<sup>4)</sup>

DN 100 PN 40 EN 1092-1 Type B1 raised face<sup>4)</sup>

DN 150 PN 40 EN 1092-1 Type B1 raised face<sup>4)</sup>

##### Communication/Output

PROFIBUS PA<sup>5)</sup>

4 ... 20 mA, HART, start-up at < 3.6 mA

FOUNDATION Fieldbus<sup>5)</sup>

##### Enclosure/Cable inlet

Aluminum, Epoxy painted

2 x ½" NPT

2 x M20 x 1.5

##### Antenna

1½" horn

2" horn (fits 2" ASME or DN 50 nozzles)

3" horn (fits 3" ASME or DN 80 nozzles)

4" horn (fits 4" ASME or DN 100 nozzles)

1½" horn with 100 mm extension

2" horn with 100 mm extension

3" horn with 100 mm extension

4" horn with 100 mm extension

7ML5431-

0 -

A B C D E F G H

0

1

A A

A B

A C

A D

A E

A F

A G

A H

A J

B D

B E

B F

C D

C E

C F

F A

F B

F C

G A

G B

G C

G D

H A

H B

H C

H D

1

2

3

0

1

A

B

C

D

E

F

G

H

#### Article No.

##### SITRANS LR250 Radar level transmitter

Continuous, non-contact, 20 m (66 ft) range, for liquids and slurries.

##### 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 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

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<sup>6)</sup>

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<sup>6)</sup>

Explosion proof: CSA/FM Class I, II, and III, Div. 1, Groups A, B, C, D, E, F, G, FCC, Industry Canada<sup>6)</sup>

Non Sparking: NEPSI Ex nA IIC T4 Gc

Intrinsically Safe: NEPSI Ex ia IIC T4 Ga,

Ex iaD tD A20 IP67 T100 °C

Flameproof: NEPSI Ex d ia mb IIC T4 Ga/Gb,

Ex iaD tD A20 IP67 T100 °C<sup>6)</sup>

Increased Safety: NEPSI Ex e ia mb IIC T4 Ga/Gb,

Ex iaD tD A20 IP67 T100 °C<sup>6)</sup>

##### Pressure rating

Rating per Pressure/Temperature curves in manual 0.5 bar g (7.25 psi g) maximum<sup>7)</sup>

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.

7ML5431-

0 -

A B C D E F G H

0

1

A

B

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D

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G

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K

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1

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR250 Horn Antenna

#### Selection and ordering data

#### Order code

#### Article No

##### Further designs

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

Plug M12 with mating Connector<sup>1)2)3)</sup>

**A50**

Plug 7/8" with mating Connector<sup>2)3)4)</sup>

**A55**

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 3.1 of EN 10204

**C12**

Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511<sup>3)5)</sup>

**C20**

Namur NE43 compliant, device preset to failsafe < 3.6 mA<sup>5)</sup>

**N07**

##### 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, 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 (two are required)

**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)<sup>6)</sup>

**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 RD150, remote digital display for 4 ... 20 mA and HART devices - see Chapter 7

**7ML5742-.....-**

SITRANS RD200, universal input display with Modbus conversion - see Chapter 7



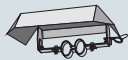

**7ML5740-.....-**

SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7

**7ML5744-.....-**

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.

Selection and ordering data	Article No.	Article No.
<b>SITRANS LR250 Spare parts</b>		
<b>SITRANS LR250 horn version enclosures (PROFIBUS PA models)</b>		<b>SITRANS LR250 horn version enclosures (&lt; 3.6 mA start-up HART)</b>
SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option A, with PROFIBUS PA communication, no process connection	<b>A5E01156836</b>	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
SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option A, with PROFIBUS PA communication, no process connection	<b>A5E01156838</b>	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
SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option B, with PROFIBUS PA communication, no process connection	<b>A5E01156841</b>	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
SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option C, with PROFIBUS PA communication, no process connection	<b>A5E01156843</b>	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
SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option C, with PROFIBUS PA communication, no process connection	<b>A5E01156844</b>	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
SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option D, with PROFIBUS communication, no process connection	<b>A5E01156846</b>	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
SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option D, with PROFIBUS PA communication, no process connection	<b>A5E01156848</b>	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
<b>SITRANS LR250 horn version enclosures (FOUNDATION Fieldbus models)</b>		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
SITRANS LR250 enclosure with board stack, NPT cable inlet, approval option B, with FOUNDATION Fieldbus communication, no process connection	<b>A5E03769538</b>	<b>Sun shield for SITRANS LR250 enclosure, stainless steel</b>
SITRANS LR250 enclosure with board stack, NPT cable inlet, approval option D, with FOUNDATION Fieldbus communication, no process connection	<b>A5E03769539</b>	
SITRANS LR250 enclosure with board stack, M20 cable inlet, approval option E, with FOUNDATION Fieldbus communication, no process connection	<b>A5E03769543</b>	<b>A5E039142556</b>
SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option C, with FOUNDATION Fieldbus communication, no process connection	<b>A5E02654608</b>	<b>SITRANS LR250 horn antenna and extension kits</b>
SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option A, with FOUNDATION Fieldbus communication, no process connection	<b>A5E02653792</b>	
SITRANS LR250 horn version enclosure with board stack, M20 cable inlet, approval option A, with FOUNDATION Fieldbus communication, no process connection	<b>A5E02653793</b>	38 mm (1.5 inch) horn antenna kit, 1.5 inch Process Connections only
SITRANS LR250 horn version enclosure with board stack, NPT cable inlet, approval option C, with FOUNDATION Fieldbus communication, no process connection	<b>A5E02654606</b>	100 mm (4 inch) horn antenna extension kit, 1.5 inch process connections only
		50 mm (2 inch) stainless steel 316L horn antenna kit
		75 mm (3 inch) stainless steel 316L horn antenna kit
		100 mm (4 inch) stainless steel 316L horn antenna kit
		100 mm (4 inch) horn antenna extension kit, 50 mm (2 inch), 75 mm (3 inch), and 100 mm (4 inch) process connection
		5 Dupont 1Gr Polyback, PTFE grease kit
		SITRANS LR250 lid with O-ring
		<b>Ex-proof plugs</b>
		Ex-proof plugs kit, 1/2" NPT, qty 5
		Ex-proof plugs kit, M20, qty 5

For special requests please consult a local sales person.  
For more information, please visit  
<http://www.usa.siemens.com/level>.

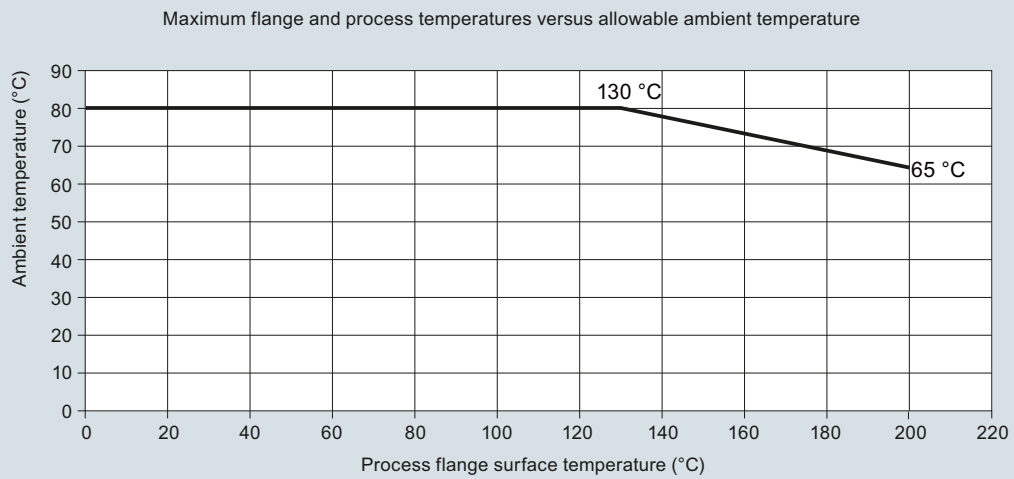
## Level measurement

Continuous level measurement

Radar level transmitters

### SITRANS LR250 Horn Antenna

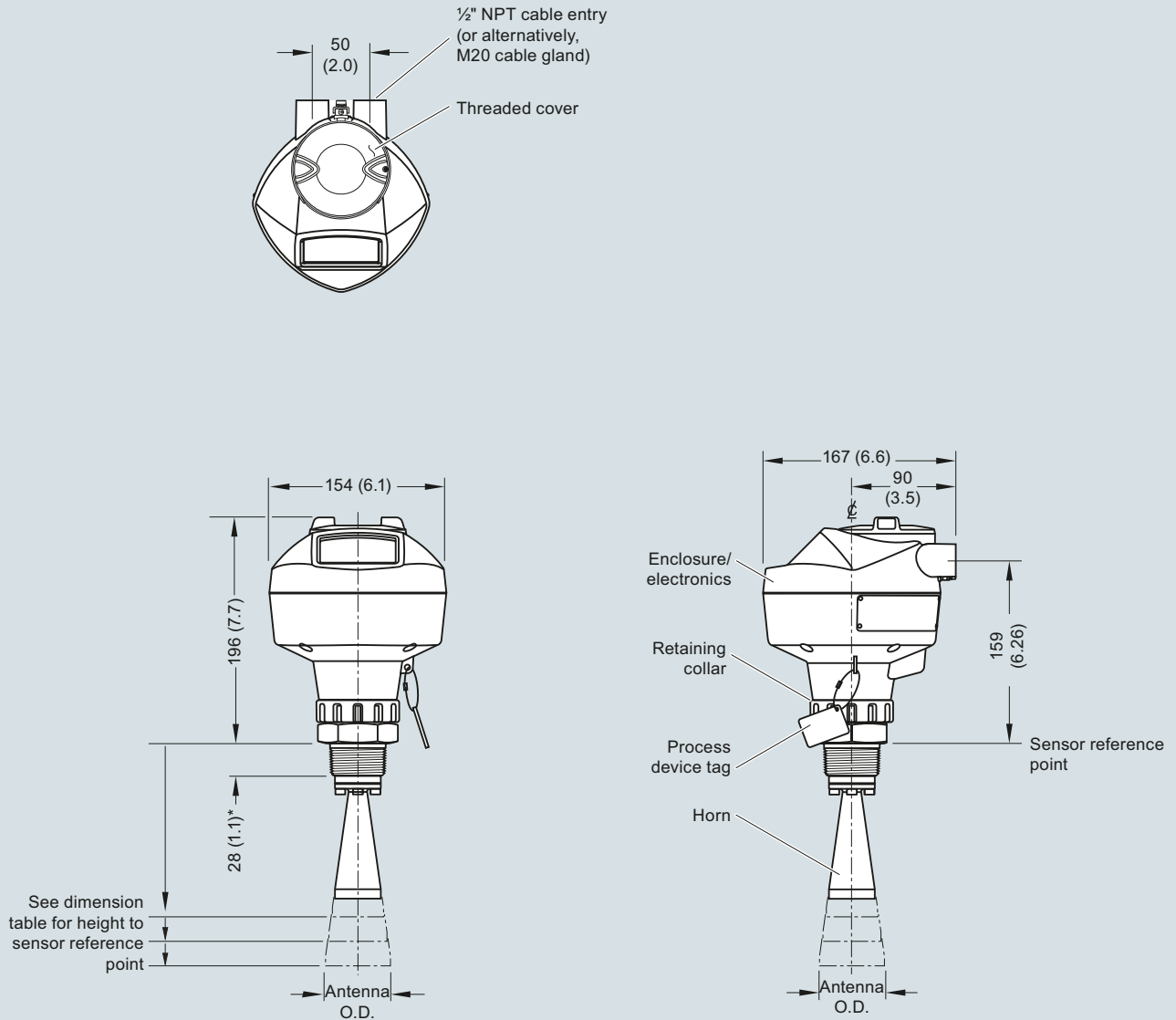
#### Characteristic curves



SITRANS LR250 ambient/process flange surface temperature curve

**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)

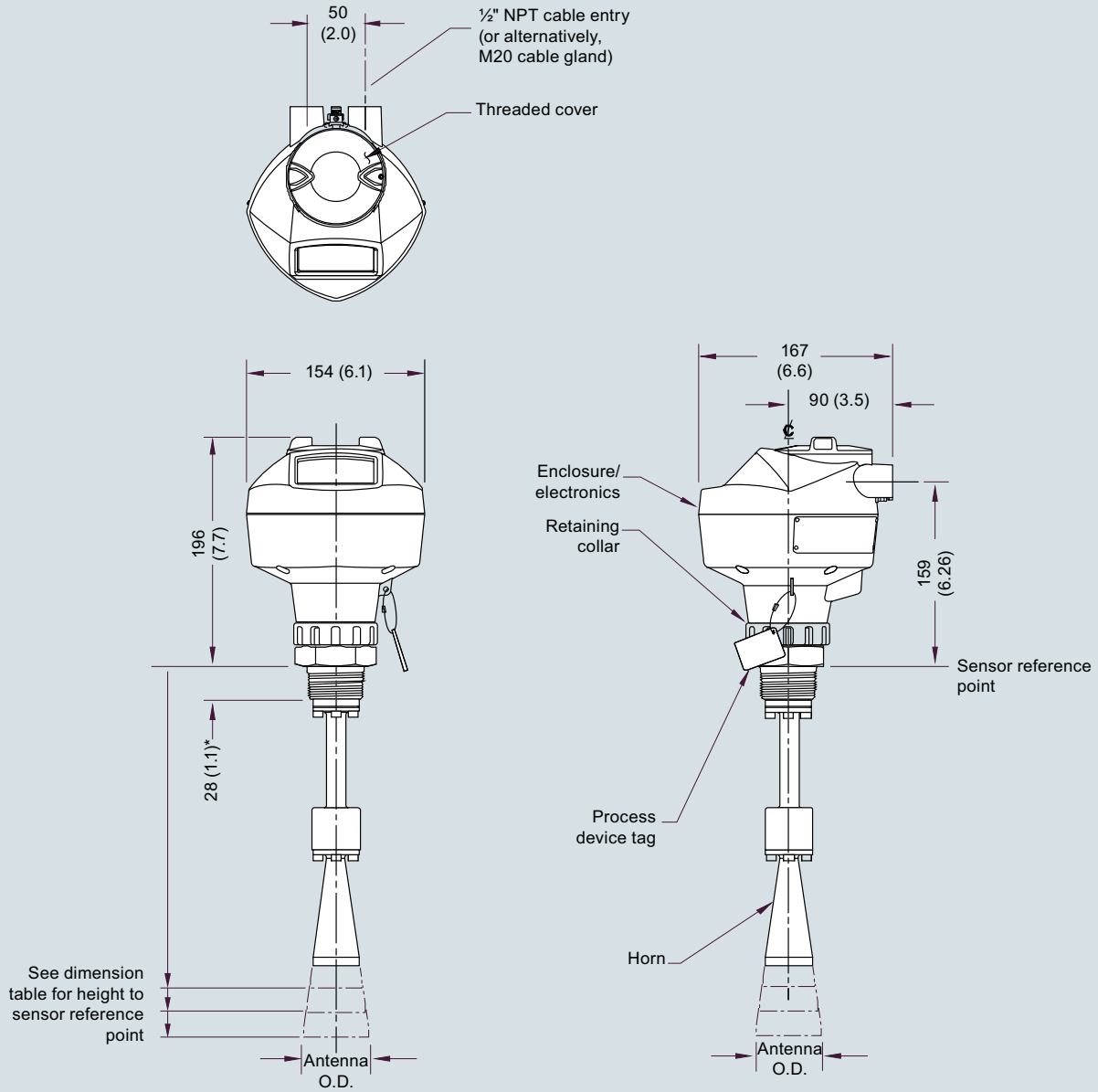
## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR250 Horn Antenna

#### Dimensional drawings (continued)

##### Threaded Horn Antenna with Extension



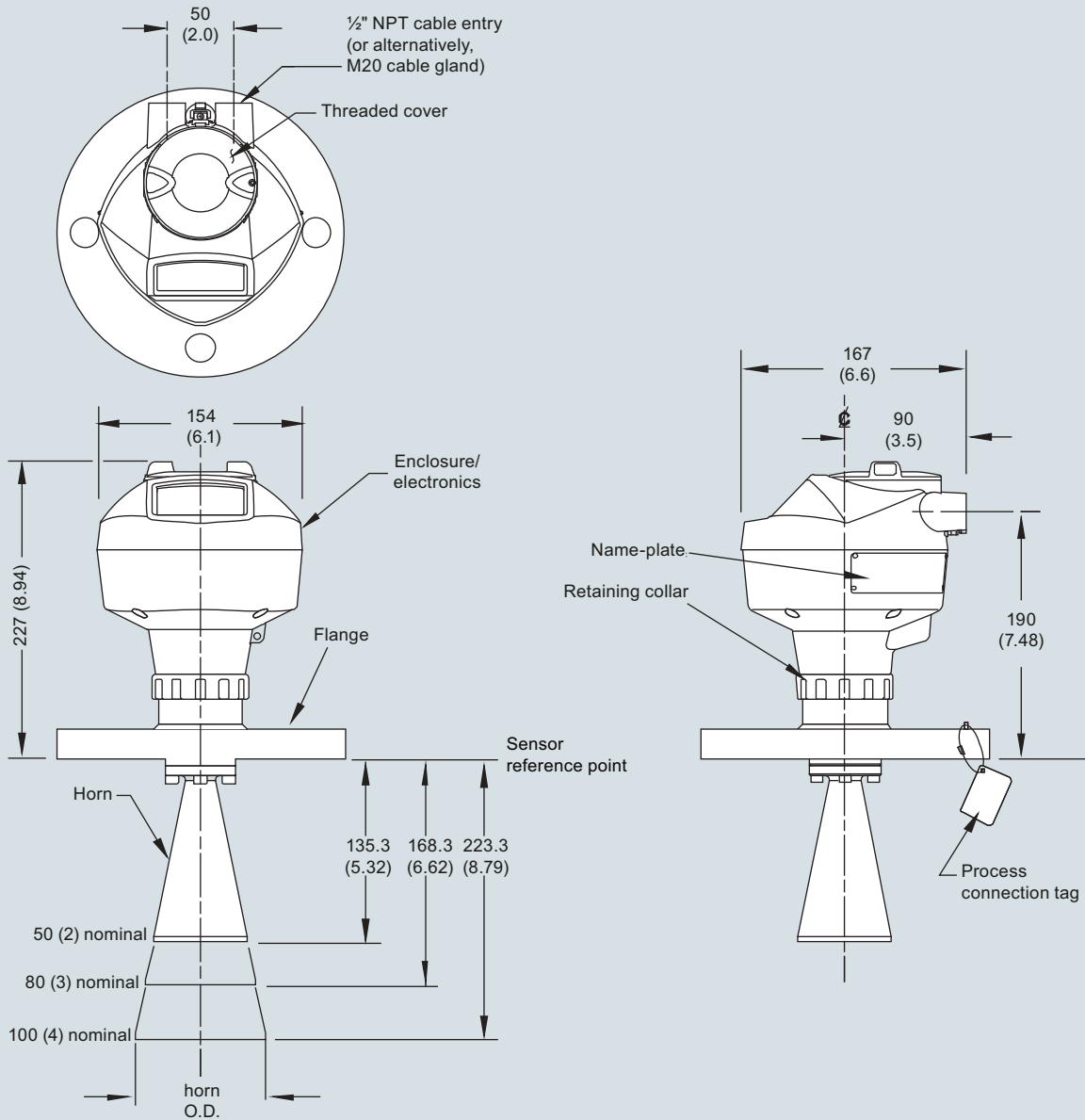
\*28 mm (1.1) for 1.5 inch and 2 inch, 42 mm (1.65) for 3 inch

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)

**Dimensional drawings** (continued)

**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)

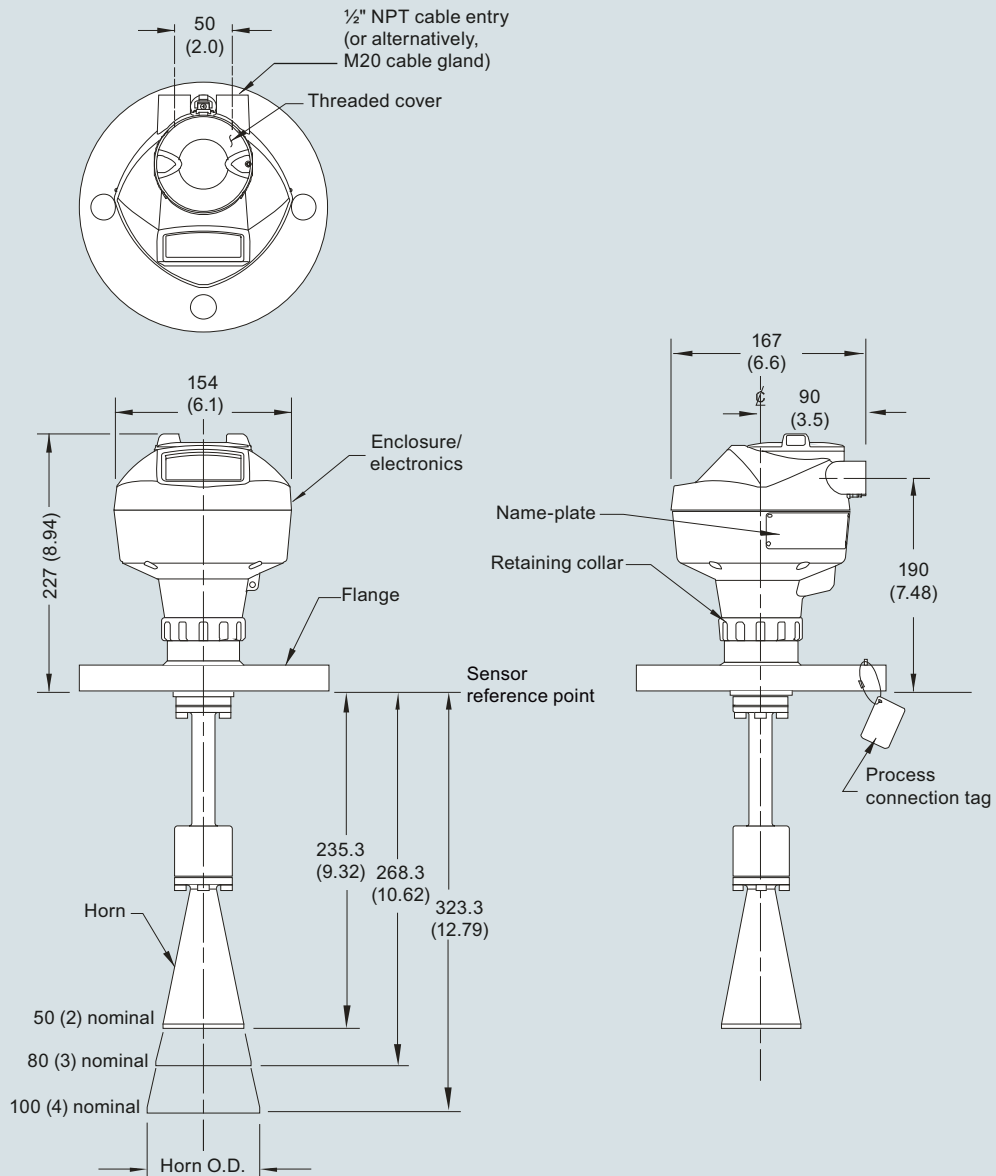
## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR250 Horn Antenna

#### Dimensional drawings (continued)

##### 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)



## 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, PROFIBUS PA, and FOUNDATION Fieldbus 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 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.

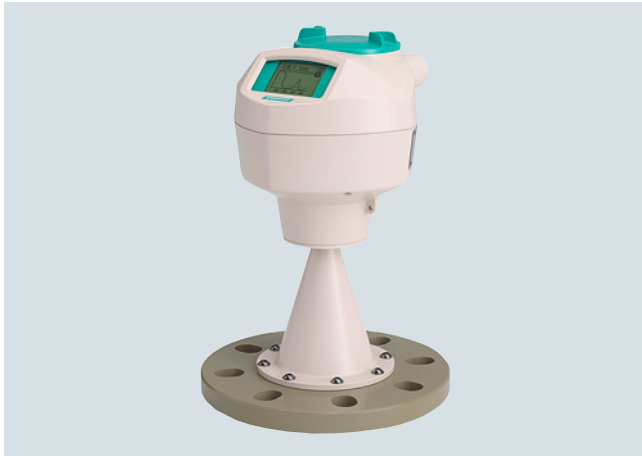
SITRANS LR250 connections

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR250 Polypropylene Lens Antenna

#### Overview



SITRANS LR250 Polypropylene lens antenna is a 25 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including corrosive materials to a range of 20 m (65.6 ft).

#### Benefits

- For use in chemical environments where aggressive and corrosive materials are present.
- 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, 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
- 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.

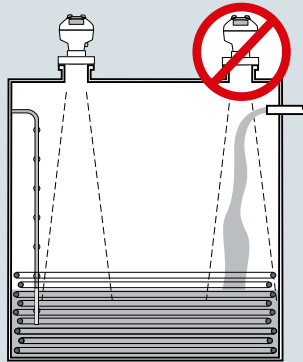
- Key Applications: liquid bulk storage tanks, process vessels with agitators, vaporous liquids, corrosive and aggressive materials.

**Configuration**

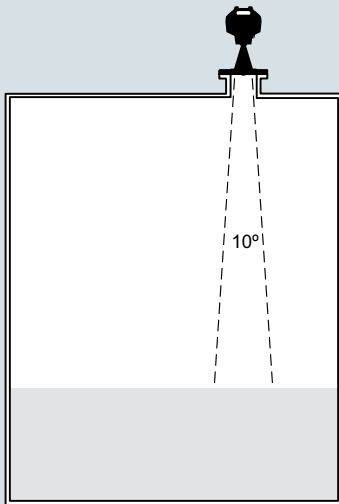
**Installation of SITRANS LR250 Level Probing Radar**

Note:

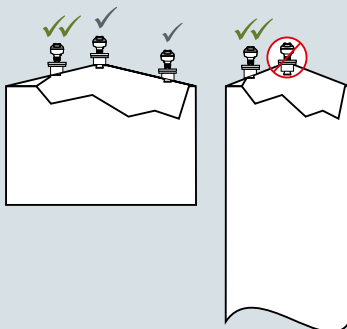
- Beam angle is the width of the cone where the energy density is half of the peak energy density.
- The peak energy density is directly in front of and in line with the antenna.
- There is a signal transmitted outside of the beam angle; therefore false targets may be detected.



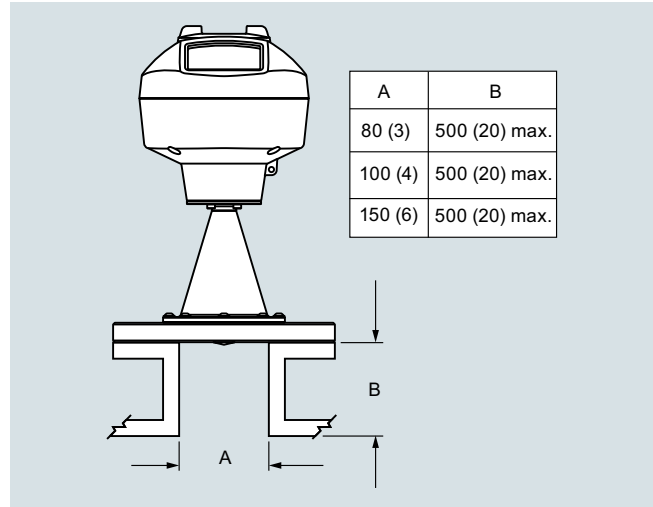
Polypropylene lens antenna



**Mounting on vessel**



SITRANS LR250 Polypropylene lens antenna installation



SITRANS LR250 Polypropylene lens antenna, mounting on a nozzle, dimensions in mm (inch)

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR250 Polypropylene Lens Antenna

#### Technical specifications

<b>Mode of operation</b>		<b>Power supply</b>	
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"> <li>• 15 mA</li> <li>• per IEC 61158-2</li> </ul>
Minimum measuring range	50 mm (2 inch) from end of antenna	FOUNDATION Fieldbus	<ul style="list-style-type: none"> <li>• 20.0 mA</li> <li>• per IEC 61158-2</li> </ul>
Maximum measuring range	20 m (66 ft)		
<b>Output</b>		<b>Certificates and approvals</b>	
HART	Version 5.1	General	CSA <sub>US/C</sub> , CE, FM, RCM
<ul style="list-style-type: none"> <li>• Analog output</li> <li>• Accuracy</li> <li>• Fail-safe</li> </ul>	4 ... 20 mA ± 0.02 mA <ul style="list-style-type: none"> <li>• Programmable as high, low or, hold (loss of echo)</li> <li>• NE 43 programmable</li> </ul>	Radio	FCC, Industry Canada, RED, RCM
PROFIBUS PA	Profile 3.1	Hazardous	
<ul style="list-style-type: none"> <li>• Function blocks</li> </ul>	2 Analog Input (AI)	<ul style="list-style-type: none"> <li>• Explosion Proof (Brazil)</li> <li>• Increased Safety (Brazil)</li> <li>• Intrinsically Safe (Brazil)</li> <li>• Explosion Proof (Canada/USA)</li> <li>• Intrinsically Safe (Canada/USA)</li> <li>• Non-incendive (Canada/USA)</li> <li>• Flame Proof/Increased Safety (China)</li> <li>• Intrinsically Safe (China)</li> <li>• Non-sparking (China)</li> <li>• Intrinsically Safe (Europe)</li> <li>• Non-sparking/Energy Limited (Europe)</li> <li>• Flame Proof (International/Europe)</li> <li>• Increased Safety (International/Europe)</li> <li>• Intrinsically Safe (International)</li> <li>• Explosion Proof (Russia/Kazakhstan)</li> <li>• Increased Safety (Russia/Kazakhstan)</li> <li>• Intrinsically Safe (Russia/Kazakhstan)</li> <li>• Marine</li> </ul>	INMETRO Ex d ia mb IIC T4 Ga/Gb, Ex ia ta IIC T100 °C Da INMETRO Ex e ia mb IIC T4 Ga/Gb, Ex ia ta IIC T100 °C Da INMETRO Ex ia IIC T4 Ga, Ex ia ta IIC T100 °C Da 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 CSA/FM Class I, Div. 2, Groups A, B, C, D T5 Ex d ia mb IIC T4 Ga/Gb, Ex e ia mb IIC T4 Ga/Gb, Ex iaD 20 T90 IP67 DIP A20 T <sub>A</sub> 90 °C Ex ia IIC T4 Ga, Ex iaD 20 T90 IP67 DIP A20 T <sub>A</sub> 90 °C NEPSI Ex nA IIC T4 Gc 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 IECEx/ATEX II ½ GD, 1D, 2D, Ex d mb ia IIC T4 Ga/Gb, Ex ia ta IIC T100 °C Da IECEx/ATEX II ½ GD, 1D, 2D, Ex e mb ia IIC T4 Ga/Gb, Ex ia ta IIC T100 °C Da IECEx/ATEX II 1 G Ex ia IIC T4 Ga, IECEx/ATEX II 1D Ex ia ta IIC T100 °C Da EAC Ex d EAC Ex e EAC Ex ia <ul style="list-style-type: none"> <li>• Lloyd's Register of Shipping</li> <li>• ABS Type Approval</li> <li>• Bureau Veritas</li> </ul>
FOUNDATION Fieldbus	H1		
<ul style="list-style-type: none"> <li>• Functionality</li> <li>• Version</li> <li>• Function blocks</li> </ul>	Basic or LAS ITK 5.2.0 2 Analog Input (AI)		
<b>Performance (according to reference conditions IEC 60770-1)</b>			
Maximum measured error	<ul style="list-style-type: none"> <li>• &gt; 500 mm from sensor reference point: 3 mm (0.118 inch)</li> <li>• &lt; 500 mm from sensor reference point: 25 mm (1 inch)</li> </ul>		
Influence of ambient temperature	< 0.003 %/K		
<b>Rated operating conditions</b>			
Installation conditions			
<ul style="list-style-type: none"> <li>• Location</li> </ul>	Indoor/outdoor		
Ambient conditions (enclosure)			
<ul style="list-style-type: none"> <li>• Ambient temperature</li> <li>• Storage temperature</li> <li>• Installation category</li> <li>• Pollution degree</li> </ul>	-40 ... +80 °C (-40 ... +176 °F) -40 ... +80 °C (-40 ... +176 °F) I 4		
<b>Medium conditions</b>			
Dielectric constant ε <sub>r</sub>	> 1.6		
Process temperature	-40 ... +80 °C (-40 ... +176 °F) at process connection		
Process pressure	Up to 5 bar g (72 psi g) temperature dependent.		
<b>Design</b>			
Enclosure			
<ul style="list-style-type: none"> <li>• Material</li> <li>• Cable inlet</li> </ul>	Aluminum, polyester powder-coated 2 x M20 x 1.5 or 2 x ½" NPT		
Degree of protection	Type 4X/NEMA 4X, Type 6/NEMA 6, IP67, IP68		
Weight	Polypropylene lens antenna with 3 inch (80 mm) polypropylene flange <ul style="list-style-type: none"> <li>• Approximately 3.4 kg (7.5 lb)</li> </ul>		
Display (local)	Graphic local user interface including quick start wizard and echo profile display		
Polypropylene lens antenna			
<ul style="list-style-type: none"> <li>• Materials</li> </ul>	<ul style="list-style-type: none"> <li>• Polyester powder coated exterior</li> <li>• 3 inch cast aluminum</li> <li>• Polypropylene lens</li> <li>• FKM seal</li> </ul>		
<ul style="list-style-type: none"> <li>• Process connections</li> </ul>			
<ul style="list-style-type: none"> <li>- Material</li> <li>- Dimensions</li> </ul>	Polypropylene Universal flange: 3 inch (80 mm), 4 inch (100 mm), 6 inch (150 mm)		
		<b>Programming</b>	
		Intrinsically Safe Siemens handheld programmer	Infrared receiver
		<ul style="list-style-type: none"> <li>• Approvals for handheld programmer</li> </ul>	IS model: ATEX II 1 GD Ex ia IIC T4 Ga, Ex ia D 20 T135 °C T <sub>a</sub> = -20 ... +50 °C, CSA/FM Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G, T6, T <sub>a</sub> = +50 °C, IECEx SIR 09.0073
		Handheld communicator	HART communicator 375/475
		PC	<ul style="list-style-type: none"> <li>• SIMATIC PDM</li> <li>• Emerson AMS</li> <li>• SITRANS DTM (for connection into FDT, such as PACTware or Fieldcare)</li> </ul>
		Display (local)	Graphic local user interface including quick start wizard and echo profile displays.

Selection and ordering data	Article No.	Order code
<b>SITRANS LR250 Radar level transmitter</b> Continuous, non-contact, 20 m (66 ft) range, for liquids and slurries. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5431- 0 -	
<b>Process Connection and Antenna Material</b> Painted aluminum 3" horn antenna <sup>1)</sup>	5	
<b>Process Connection Type</b> <u>Engineered polymer flange connections</u> Without flange, without mounting bracket, no polypropylene lens Without flange, with mounting bracket, no polypropylene lens <u>Universal polymeric flange, flat face, with polypropylene lens, FKM seal</u> DN80 PN16, ANSI 3", 150 lb, DN80 PN16/10K DN100 PN16, ANSI 4", 150 lb, DN100 PN16/10K DN150 PN16, ANSI 6", 150 lb, DN150 PN16/10K	Q A Q B Q C Q D Q E	<b>Further designs</b> Please add "-Z" to Article No. and specify Order code(s). Plug M12, incl. cable socket, IP68 <sup>4)5)6)</sup> Plug 7/8", incl. cable socket, IP68 <sup>5)6)7)</sup> Long tag (device parameter, max. 27 characters) plate stainless steel 304/1.4301 Factory test certificate - M to DIN 55350, Part 18 Inspection certificate 3.1 (EN 10204) - material of pressure-containing and wetted parts Namur NE43 compliant: device preset to failsafe < 3.6 mA <sup>2)</sup>
<b>Communication/Output</b> PROFIBUS PA 4 ... 20 mA, HART, start-up at < 3.6 mA FOUNDATION Fieldbus	1 2 3	
<b>Enclosure/Cable inlet</b> <u>Aluminum, Epoxy painted</u> 2 x 1/2" NPT 2 x M20 x 1.5	0 1	
<b>Antenna</b> 3 inch (80 mm) polypropylene lens antenna	S	
<b>Approvals</b> 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 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 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 <sup>2)</sup> 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 <sup>2)</sup> Explosion proof: CSA/FM Class I, II and III, Div. 1, Groups A, B, C, D, E, F, G, FCC, Industry Canada <sup>2)</sup> Non Sparking: NEPSI Ex nA IIC T4 Gc Intrinsically Safe: NEPSI Ex ia IIC T4 Ga, Ex iaD 20 T90 IP67 DIP A20 T <sub>A</sub> 90 °C Flameproof: NEPSI Ex d ia mb IIC T4 Ga/Gb, Ex iaD 20 T90 IP67 DIP A20 T <sub>A</sub> 90 °C <sup>2)</sup> Increased Safety: NEPSI Ex e ia mb IIC T4 Ga/Gb, Ex iaD 20 T90 IP67 DIP A20 T <sub>A</sub> 90 °C <sup>2)</sup>	A B C D E F G H K L M N	<b>Operating Instructions</b> All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a> <b>Accessories</b> Mounting bracket suitable for wall or ceiling mounting, for aluminum painted horn versions only Polypropylene lens replacement kit, polypropylene lens antenna and polymeric flange versions One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), HART <sup>9)</sup> One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), PROFIBUS PA and FOUNDATION Fieldbus Handheld programmer, Intrinsically safe, EEx ia HART modem/USB (for use with a PC and SIMATIC PDM) FDA approved FKM o-ring for 2" G (BSPP) process connections -28 ... +80 °C (-28 ... +176 °F) SITRANS RD100, loop powered display - see Chapter 7 SITRANS RD150, remote digital display for 4 ... 20 mA and HART devices - 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 For applicable back up point level switch - see point level measurement section
<b>Pressure rating</b> 0.5 bar (7.25 psi g) max. Rating per Pressure/Temperature curves in manual <sup>3)</sup>	1 2	Article No. <b>A50</b> <b>A55</b> <b>Y15</b> <b>C11</b> <b>C12</b> <b>N07</b> <b>A5E46342367</b> <b>A5E46342366</b> <b>7ML1930-1AP</b> <b>7ML1930-1AQ</b> <b>7ML1930-1BK</b> <b>7MF4997-1DB</b> <b>7ML1830-3AN</b> <b>7ML5741-.....-</b> <b>7ML5742-.....-</b> <b>7ML5740-.....-</b> <b>7ML5744-.....-</b>
		1) Available only with Process connection options QA ... QE and Antenna option S. 2) Available only with Communication option 2 and Process connection and antenna material option 4. 3) Available only with Process connection and Antenna material option 5 and Process connection type option QC. 4) Available only with Enclosure option 1. 5) Available only with Communication options 1 and 3. 6) Available only with Approval options A, B, C, and L. 7) Available only with Enclosure option 0. 8) Available only with Approval options A, B, C, D, E, K, and L. 9) Product shipped with plastic cable gland, rated to -20 °C (-4 °F). If -40 °C (-40 °F) rating required, then metallic cable gland is recommended.

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR250 Polypropylene Lens Antenna

#### Selection and ordering data

#### Article No.

#### Article No.

#### SITRANS LR250 Polypropylene Lens Antenna Specials

##### 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 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

**A5E035869747**

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 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 threaded PVDF antenna version enclosure with board stack, NPT cable inlet, approval option B, with PROFIBUS PA communication, no process connection

**A5E03588512**

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 threaded PVDF antenna version enclosure with board stack, M20 cable inlet, approval option C, with PROFIBUS PA communication, no process connection

**A5E03589260**

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 threaded PVDF antenna version enclosure with board stack, NPT cable inlet, approval option D, with PROFIBUS PA communication, no process connection

**A5E03589262**

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 threaded PVDF antenna version enclosure with board stack, M20 cable inlet, approval option E, with PROFIBUS PA communication, no process connection

**A5E03589264**

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 threaded PVDF antenna version enclosures (FOUNDATION Fieldbus models)

**A5E03589264**

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 A, with FOUNDATION Fieldbus communication, no process connection

**A5E03589266**

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 A, with FOUNDATION Fieldbus communication, no process connection

**A5E03589275**

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 enclosure with board stack, NPT cable inlet, approval option B, with FOUNDATION Fieldbus communication, no process connection

**A5E03589277**

SITRANS LR250 threaded PVDF antenna kits

Antenna kit 2" NPT threaded PVDF

**A5E03528941**

SITRANS LR250 enclosure with board stack, M20 cable inlet, approval option C, with FOUNDATION Fieldbus communication, no process connection

**A5E03589280**

Antenna kit 2" R (BSPT) threaded PVDF

**A5E03528943**

Antenna kit 2" G (BSPP) threaded PVDF

**A5E03528947**

SITRANS LR250 enclosure with board stack, NPT cable inlet, approval option D, with FOUNDATION Fieldbus communication, no process connection

**A5E03589281**

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

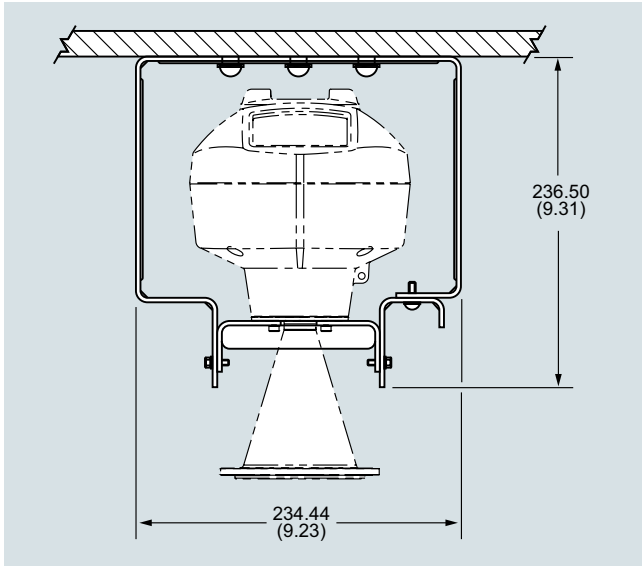
**A5E39979992**

SITRANS LR250 enclosure with board stack, M20 cable inlet, approval option E, with FOUNDATION Fieldbus communication, no process connection

**A5E03589283**

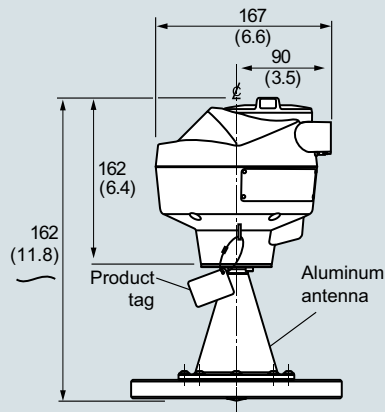
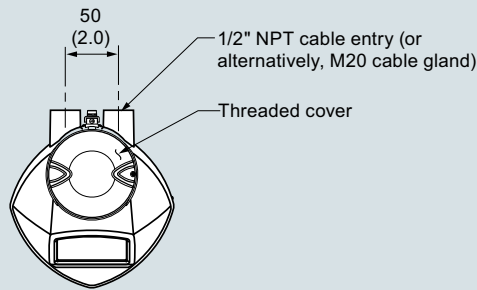
**SITRANS LR250 Polypropylene Lens Antenna**

**Options**



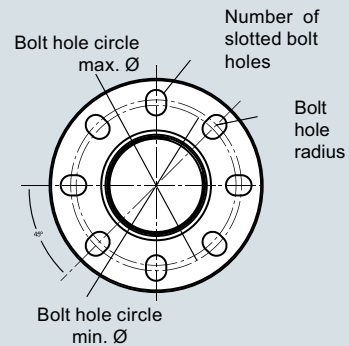
SITRANS LR250 Polypropylene lens antenna, wall/ceiling mount

**Dimensional drawings**



**Polypropylene Flange**

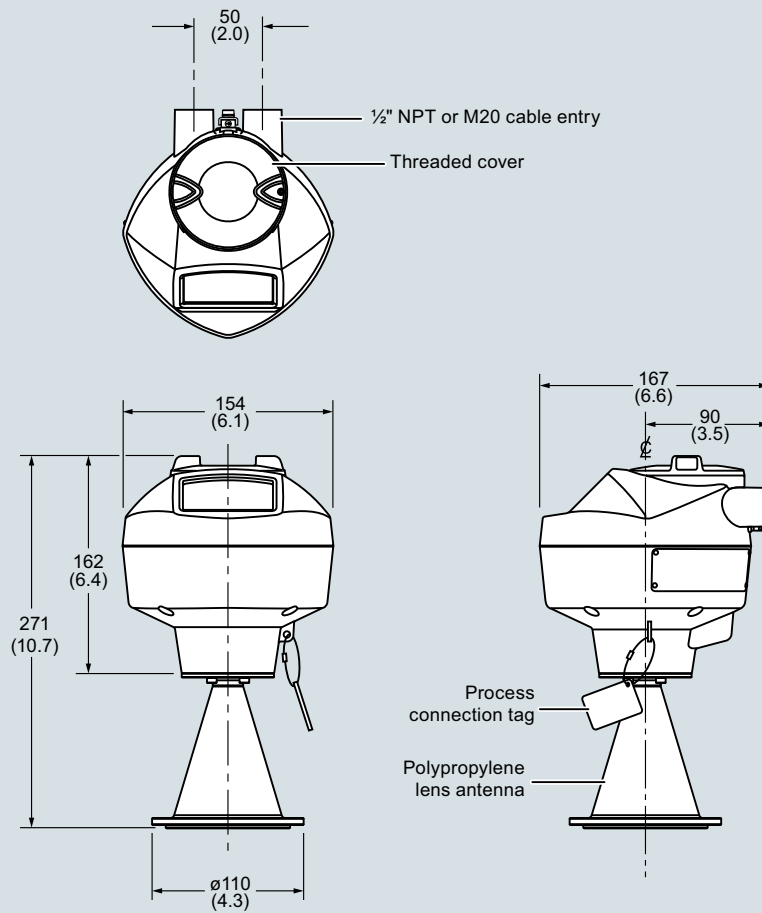
Nominal pipe size	OD ± 1	B.C.D. max. for slotted holes (bmax.) ± 0.75	B.C.D. min. for slotted holes (bmin.) ± 0.75	Bolt hole radius ± 0.25	Number of slotted holes
3	200	160	150	R 9.5	8
4	229	191	175	R 9.5	8
6	285	242	240	R 11.5	8



SITRANS LR250 Polypropylene lens antenna, dimensions in mm (inch)

**Level measurement**

Continuous level measurement  
Radar level transmitters

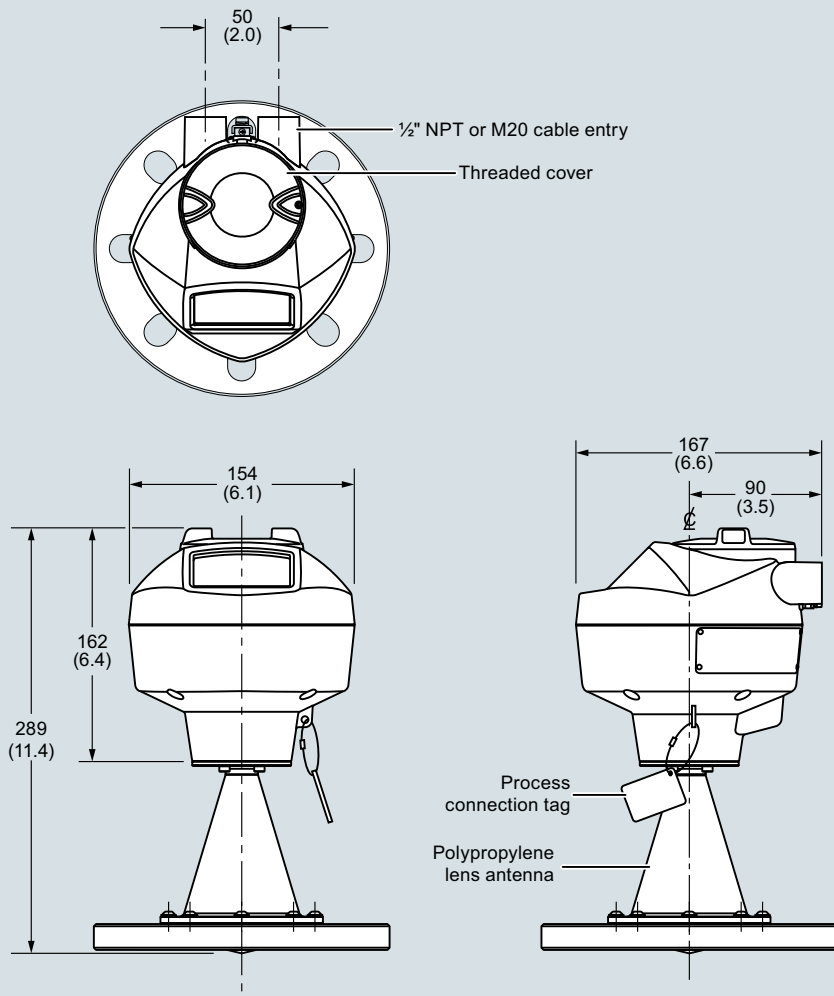
**SITRANS LR250 Polypropylene Lens Antenna****Dimensional drawings** (continued)

SITRANS LR250 Polypropylene lens antenna, dimensions in mm (inch)

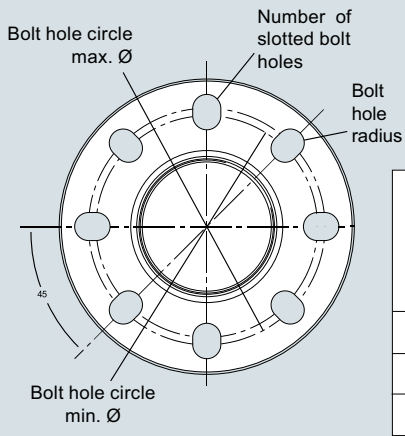


**SITRANS LR250 Polypropylene Lens Antenna**

**Dimensional drawings** (continued)



**Universal polymeric flange**



Nominal pipe size	OD ± 1	B.C.D. max. for slotted holes (bmax.) ± 0.75	B.C.D. min. for slotted holes (bmin.) ± 0.75	Bolt hole radius ± 0.25	# of slotted holes
3 (80)	7.87 (200)	6.30 (160)	5.91 (150)	0.37 (9.5)	8
4 (100)	9.00 (229)	17.52 (191)	6.89 (175)	0.37 (9.5)	8
6 (150)	11.22 (285)	9.53 (242)	9.45 (140)	0.45 (11.5)	8

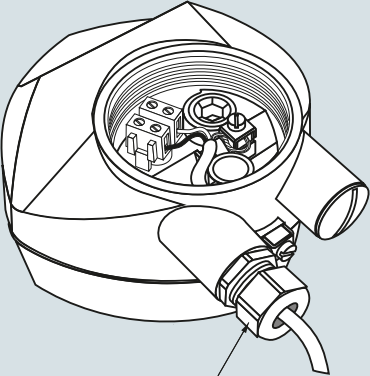
SITRANS LR250 Polypropylene lens antenna with universal polymeric flange, dimensions in mm (inch)

## Level measurement

Continuous level measurement  
Radar level transmitters

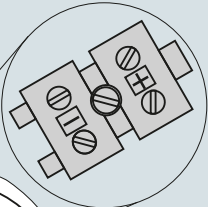
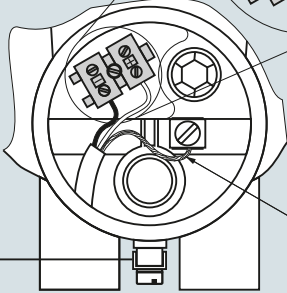
### SITRANS LR250 Polypropylene Lens Antenna

#### Circuit diagrams



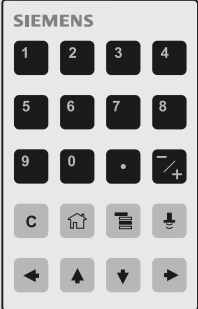
Gland may or may not be provided depending on approval option.

Connect the wires to the terminals as shown: the polarity is identified on the terminal block.

Shield for HART, PROFIBUS PA, and FOUNDATION Fieldbus Intrinsically Safe versions only.

**Hand Programmer**



Part number:  
7ML1930-1BK

**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

## Level measurement

### Continuous level measurement

### Radar level 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  $dk > 1.6$ .

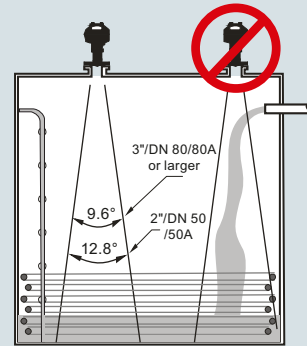
- Key Applications: liquid bulk storage tanks, process vessels with agitators, vaporous liquids, temperatures to 170 °C (338 °F), corrosive and aggressive materials and applications where ease of cleaning is required such as food or fine chemicals

#### Configuration

##### Installation

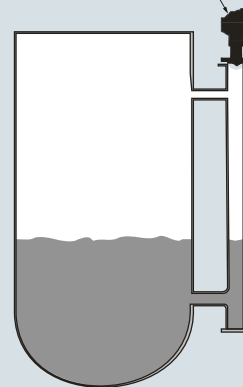
##### Note:

- 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.



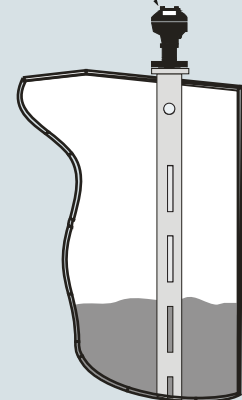
##### Mounting on bypass

Orient front or back of device toward vent.

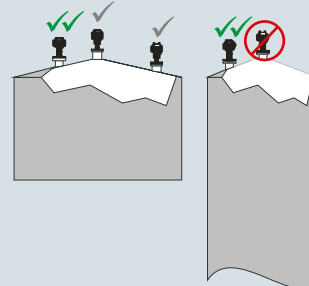


##### Mounting on stilling well

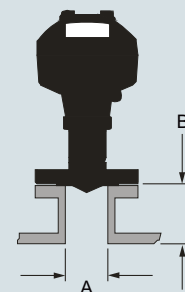
Orient front or back of device toward stillpipe slots.



##### 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 level transmitters

### SITRANS LR250 Flanged Encapsulated Antenna

#### Technical specifications

##### Mode of operation

Measuring principle	Radar level measurement
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

HART	Version 5.1
• Analog output	4 ... 20 mA
• Accuracy	± 0.02 mA
• Fail-safe	<ul style="list-style-type: none"> <li>Programmable as high low or hold (loss of echo)</li> <li>NE 43 programmable</li> </ul>
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)

Maximum measured error	<ul style="list-style-type: none"> <li>&gt; 500 mm from sensor reference point: 3 mm (0.118 inch)</li> <li>&lt; 500 mm from sensor reference point: 25 mm (1 inch)</li> </ul>
Influence of ambient temperature	< 0.003 %/K

##### Rated operating conditions

Installation conditions	
• Location	Indoor/outdoor
Ambient conditions (enclosure)	
• Ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
• Storage temperature	-40 ... +80 °C (-40 ... +176 °F)
• Installation category	I
• Pollution degree	4

##### Medium conditions

Dielectric constant $\epsilon_r$	≥ 1.6 (antenna dependent)
Process temperature	-40 ... +170 °C (-40 ... +338 °F) at process connection
Process pressure	See Pressure/Temperature curves for more information (page 4/233)

##### Design

Enclosure	
• Material	Aluminum, polyester powder-coated
• 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 (dependent on process connection)	<ul style="list-style-type: none"> <li>Approx. 7 kg (15.43 lb) for 2" Class 150 ASME B16.5 raised face flange (smallest size)</li> <li>Approx. 17.7 kg (39.02 lb) for 6" Class 150 ASME B16.5 raised face flange (largest size)</li> </ul>
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)
• Dimensions (nominal sizes)	48 mm (2 inch), 80 mm (3 inch), 100 mm (4 inch), 150 mm (6 inch)

##### Process connections

Flanged connection	<p>Raised Face</p> <ul style="list-style-type: none"> <li>2, 3, 4, 6" Class 150 ASME B16.5</li> <li>50A, 80A, 100A, 150A 10K JIS B 2220</li> <li>DN 50, DN 80, DN 100 &amp; DN 150 PN 10/16 EN 1092-1 type B1</li> </ul>
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##### Power supply

4 ... 20 mA/HART	Nominal 24 V DC (max. 30 V DC) with max. 550 Ω
PROFIBUS PA	<ul style="list-style-type: none"> <li>15 mA</li> <li>Per IEC 61158-2</li> </ul>
FOUNDATION Fieldbus	<ul style="list-style-type: none"> <li>20.0 mA</li> <li>Per IEC 61158-2</li> </ul>

##### Certificates and approvals

General	CSA <sub>US/IC</sub> , CE, FM, RCM
Radio	FCC, Industry Canada, RED, RCM
Hazardous	
• Explosion Proof (Brazil)	INMETRO Ex d ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da
• Increased Safety (Brazil)	INMETRO Ex e ia mb IIC T4 Ga/Gb, Ex ia ta IIIC T100 °C Da
• Intrinsically Safe (Brazil)	INMETRO Ex ia IIC T4 Ga, Ex ia ta IIIC T100 °C Da
• 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
• 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
• Non-incendive (Canada/USA)	CSA/FM Class I, Div. 2, Groups A, B, C, D T5
• 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
• Intrinsically Safe (China)	NEPSI Ex ia IIC T4 Ga, Ex iaD tD A20 IP67 T100 °C
• Non-sparking/Energy Limited (China)	NEPSI Ex nA IIC T4 Gc
• Intrinsically Safe (Europe)	ATEX II 1G Ex ia IIC T4 Ga
• Non-sparking/Energy Limited (Europe)	ATEX II 1D Ex ia ta IIIC T100 °C Da
• Flame Proof (International/Europe)	ATEX II 3G Ex nA IIC T4 Gc
• 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
• Intrinsically Safe (International)	IECEX/ATEX II 1 G Ex ia IIC T4 Ga, IECEX/ATEX II 1D Ex ia ta IIIC T100 °C Da
• Explosion Proof (Russia/Kazakhstan)	EAC Ex d
• Increased Safety (Russia/Kazakhstan)	EAC Ex e
• Intrinsically Safe (Russia/Kazakhstan)	EAC Ex ia
• Marine	<ul style="list-style-type: none"> <li>Lloyd's Register of Shipping</li> <li>ABS Type Approval</li> <li>Bureau Veritas</li> </ul>
• Functional Safety	SIL-2 suitable in accordance with IEC 61508/61511

##### 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 <sub>a</sub> = -20 ... +50 °C CSA/FM Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G, T6 T <sub>a</sub> = 50 °C IECEx SIR 09.0073
Handheld communicator	HART communicator 375/475
PC	<ul style="list-style-type: none"> <li>SIMATIC PDM</li> <li>Emerson AMS</li> <li>SITRANS DTM (for connection into FDT such as PACTware or Fieldcare)</li> </ul>
Display (local)	Graphic local user interface including quick start wizard and echo profile displays

# Level measurement

## Continuous level measurement

### Radar level transmitters

#### SITRANS LR250 Flanged Encapsulated Antenna

#### Selection and ordering data

#### Article No.

#### Order code

#### SITRANS LR250 Radar level transmitter with encapsulated horn and PTFE lens

Continuous, non-contact, 20 m (66 ft) range, for liquids and slurries in the chemical industry.

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

#### Process Connection Material

Stainless steel 1.4404/1.4435

#### Process Connection Type

Flanged Process Connection Types  
(stainless steel 1.4404/1.4435)

2" Class 150 ASME B16.5 raised face<sup>1)</sup>

3" Class 150 ASME B16.5 raised face

4" Class 150 ASME B16.5 raised face

6" Class 150 ASME B16.5 raised face

50A 10K JIS B 2220 raised face<sup>1)</sup>

80A 10K JIS B 2220 raised face

100A 10K JIS B 2220 raised face

150A 10K JIS B 2220 raised face

DN 50 PN 10/16 EN 1092-1 type B1 raised face<sup>1)</sup>

DN 80 PN 10/16 EN 1092-1 type B1 raised face

DN 100 PN 10/16 EN 1092-1 type B1 raised face

DN 150 PN 10/16 EN 1092-1 type B1 raised face

#### Communication/Output

PROFIBUS PA

4 ... 20 mA, HART, start-up at < 3.6 mA

FOUNDATION Fieldbus

#### Enclosure/Cable inlet

Aluminum, Epoxy painted

2 x 1/2" NPT

2 x M20 x 1.5

#### Antenna lens material

TFM 1600 PTFE Flush Lens

#### 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 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

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<sup>2)</sup>

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<sup>2)</sup>

Explosion proof: CSA/FM Class I, II and III, Div. 1, Groups A, B, C, D, E, F, G, FCC, Industry Canada<sup>2)</sup>

Non Sparking: NEPSI Ex nA IIC T4 Gc

Intrinsically Safe: NEPSI Ex ia IIC T4 Ga, Ex iaD tD A20 IP67 T100 °C

Flameproof: NEPSI Ex d ia mb IIC T4 Ga/Gb, Ex iaD tD A20 IP67 T100 °C<sup>2)</sup>

Increased Safety: NEPSI Ex e ia mb IIC T4 Ga/Gb, Ex iaD tD A20 IP67 T100 °C<sup>2)</sup>

#### Pressure rating

Rating per Pressure/Temperature curves in instruction manual

Article No.	Order code
7ML5432-	
0	
B F	
B G	
B H	
B J	
F D	
F E	
F F	
F G	
G A	
G B	
G C	
G D	
1	
2	
3	
0	
1	
A	
A	
B	
C	
D	
E	
F	
G	
H	
K	
L	
M	
N	
0	

#### Further designs

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

Plug M12 with mating Connector<sup>1)2)3)</sup>

Plug 7/8" with mating Connector<sup>2)3)4)</sup>

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

Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511<sup>5)6)</sup>

Namur NE43 compliant, device preset to failsafe < 3.6 mA<sup>5)</sup>

#### 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, EEx 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), HART (2 are required)<sup>6)</sup>

One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), PROFIBUS PA and FOUNDATION Fieldbus (2 are required)<sup>2)</sup>

SITRANS RD100, loop powered display - see Chapter 7

SITRANS RD150, remote digital display for 4 ... 20 mA and HART devices - 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

For applicable back up point level switch - see point level measurement section

- 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.

<sup>1)</sup> Maximum range 10 m (32.8 ft), dk > 3 [20 m (66 ft)] and dk > 1.6 when mounted in stillpipe].

<sup>2)</sup> Applicable with communication option 2 only.

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR250 Flanged Encapsulated Antenna

#### Selection and ordering data

Article No.

Article No.

#### **SITRANS LR250 flanged encapsulated Specials**

##### **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 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

**A5E32462870**

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

**A5E32462871**

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

**A5E32462872**

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

**A5E32462873**

Selection and ordering data	Article No.
<b>SITRANS LR250 flanged encapsulated antenna lens kits</b>	
Replacement TFM 1600 Lens and Spring Washer Kit for 2 inch Class 150 ASME B16.5 raised faced	<b>A5E32462817</b>
Replacement TFM 1600 Lens and Spring Washer Kit for 3 inch Class 150 ASME B16.5 raised faced	<b>A5E32462819</b>
Replacement TFM 1600 Lens and Spring Washer Kit for 4 inch Class 150 ASME B16.5 raised faced	<b>A5E32462820</b>
Replacement TFM 1600 Lens and Spring Washer Kit for 6 inch Class 150 ASME B16.5 raised faced	<b>A5E32462821</b>
Replacement TFM 1600 Lens and Spring Washer Kit for 50A 10K JIS B 2220 raised Face	<b>A5E32462822</b>
Replacement TFM 1600 Lens and Spring Washer Kit for 80A 10K JIS B 2220 raised Face	<b>A5E32462823</b>
Replacement TFM 1600 Lens and Spring Washer Kit for 100A 10K JIS B 2220 raised Face	<b>A5E32462824</b>
Replacement TFM 1600 Lens and Spring Washer Kit for 150A 10K JIS B 2220 raised Face	<b>A5E32462825</b>
Replacement TFM 1600 Lens and Spring Washer Kit for DN50 PN10/16 EN 1092-1 type B1 raised face	<b>A5E32462826</b>
Replacement TFM 1600 Lens and Spring Washer Kit for DN80 PN10/16 EN 1092-1 type B1 raised face	<b>A5E32462827</b>
Replacement TFM 1600 Lens and Spring Washer Kit for DN100 PN10/16 EN 1092-1 type B1 raised face	<b>A5E32462828</b>
Replacement TFM 1600 Lens and Spring Washer Kit for DN150 PN10/16 EN 1092-1 type B1 raised face	<b>A5E32462829</b>
<b>Ex-proof plugs</b>	
Ex-proof plugs kit, 1/2" NPT, qty 5	<b>A5E39979991</b>
Ex-proof plugs kit, M20, qty 5	<b>A5E39979992</b>

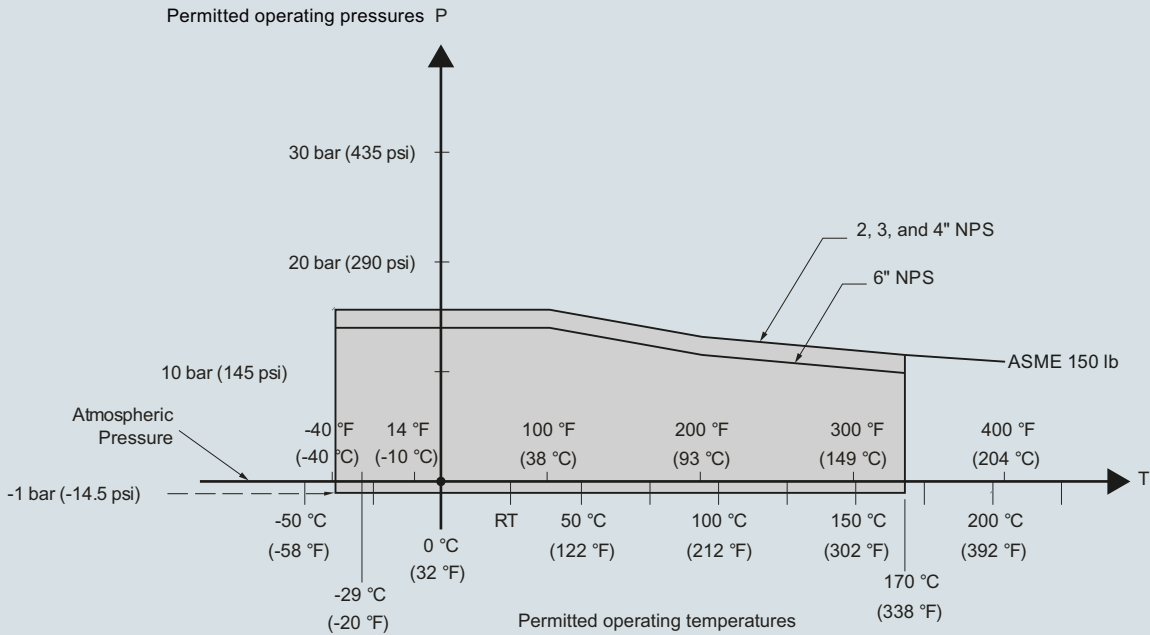
## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR250 Flanged Encapsulated Antenna

#### Characteristic curves

Pressure/ temperature curve  
LR250 Flanged Encapsulated Antenna  
ASME flanged process connections  
(7ML5432)

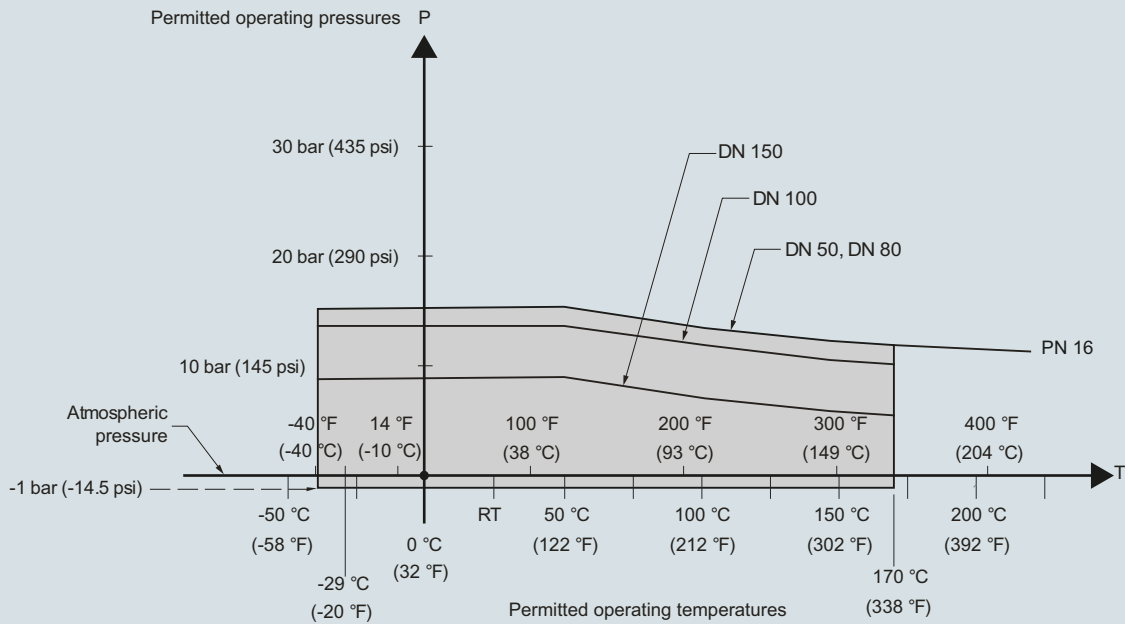


SITRANS LR250 Flanged Encapsulated Antenna pressure/temperature curve



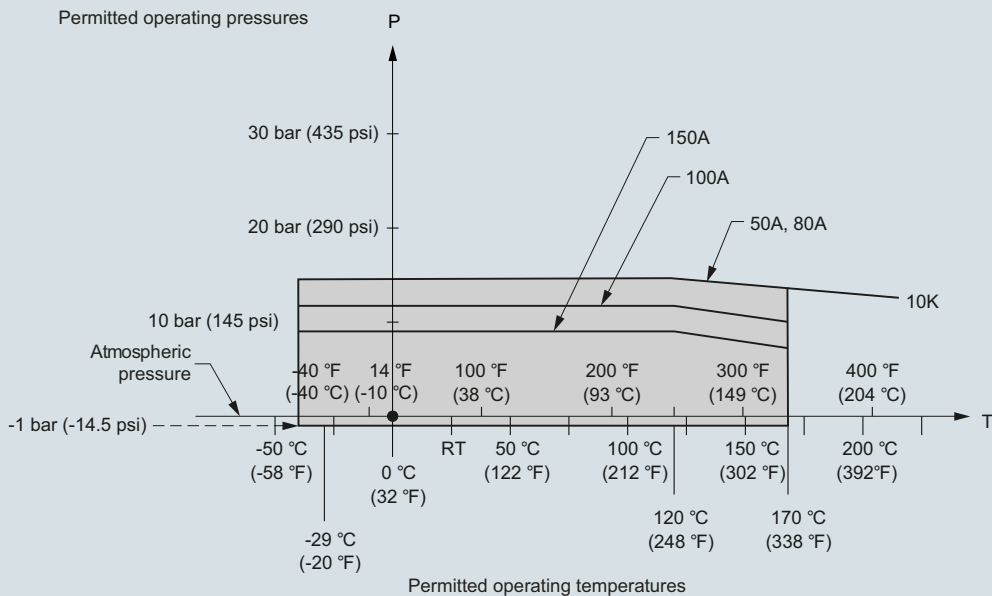
**Characteristic curves (continued)**

**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

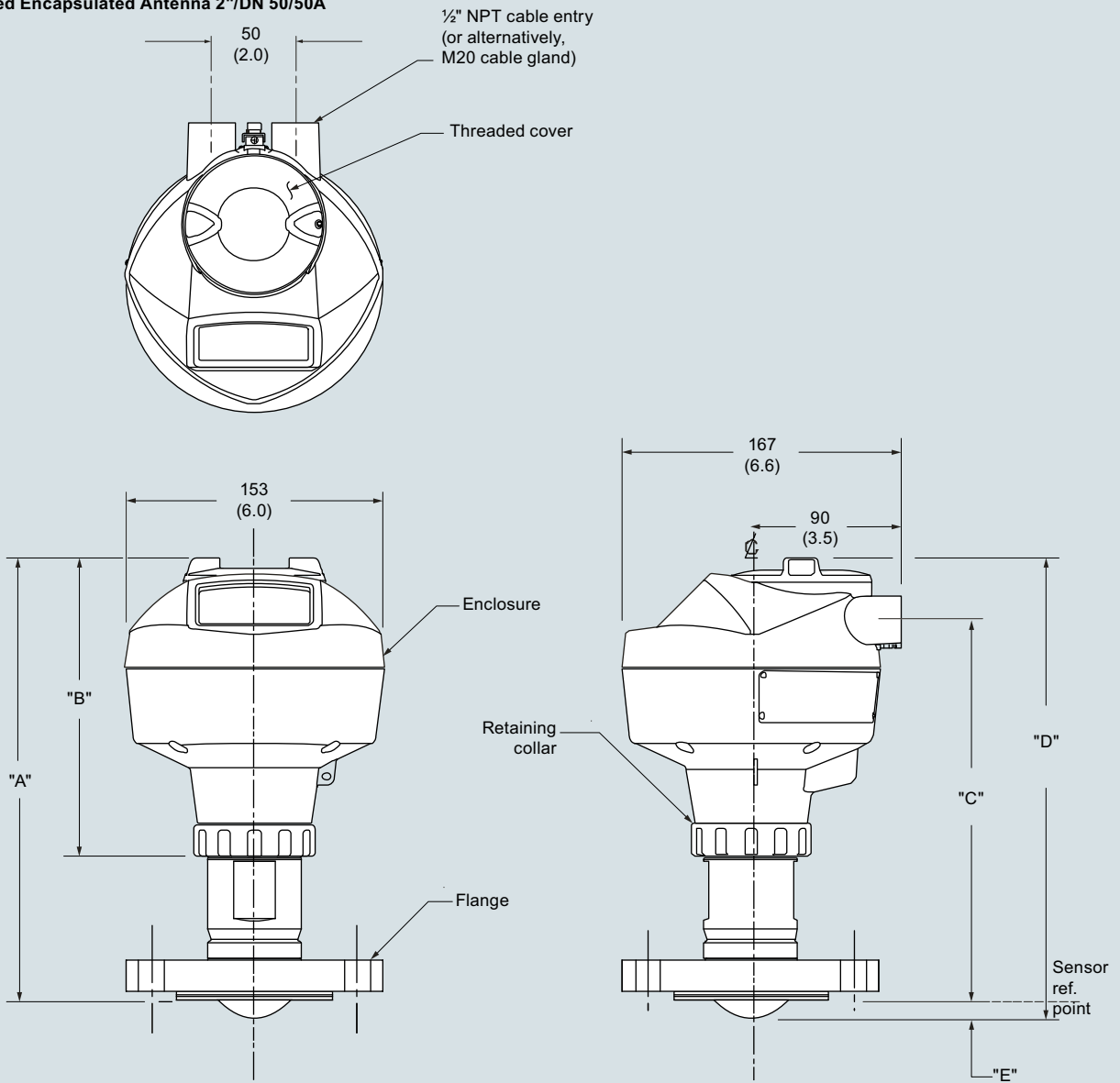
## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR250 Flanged Encapsulated Antenna

#### 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 <sup>1)</sup>	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)								

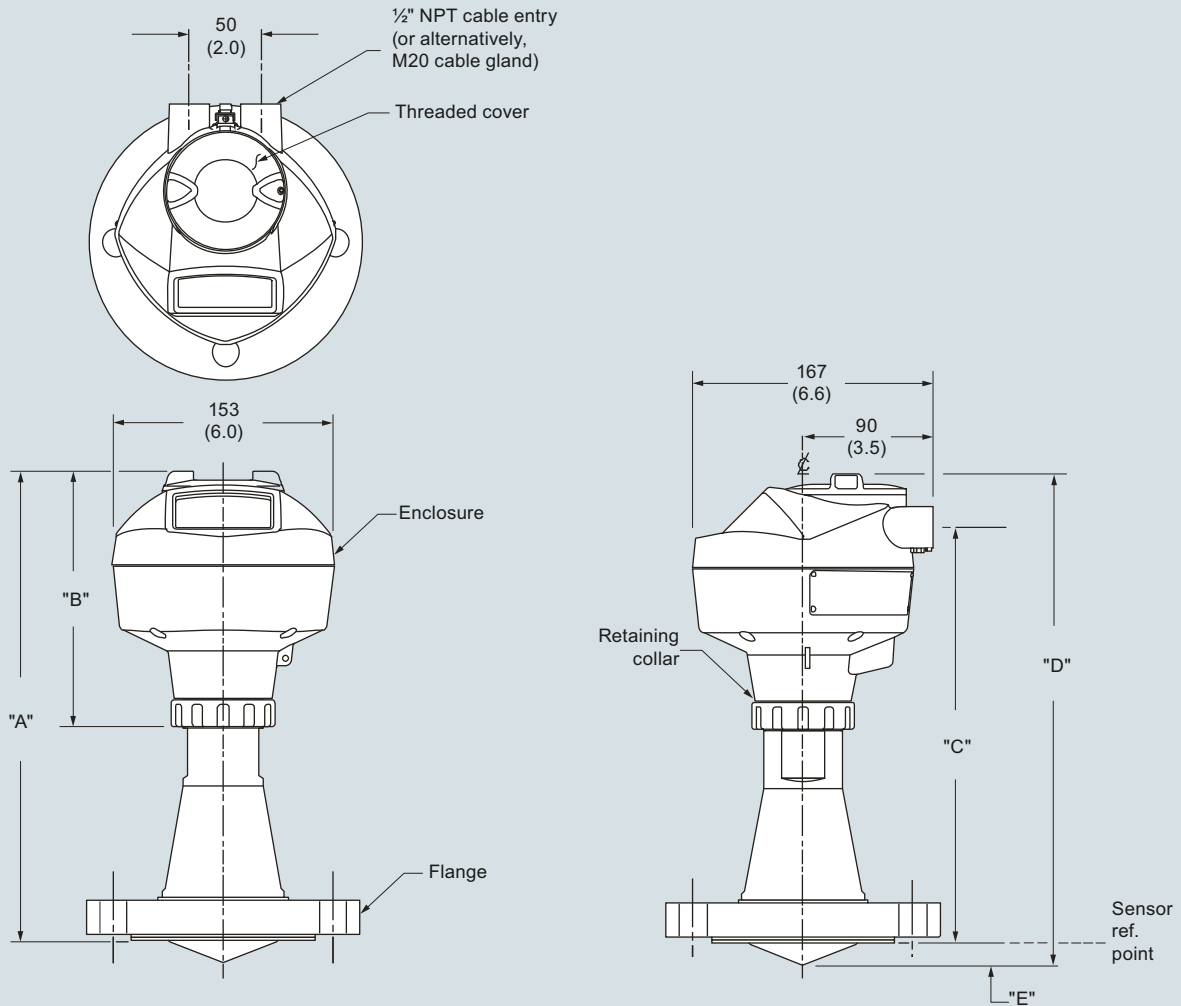
<sup>1)</sup> Height from tip of lens to sensor reference point as shown.

SITRANS LR250 Flanged Encapsulated Antenna, dimensions in mm (inch)

**SITRANS LR250 Flanged Encapsulated Antenna**

**Dimensional drawings** (continued)

**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 <sup>1)</sup>	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)							

<sup>1)</sup> 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 level transmitters

### SITRANS LR250 Flanged Encapsulated Antenna

#### Circuit diagrams

4

Connect the wires to the terminals as shown: the polarity is identified on the terminal block.

Shield for HART, PROFIBUS PA, and FOUNDATION Fieldbus Intrinsically Safe versions only.

Gland may or may not be provided depending on approval option.

**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 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 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
- $< 0.8 \mu \text{ Ra}$  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 Tuchenhagen 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 PAC Tware 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  $dk > 1.6$ .

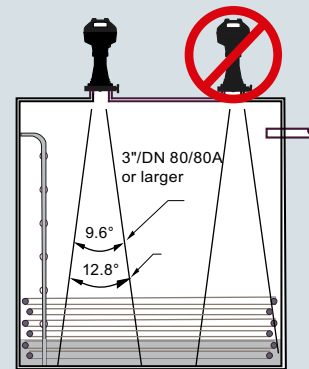
- Key Applications: applications within the food, beverage, chemical and pharmaceutical industries where sanitary, aseptic, or hygienic approvals are required or easy install/clean flush antennas are preferable, such as ice cream, fruit juice, milk, beer, and pharmaceutical or chemical additives and ingredients.

#### Configuration

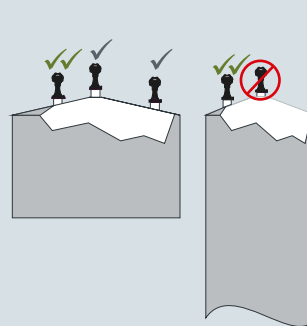
##### Installation

##### Note:

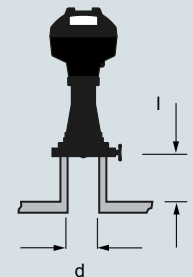
- Beam angle is the width of the cone where the energy density is half of the peak energy density.
- The peak energy density is directly in front of and in line with the antenna.
- There is a signal transmitted outside of the beam angle; therefore false targets may be detected.



##### 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)

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR250 Hygienic Encapsulated Antenna

#### Technical specifications

<b>Mode of Operation</b>		<b>Process connections</b>	
Measuring principle	Radar level measurement	Hygienic/Sanitary connections	<ul style="list-style-type: none"> <li>• 2", 3" &amp; 4" Sanitary Clamp according to ISO 2852</li> <li>• DN 50, DN 80 &amp; DN 100 Aseptic/Hygienic threaded to DIN 11864-1 [Form A]</li> <li>• DN 50, DN 80 &amp; DN 100 Aseptic/Hygienic flanged to DIN 11864-2 [Form A]</li> <li>• DN 50, DN 80 &amp; DN 100 Aseptic/Hygienic Clamp according to DIN 11864-3 [Form A]</li> <li>• DN 50, DN 80 &amp; DN 100 Hygienic Union according to DIN 11851</li> <li>• Type F (50 mm) &amp; Type N (68 mm) Tuchenhagen Varivent</li> </ul>
Frequency	K-band (25.0 GHz)	<b>Power supply</b>	
Minimum measuring range	50 mm (2 inch) from end of antenna	4 ... 20 mA/HART	Nominal 24 V DC (max. 30 V DC) with max. 550 Ω
Maximum measuring range	20 m (66 ft)	PROFIBUS PA	<ul style="list-style-type: none"> <li>• 15 mA</li> <li>• Per IEC 61158-2</li> </ul>
<b>Output</b>		FOUNDATION Fieldbus	<ul style="list-style-type: none"> <li>• 20.0 mA</li> <li>• Per IEC 61158-2</li> </ul>
HART	Version 5.1	<b>Certificates and approvals</b>	
<ul style="list-style-type: none"> <li>• Analog output</li> <li>• Accuracy</li> <li>• Fail-safe</li> </ul>	4 ... 20 mA ± 0.02 mA <ul style="list-style-type: none"> <li>• Programmable as high low or hold (loss of echo)</li> <li>• NE 43 programmable</li> </ul>	General	CSA <sub>US/C</sub> , CE, FM, RCM
PROFIBUS PA	Profile 3.01	Radio	FCC, Industry Canada, RED, RCM
<ul style="list-style-type: none"> <li>• Function blocks</li> </ul>	2 Analog Input (AI)	Hazardous	
FOUNDATION Fieldbus	H1	<ul style="list-style-type: none"> <li>• Explosion Proof (Brazil)</li> <li>• Increased Safety (Brazil)</li> <li>• Intrinsically Safe (Brazil)</li> <li>• Explosion Proof (Canada/USA)</li> <li>• Intrinsically Safe (Canada/USA)</li> <li>• Non-incendive (Canada/USA)</li> <li>• Flame Proof/Increased Safety (China)</li> <li>• Intrinsically Safe (China)</li> <li>• Non-sparking (China)</li> <li>• Intrinsically Safe (Europe)</li> <li>• Non-sparking (Europe)</li> <li>• Flame Proof (International/Europe)</li> <li>• Increased Safety (International/Europe)</li> <li>• Intrinsically Safe (International)</li> <li>• Explosion Proof (Russia/Kazakhstan)</li> <li>• Increased Safety (Russia/Kazakhstan)</li> <li>• Intrinsically Safe (Russia/Kazakhstan)</li> </ul>	INMETRO Ex d ia mb 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 INMETRO Ex ia IIC T4 Ga, Ex ia ta IIIC T100 °C Da 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 CSA/FM Class I, Div. 2, Groups A, B, C, D T5 NEPSI Ex d ia mb IIC T4 Ga/Gb, Ex e ia mb IIC T4 Ga/Gb, Ex iaD tD A20 IP67 T100 °C NEPSI Ex ia IIC T4 Ga, Ex iaD tD A20 IP67 T100 °C NEPSI Ex nA IIC T4 Gc ATEX II 1G Ex ia IIC T4 Ga ATEX II 1D Ex ia ta IIIC T100 °C Da ATEX II 3G Ex nA IIC T4 Gc IECEx/ATEX II 1/2 GD, 1D, 2D Ex d mb ia IIC T4 Ga/Gb, Ex ia ta IIC T100 °C Da IECEx/ATEX II 1 G Ex ia IIC T4 Ga, IECEx/ATEX II 1D Ex ia ta IIIC T100 °C Da EAC Ex d EAC Ex e EAC Ex ia EHEDG EL Class I EHEDG EL Aseptic Class I
<ul style="list-style-type: none"> <li>• Functionality</li> <li>• Version</li> <li>• Function blocks</li> </ul>	Basic or LAS ITK 5.2.0 2 Analog Input (AI)	Hygienic/Sanitary	
<b>Performance (according to reference conditions IEC60770-1)</b>			
Maximum measured error	<ul style="list-style-type: none"> <li>• &gt; 500 mm from sensor reference point: 3 mm (0.118 inch)</li> <li>• &lt; 500 mm from sensor reference point: 25 mm (1 inch)</li> </ul>		
Influence of ambient temperature	< 0.003 %/K		
<b>Rated operating conditions</b>			
Installation conditions			
<ul style="list-style-type: none"> <li>• Location</li> </ul>	Indoor/outdoor		
Ambient conditions (enclosure)			
<ul style="list-style-type: none"> <li>• Ambient temperature</li> <li>• Storage temperature</li> <li>• Installation category</li> <li>• Pollution degree</li> </ul>	-40 ... +80 °C (-40 ... +176 °F) -40 ... +80 °C (-40 ... +176 °F) I 4		
<b>Medium conditions</b>			
Dielectric constant $\epsilon_r$	≥ 1.6 (antenna dependent)		
Process temperature	-40 ... +170 °C (-40 ... +338 °F) at process connection		
Process pressure	See Pressure/Temperature curves for more information		
<b>Design</b>			
Enclosure			
<ul style="list-style-type: none"> <li>• Material</li> <li>• Cable inlet</li> </ul>	Aluminum, polyester powder coated 2 x M20 x 1.5 or 2 x ½" NPT		
Degree of protection	Type 4X/NEMA 4X, Type 6/NEMA 6, IP67, IP68		
Weight (dependent on process connection)	<ul style="list-style-type: none"> <li>• Approx. 4.7 kg (10.4 lb) for 2" ISO 2852 (smallest size)</li> <li>• Approx. 7.9 kg (17.4 lb) for DN 100 DIN 11864-2 (largest size)</li> </ul>		
Display (local)	Graphic local user interface including quick start wizard and echo profile display		
Antenna			
<ul style="list-style-type: none"> <li>• Material</li> <li>• Lens surface finish (<math>R_a</math>)</li> </ul>	Stainless steel 316L (1.4435 or 1.4404) and TFM 1600 PTFE Lens (lens is the only wetted part) 0.8 μm		

### Technical specifications (continued)

#### Programming

Intrinsically Safe Siemens handheld programmer	Infrared receiver
<ul style="list-style-type: none"> <li>• Approvals for handheld programmer</li> </ul>	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 T <sub>a</sub> = 50 °C IECEx SIR 09.0073
Handheld communicator	HART communicator 375/475
PC	<ul style="list-style-type: none"> <li>• SIMATIC PDM</li> <li>• Emerson AMS</li> <li>• SITRANS DTM (for connection into FDT, such as PACTware or Fieldcare)</li> </ul>
Display (local)	Graphic local user interface including quick start wizard and echo profile displays

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR250 Hygienic Encapsulated Antenna

#### Selection and ordering data

#### Article No.

#### Article No.

##### SITRANS LR250 Radar level transmitter with encapsulated horn and PTFE lens

Continuous, non-contact, 20 m (66 ft) range, for liquids, solids, and slurries. For use in hygienic applications.

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

##### Hygienic/Sanitary Approvals

EHEDG EL Class I<sup>1)</sup>  
EHEDG EL Aseptic Class I<sup>1)</sup>  
3-A (Tuchenhagen connections only - FC ... FF)<sup>2)3)</sup>  
EHEDG EL Class I & 3-A (excludes Tuchenhagen connections)<sup>2)4)</sup>

##### Process Connection Types (all types have TFM1600 PTFE lens)

316L st/st [1.4435 or 1.4404]  
2" Sanitary Clamp according to ISO 2852<sup>5)</sup>  
3" Sanitary Clamp according to ISO 2852  
4" Sanitary Clamp according to ISO 2852

316L st/st (1.4435 or 1.4404) & 304L st/st (1.4301)  
DN 50 Aseptic/Hygienic nozzle/ slotted nut (instrument side) to DIN 11864-1 [Form A]<sup>5)</sup>  
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]

316L st/st [1.4435 or 1.4404]  
DN 50 Aseptic/Hygienic flanged to DIN 11864-2 [Form A]<sup>5)</sup>  
DN 80 Aseptic/Hygienic flanged to DIN 11864-2 [Form A]  
DN 100 Aseptic/Hygienic flanged to DIN 11864-2 [Form A]

316L st/st [1.4435 or 1.4404]  
DN 50 Aseptic/Hygienic Clamp according to DIN 11864-3 [Form A]<sup>5)</sup>  
DN 80 Aseptic/Hygienic Clamp according to DIN 11864-3 [Form A]  
DN 100 Aseptic/Hygienic Clamp according to DIN 11864-3 [Form A]

316L st/st (1.4435 or 1.4404) & 304L st/st (1.4301)  
DN 50 Hygienic nozzle/ slotted nut (instrument side) to DIN 11851<sup>5)</sup>  
DN 80 Hygienic nozzle/ slotted nut (instrument side) to DIN 11851  
DN 100 Hygienic nozzle/ slotted nut (instrument side) to DIN 11851

7ML5433-	0	-	A
1			
2			
3			
4			
AA			
AB			
AC			
BA			
BB			
BC			
CA			
CB			
CC			
DA			
DB			
DC			
EA			
EB			
EC			

##### SITRANS LR250 Radar level transmitter with encapsulated horn and PTFE lens

Continuous, non-contact, 20 m (66 ft) range, for liquids, solids, and slurries. For use in hygienic applications.

316L st/st [1.4435 or 1.4404]

Type F (50 mm) Tuchenhagen Varivent (EHEDG only)<sup>5)</sup>  
Type N (68 mm) Tuchenhagen Varivent (EHEDG only)<sup>5)</sup>  
Type F (50 mm) Tuchenhagen Varivent [3-A only & EPDM process seal -40 ... 120 °C (-40 ... 248 °F)]<sup>5)</sup>  
Type N (68 mm) Tuchenhagen Varivent [3-A only & EPDM process seal -40 ... 120 °C (-40 ... 248 °F)]<sup>5)</sup>  
Type F (50 mm) Tuchenhagen Varivent [3-A only & FKM process seal -20 ... 170 °C (-4 ... 338 °F)]<sup>5)</sup>  
Type N (68 mm) Tuchenhagen Varivent [3-A only & FKM process seal -20 ... 170 °C (-4 ... 338 °F)]<sup>5)</sup>

##### Communication

PROFIBUS PA  
4 ... 20 mA HART, start-up at < 3.6 mA  
FOUNDATION Fieldbus

##### Enclosure (with Cable Inlets)

Aluminum, Epoxy paint, 2 X 1/2" 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<sup>6)</sup>  
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<sup>6)</sup>  
Explosion proof: CSA/FM Class I, II and III, Div. 1, Groups A, B, C, D, E, F, G, FCC, Industry Canada<sup>6)</sup>  
Non Sparking: NEPSI Ex nA IIC T4 Gc  
Intrinsically Safe: NEPSI Ex ia IIC T4 Ga, Ex iaD tD A20 IP67 T100 °C  
Flameproof: NEPSI Ex d ia mb IIC T4 Ga/Gb, Ex iaD tD A20 IP67 T100 °C<sup>6)</sup>  
Increased Safety: NEPSI Ex e ia mb IIC T4 Ga/Gb, Ex iaD tD A20 IP67 T100 °C<sup>6)</sup>

##### Pressure Rating

Rating per pressure/temperature curves in instruction manual

7ML5433-	0	-	A
FA			
FB			
FC			
FD			
FE			
FF			
1			
2			
3			
0			
1			
A			
B			
C			
D			
E			
F			
G			
H			
K			
L			
M			
N			
0			



#### SITRANS LR250 Hygienic Encapsulated Antenna

Selection and ordering data	Order code	Article No
<b>Further designs</b>		
Please add <b>"-Z"</b> to Article No. and specify Order code(s).		
<b>Electrical Connection cable entry:</b>		
Plug M12 (IP 67 rating) with mating connector <sup>2)7)8)</sup>	<b>A50</b>	
Plug 7/8" (IP 67 rating) with mating Connector <sup>2)8)9)</sup>	<b>A55</b>	
<b>Test Certificates</b>		
Manufacturer's Test Certificate M to DIN 55350, Part 18 and to ISO 9000	<b>C11</b>	
Material inspection Certificate 3.1 of EN 10204	<b>C12</b>	
<b>Functional Safety</b>		
Functional Safety (SIL 2). Device suitable for use in accordance with IEC 61508 and IEC 61511 <sup>6)10)</sup>	<b>C20</b>	
<b>Namur</b>		
Namur NE43 compliant, device preset to failsafe < 3.6 mA <sup>6)</sup>	<b>N07</b>	
<b>Tagging</b>		
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	<b>Y15</b>	
<b>Operating Instructions</b>		
All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>		
		<b>Accessories</b>
		Handheld programmer, Intrinsically safe, EEx ia (LUI enabled)
		<b>7ML1930-1BK</b>
		HART modem/USB (for use with a PC and SIMATIC PDM)
		<b>7MF4997-1DB</b>
		One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), HART (two are required) <sup>6)</sup>
		<b>7ML1930-1AP</b>
		One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), PROFIBUS PA and FOUNDATION Fieldbus (two are required) <sup>8)</sup>
		<b>7ML1930-1AQ</b>
		SITRANS RD100, loop powered display - see Chapter 7
		<b>7ML5741-.....-</b>
		SITRANS RD150, remote digital display for 4 ... 20 mA and HART devices - see Chapter 7
		<b>7ML5742-.....-</b>
		SITRANS RD200, universal input display with Modbus conversion - see Chapter 7
		<b>7ML5740-.....-</b>
		SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7
		<b>7ML5744-.....-</b>
		For applicable back up point level switch - see point level measurement section
		1) Available with Process connection options AA ... FB & FF only.
		2) Available with Approval options A, B, C, L only.
		3) Available with Process connections FC ... FF only.
		4) Available with Process connection options AA ... EC & FF only.
		5) Max. range 10 m (32.8 ft), dk > 3 [20 m (66 ft) and dk > 1.6 if installed in a stillpipe].
		6) Applicable with Communication option 2 only.
		7) Available with Enclosure option 1 only.
		8) Available with Communication options 1 and 3 only.
		9) Available with Enclosure option 0 only.
		10) Available with Approval options A, B, C, D, E, K, L only.

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR250 Hygienic Encapsulated Antenna

#### Selection and ordering data

#### Article No.

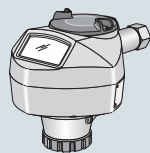
#### Article No.

#### SITRANS LR250 hygienic encapsulated Specials

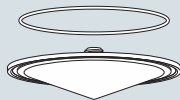
For "Electronics Head only" follow the standard configuration and choose YY option on positions 9 and 10 of the full part number.

For example: 7ML5433-1YY20-1AA0 will order an electronics head for the following:

**EHEDG EL Class 1 approval, 4 ... 20 mA HART, M20 cable entries, General purpose Haz Loc approval, pressure rating as per manual.**



#### Spare Lens Kits (Lens and O-ring)



Kit, 2 inch, ISO 2852, HEA, Lens, silicone secondary O-ring

**A5E32572731**

Kit, 3 inch, ISO 2852, HEA, Lens, silicone secondary O-ring

**A5E32572745**

Kit, 4 inch, ISO 2852, HEA, Lens, silicone secondary O-ring

**A5E32572747**

Kit, DN 50, DIN 11851, HEA, Lens, silicone secondary O-ring

**A5E32572758**

Kit, DN 80, DIN 11851, HEA, Lens, silicone secondary O-ring

**A5E32572770**

Kit, DN 100, DIN 11851, HEA, Lens, silicone secondary O-ring

**A5E32572772**

Kit, DN 50, DIN 11864-1, HEA, Lens, silicone secondary O-ring

**A5E32572773**

Kit, DN 80, DIN 11864-1, HEA, Lens, silicone secondary O-ring

**A5E32572779**

Kit, DN 100, DIN 11864-1, HEA, Lens, silicone secondary O-ring

**A5E32572782**

Kit, DN 50, DIN 11864-2/3, HEA, Lens, silicone secondary O-ring

**A5E32572785**

Kit, DN 80, DIN11864-2/3, HEA, Lens, silicone secondary O-ring

**A5E32572790**

Kit, DN 100, DIN11864-2/3, HEA, Lens, silicone secondary O-ring

**A5E32572791**

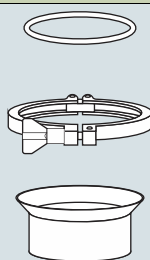
Kit, Tuchenhagen, Type F, HEA, Lens, silicone secondary O-ring

**A5E32572794**

Kit, Tuchenhagen, Type N, HEA, Lens, silicone secondary O-ring

**A5E32572795**

#### Accessories (customer side process connection and FKM and EPDM seal for each size and type)



Kit DN50 DIN11864-1 GS Form A tank connection, EPDM Seal Class II

**A5E32910638**

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**

Kit, DN80 DIN11864-1 GS Form A tank connection, FKM Seal Class I

**A5E32910671**

Kit, DN100 DIN11864-1 GS Form A tank connection, FKM Seal Class I

**A5E32910681**

Kit 2" ISO2852 tank connection, Clamp, Cleanable EPDM Seal Class II

**A5E32910686**

Kit 3" ISO2852 tank connection, Clamp, Cleanable EPDM Seal Class II

**A5E32910697**

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 4" ISO2852 tank connection, Clamp, Cleanable FKM Seal

**A5E32910734**

Kit DN50 DIN11851 SC Tank connection, EPDM Seal Class II<sup>1)</sup>

**A5E32910746**

Kit DN80 DIN11851 SC Tank connection, EPDM Seal Class II<sup>1)</sup>

**A5E32910771**

Kit DN100 DIN11851 SC Tank connection, EPDM Seal Class II<sup>1)</sup>

**A5E32910780**

Kit DN50 DIN11851 SC Tank connection, FKM Seal Class II

**A5E32910784**

Kit DN80 DIN11851 SC Tank connection, FKM Seal Class II

**A5E32910789**

Kit DN100 DIN11851 SC Tank connection, FKM Seal Class II

**A5E32910790**

Kit DN50 DIN11864-2 Form A tank connection, M8 Hardware (nut/bolt/washer), EPDM Seal Class II

**A5E32910791**

Kit DN80 DIN11864-2 Form A tank connection, M10 Hardware (nut/bolt/washer), EPDM Seal Class II

**A5E32910793**

Kit DN100 DIN11864-2 Form A tank connection, M10 Hardware (nut/bolt/washer), EPDM Seal Class II

**A5E32910799**

Kit DN50 DIN11864-2 Form A tank connection, M8 Hardware (nut/bolt/washer), FKM Seal Class I

**A5E32910805**

Kit DN80 DIN11864-2 Form A tank connection, M10 Hardware (nut/bolt/washer), FKM Seal Class I

**A5E32910809**

Kit DN100 DIN11864-2 Form A tank connection, M10 Hardware (nut/bolt/washer), FKM Seal Class I

**A5E32910812**

Kit DN50 DIN11864-3 Form A tank connection, Clamp, EPDM Seal Class II

**A5E32910813**

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 DN80 DIN11864-3 Form A tank connection, Clamp, FKM Seal Class I

**A5E32910817**

Kit DN100 DIN11864-3 Form A tank connection, Clamp, FKM Seal Class I

**A5E32910818**

Kit Type F, Tuchenhagen, Clamp, EPDM Seal Class II (EHEDG only) - no tank connection

**A5E33489537**

Kit Type N, Tuchenhagen, Clamp, EPDM Seal Class II (EHEDG only) - no tank connection

**A5E33489543**

Kit Type F, Tuchenhagen, Clamp, FKM Seal Class I (EHEDG only) - no tank connection

**A5E33489828**

Kit Type N, Tuchenhagen, 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

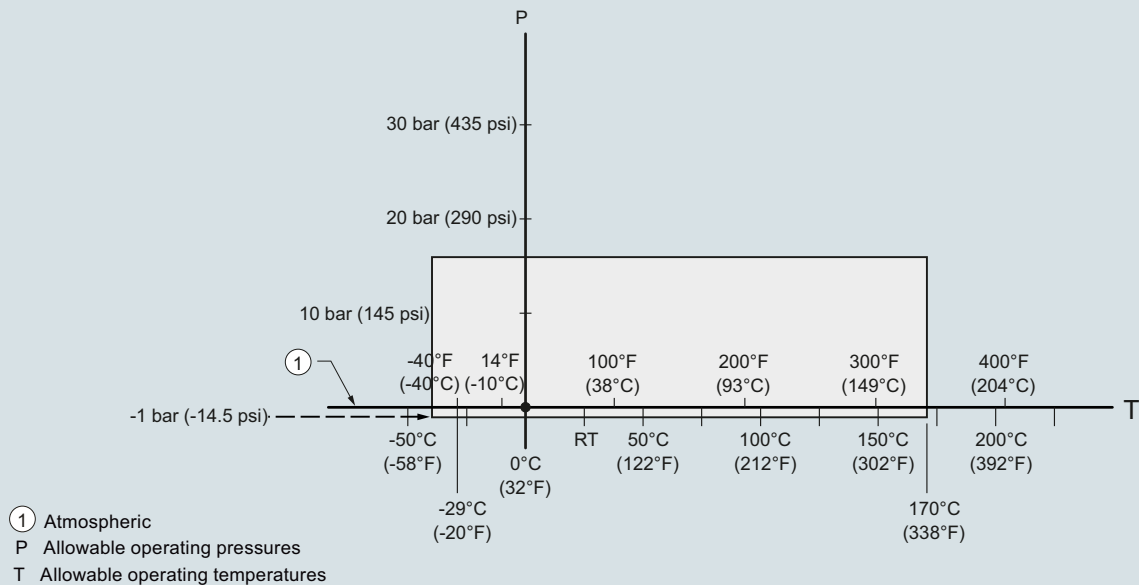
**A5E39979992**

<sup>1)</sup>Class II for low fat applications when EPDM seal used on DIN11851

## SITRANS LR250 Hygienic Encapsulated Antenna

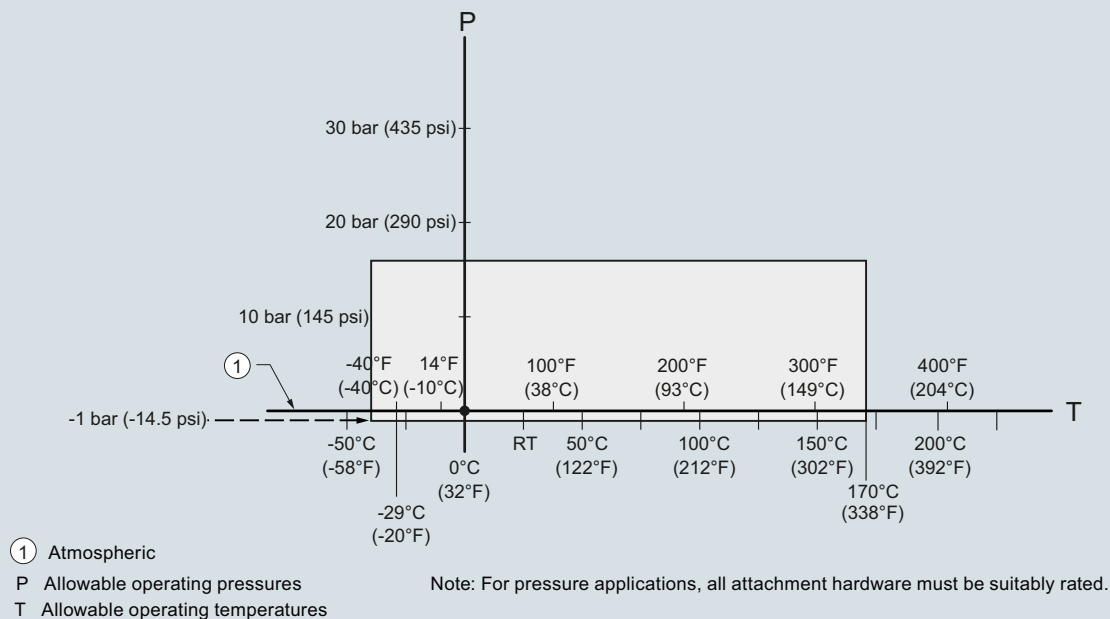
### Characteristic curves

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

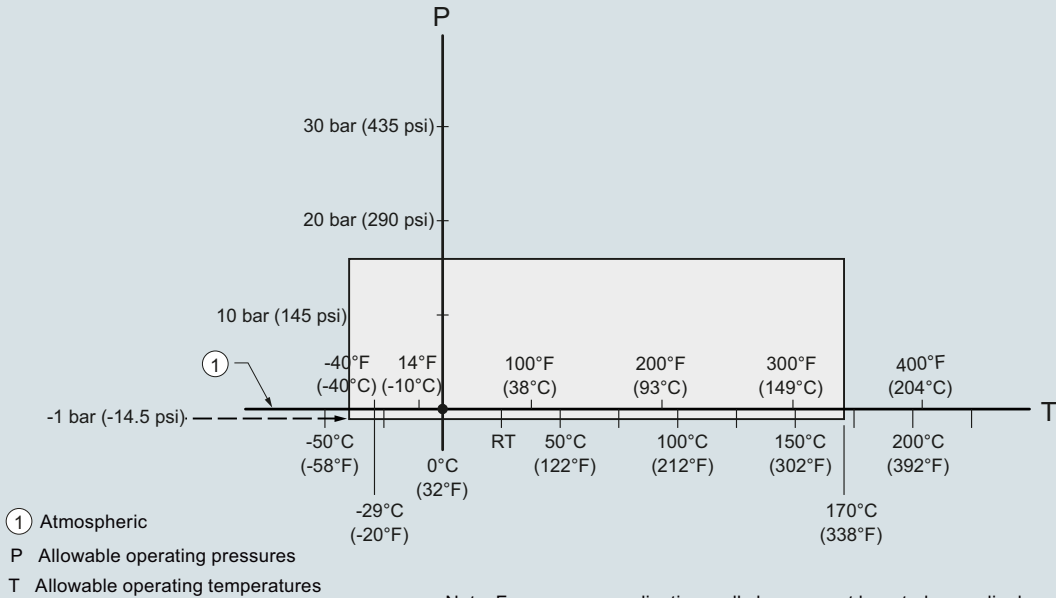
Continuous level measurement

Radar level transmitters

### SITRANS LR250 Hygienic Encapsulated Antenna

#### Characteristic curves (continued)

DIN 11864-3 Aseptic/Hygienic clamp: DN 50, DN 80, and DN 100  
 ISO 2852 Sanitary/Hygienic clamp: 2", 3", and 4"  
 Tuchenhausen Varivent face seal clamp: Type N (68 mm) and Type F (50 mm)



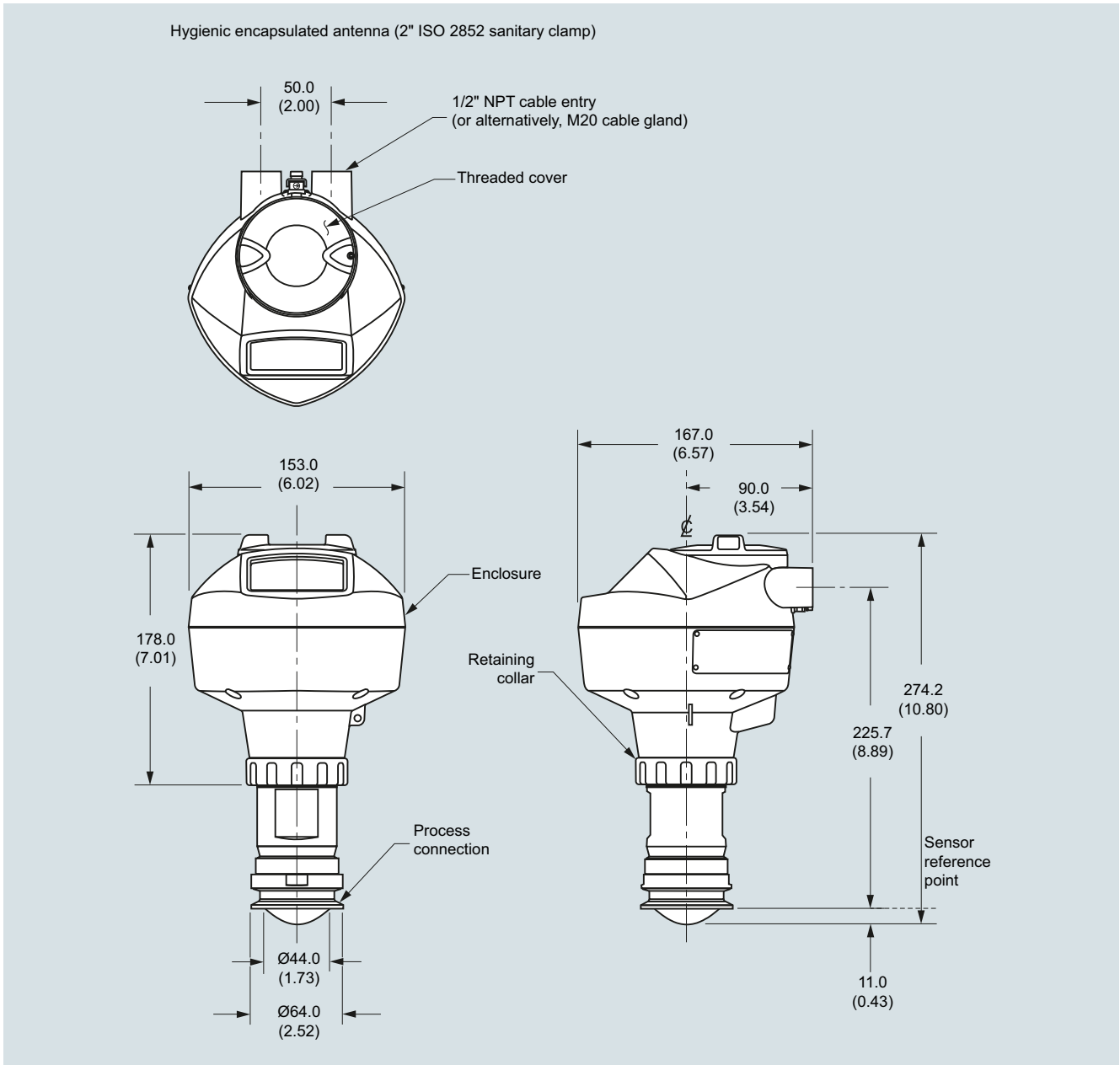
Note: For pressure applications, all clamps must be rated accordingly.

SITRANS LR250 Hygienic Encapsulated Antenna, process pressure/temperature rating curve

4

**SITRANS LR250 Hygienic Encapsulated Antenna**

**Dimensional drawings**



SITRANS LR250 Hygienic Encapsulated Antenna (2" ISO 2852 sanitary clamp), dimensions in mm (inch)

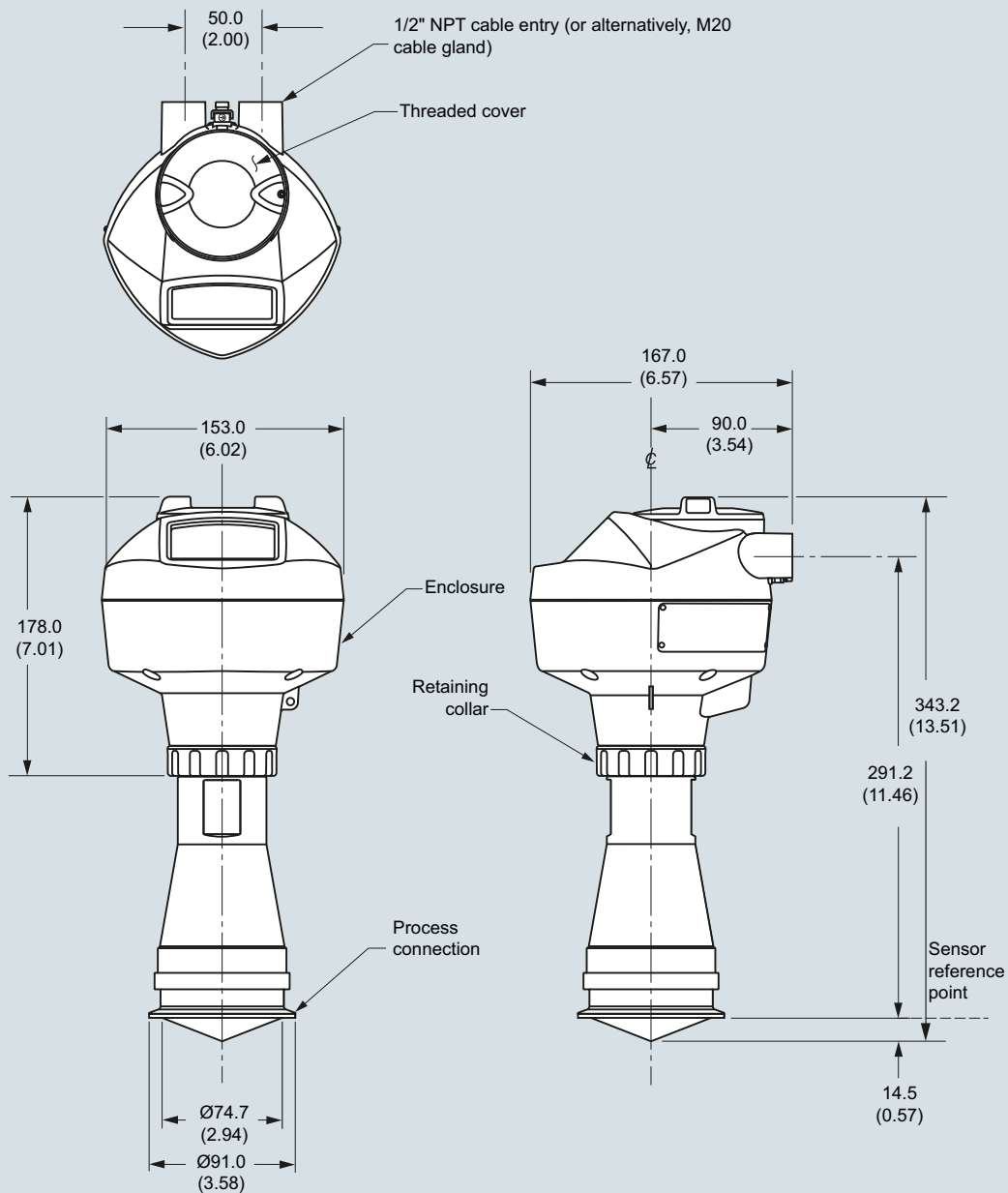
## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR250 Hygienic Encapsulated Antenna

#### Dimensional drawings (continued)

Hygienic encapsulated antenna (3" ISO 2852 sanitary clamp)

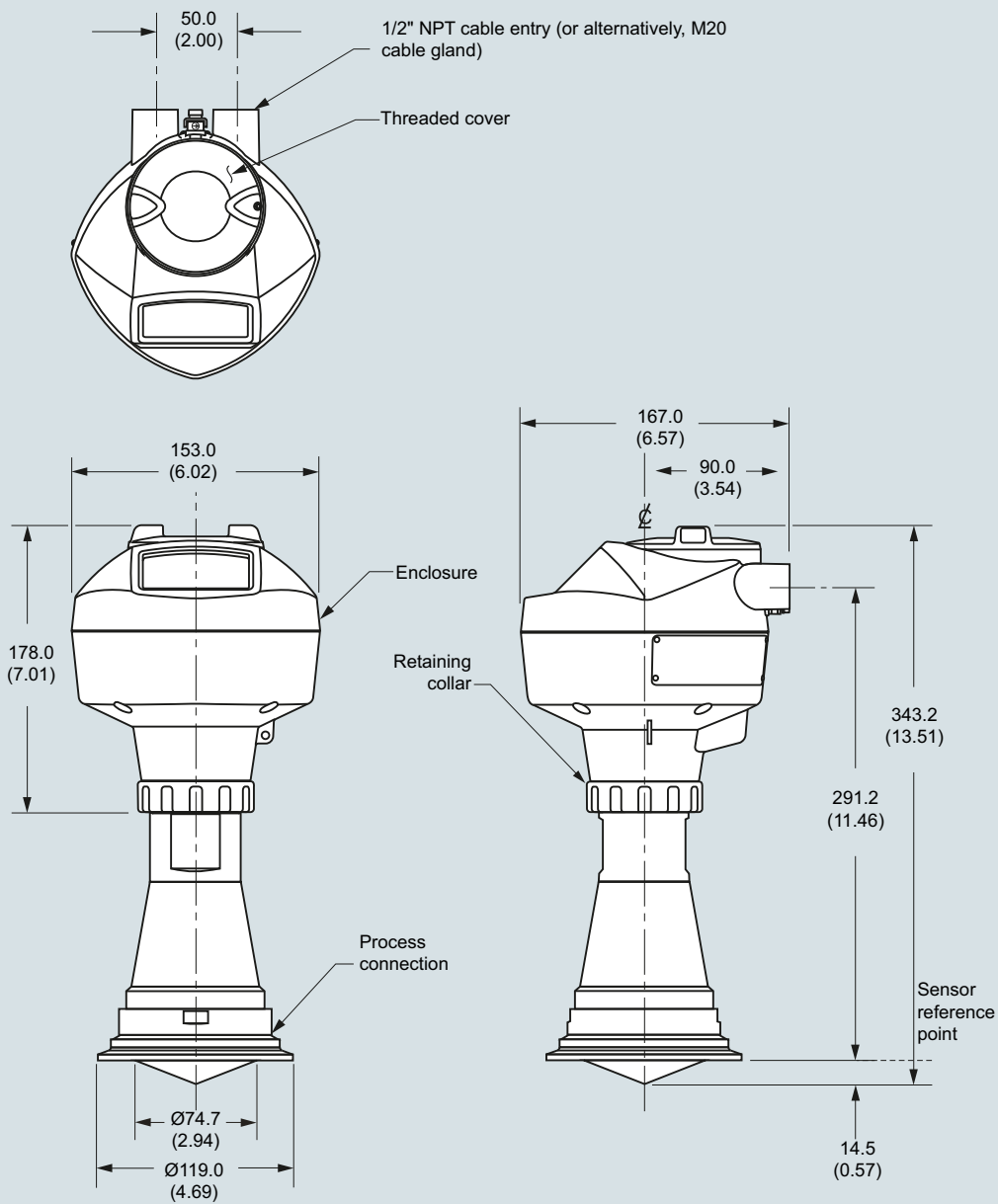


SITRANS LR250 Hygienic Encapsulated Antenna (3" ISO 2852 sanitary clamp), dimensions in mm (inch)

**SITRANS LR250 Hygienic Encapsulated Antenna**

**Dimensional drawings** (continued)

Hygienic encapsulated antenna (4" ISO 2852 sanitary clamp)



SITRANS LR250 Hygienic Encapsulated Antenna (4" ISO 2852 sanitary clamp), dimensions in mm (inch)

## Level measurement

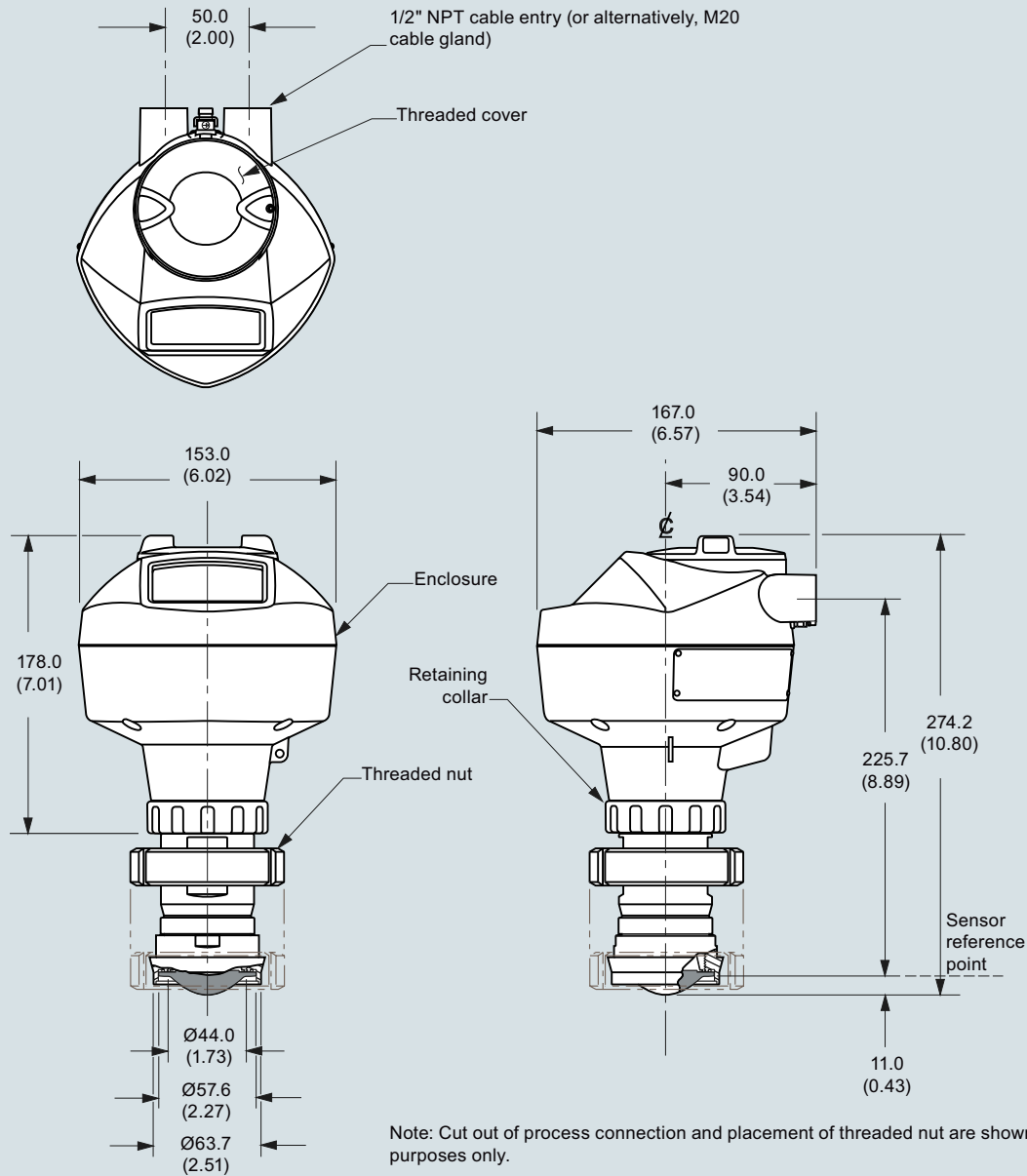
Continuous level measurement

Radar level transmitters

### SITRANS LR250 Hygienic Encapsulated Antenna

#### Dimensional drawings (continued)

Hygienic encapsulated antenna (DN 50 nozzle/slotted nut to DIN 11851)



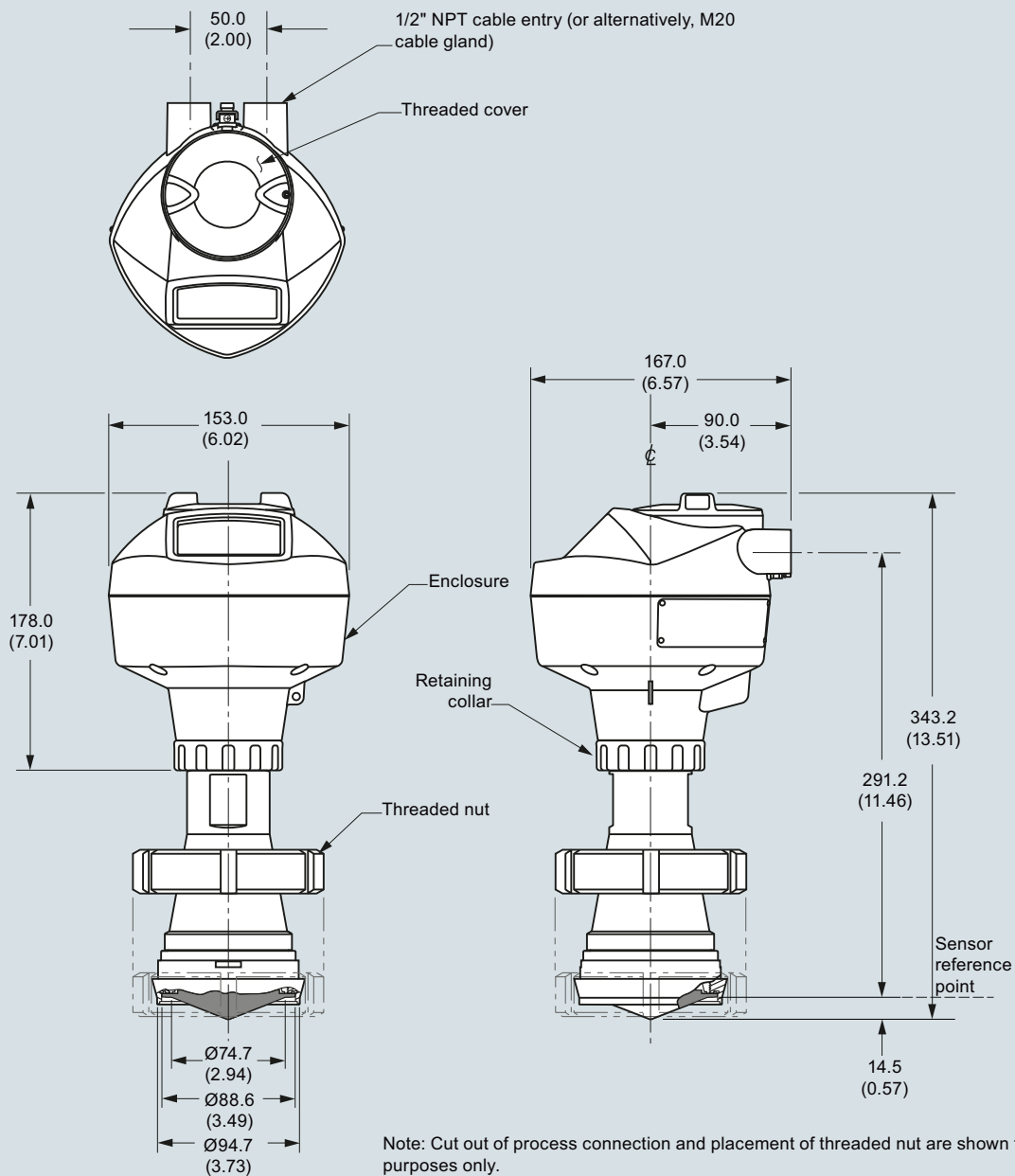
SITRANS LR250 Hygienic Encapsulated Antenna (DN 50 nozzle/slotted nut to DIN 11851), dimensions in mm (inch)



**SITRANS LR250 Hygienic Encapsulated Antenna**

**Dimensional drawings** (continued)

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

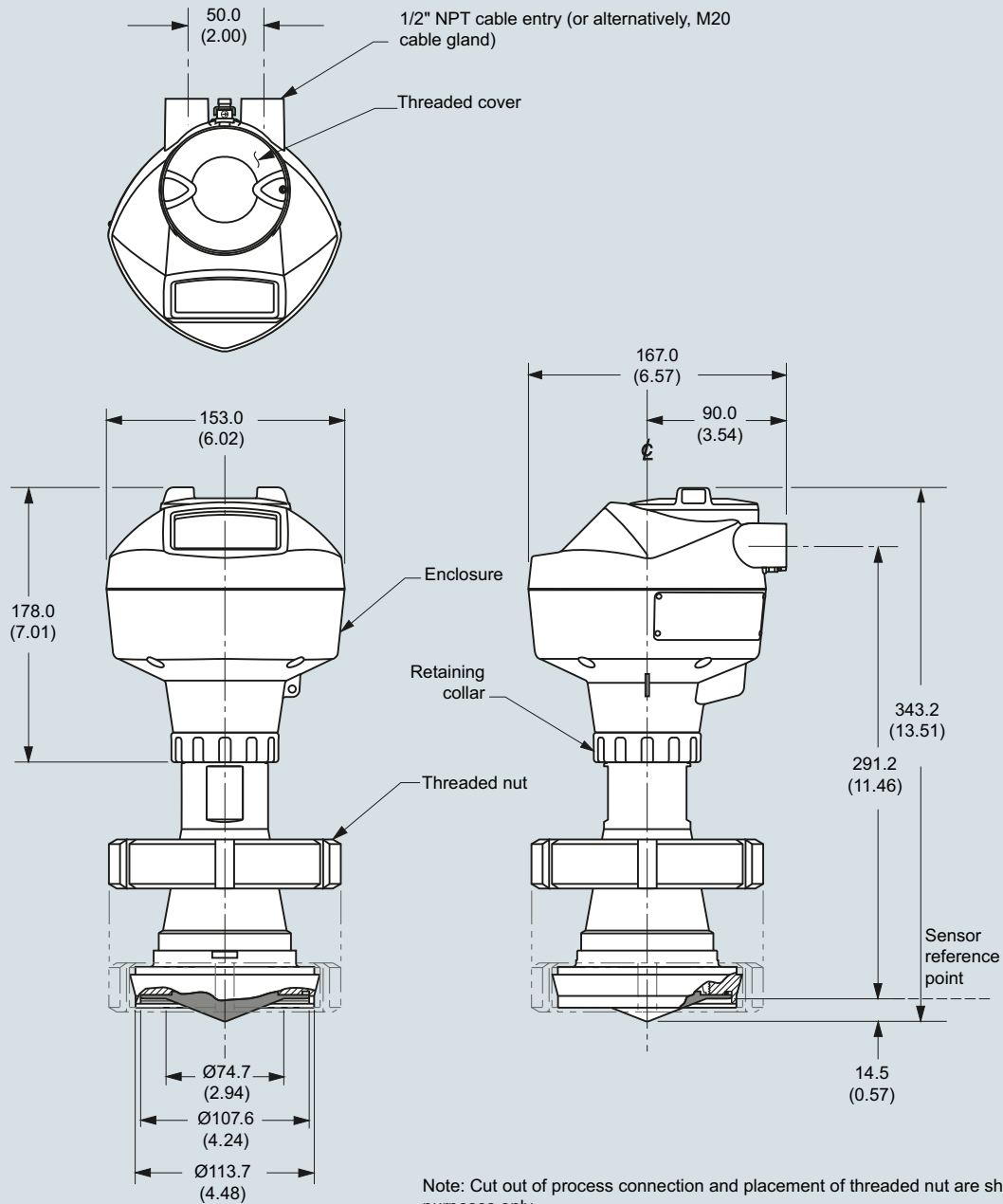
Continuous level measurement

Radar level transmitters

### SITRANS LR250 Hygienic Encapsulated Antenna

#### Dimensional drawings (continued)

Hygienic encapsulated antenna (DN 100 nozzle/slotted nut to DIN 11851)

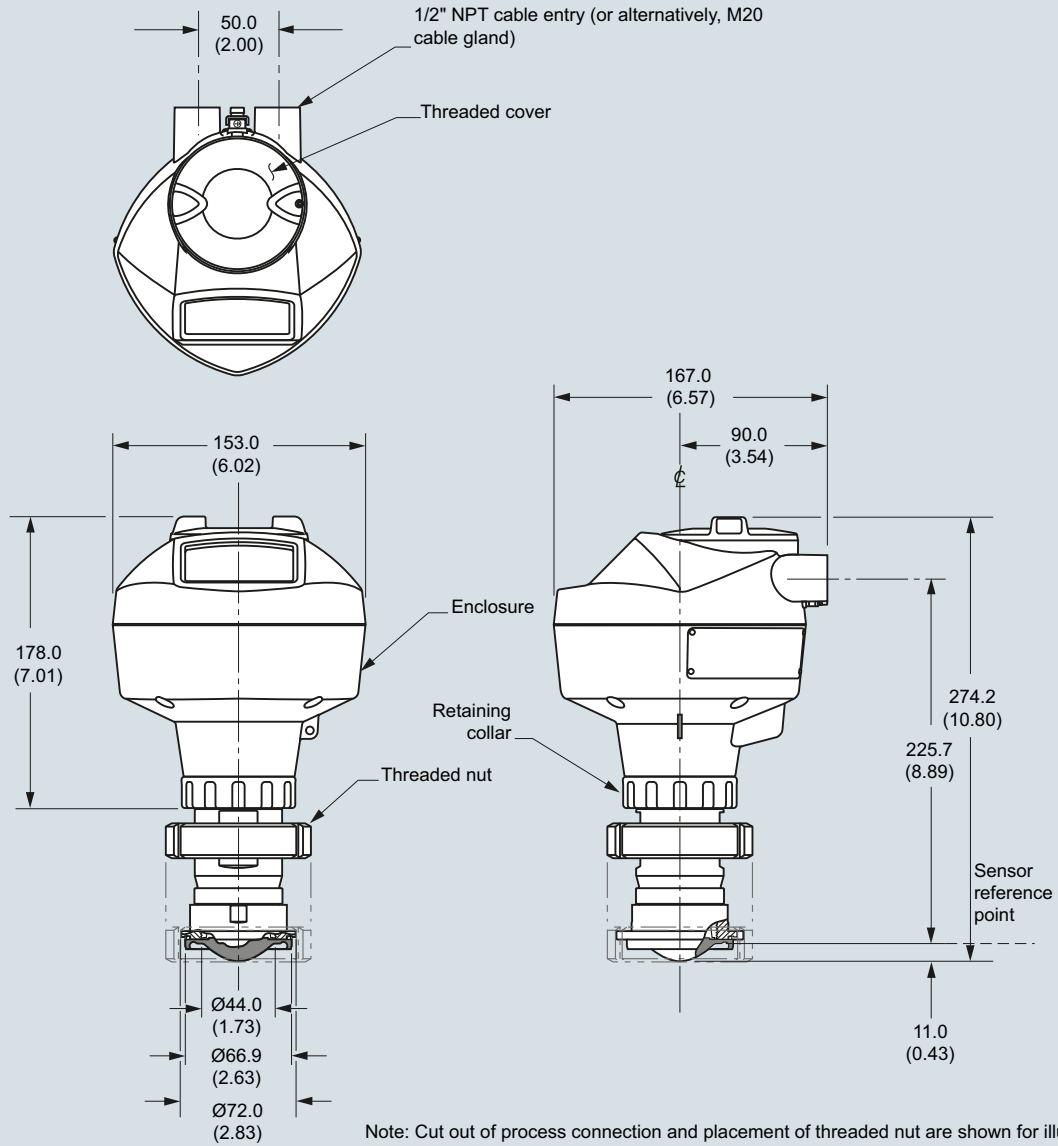


SITRANS LR250 Hygienic Encapsulated Antenna (DN 100 nozzle/slotted nut to DIN 11851), dimensions in mm (inch)

**SITRANS LR250 Hygienic Encapsulated Antenna**

**Dimensional drawings** (continued)

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)

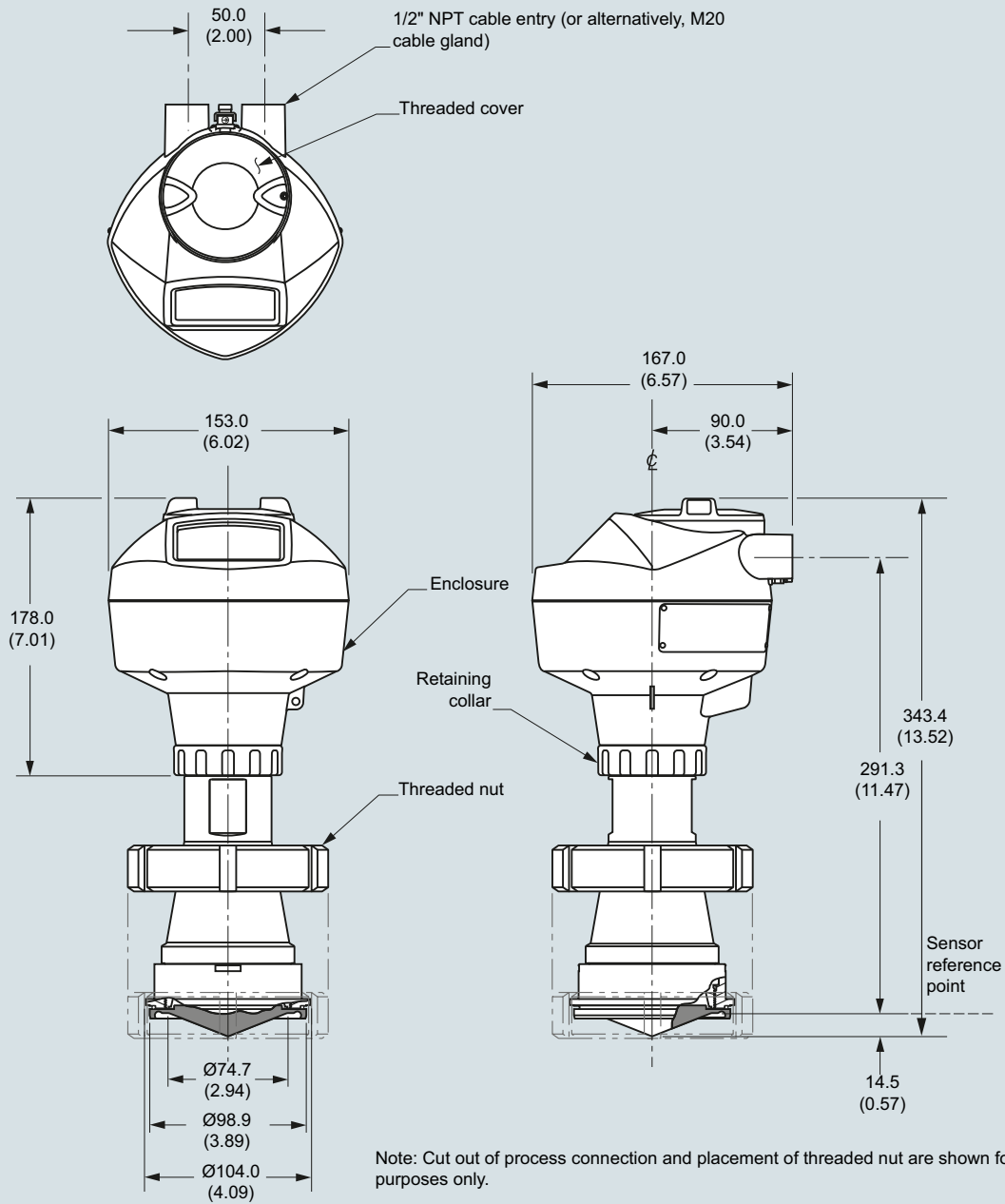
**Level measurement**

Continuous level measurement

Radar level transmitters

**SITRANS LR250 Hygienic Encapsulated Antenna****Dimensional drawings** (continued)

Hygienic encapsulated antenna (DN 80 aseptic clamp to DIN 11864-1)

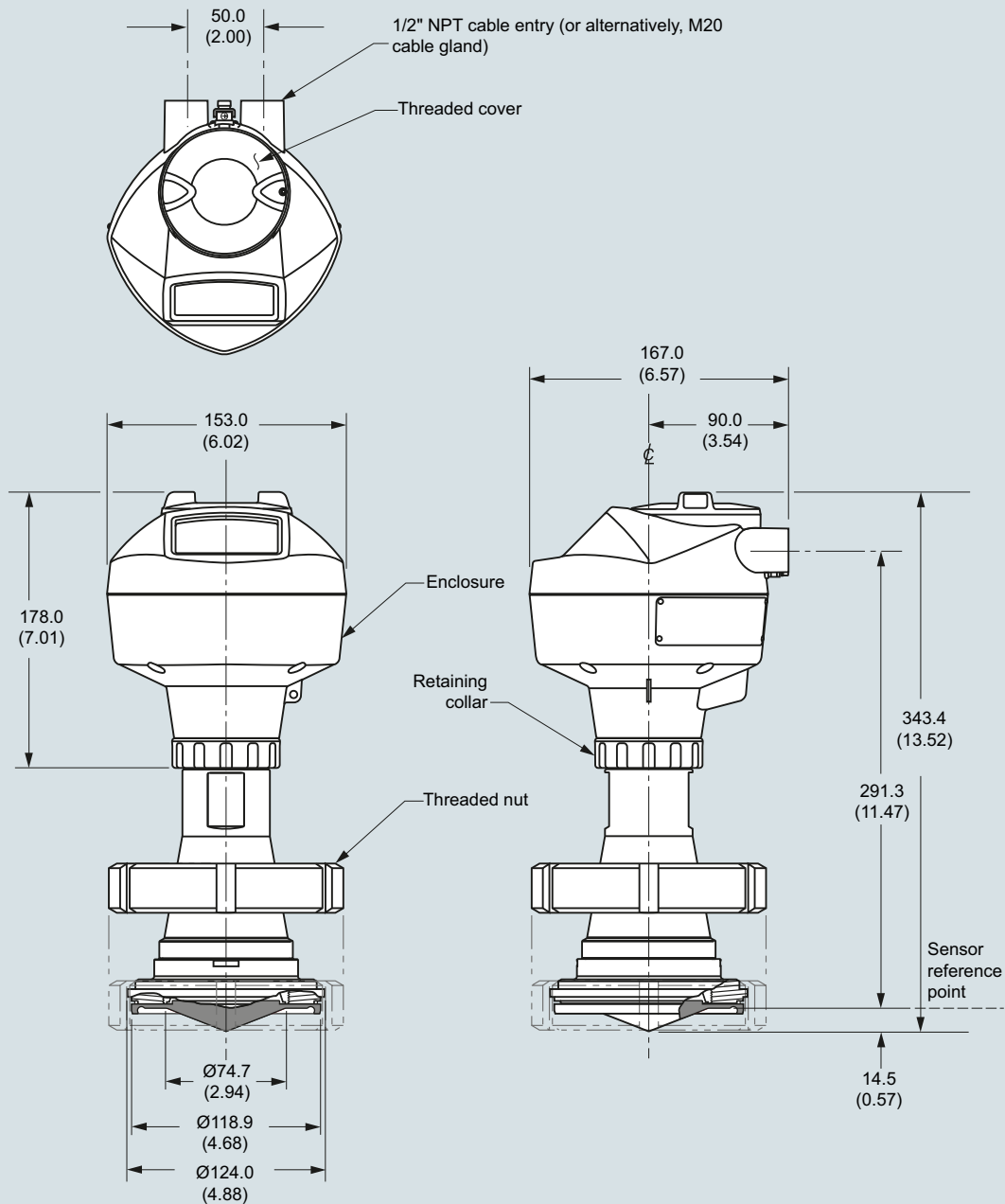


SITRANS LR250 Hygienic Encapsulated Antenna (DN 80 aseptic clamp to DIN 11864-1), dimensions in mm (inch)

**SITRANS LR250 Hygienic Encapsulated Antenna**

**Dimensional drawings** (continued)

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)

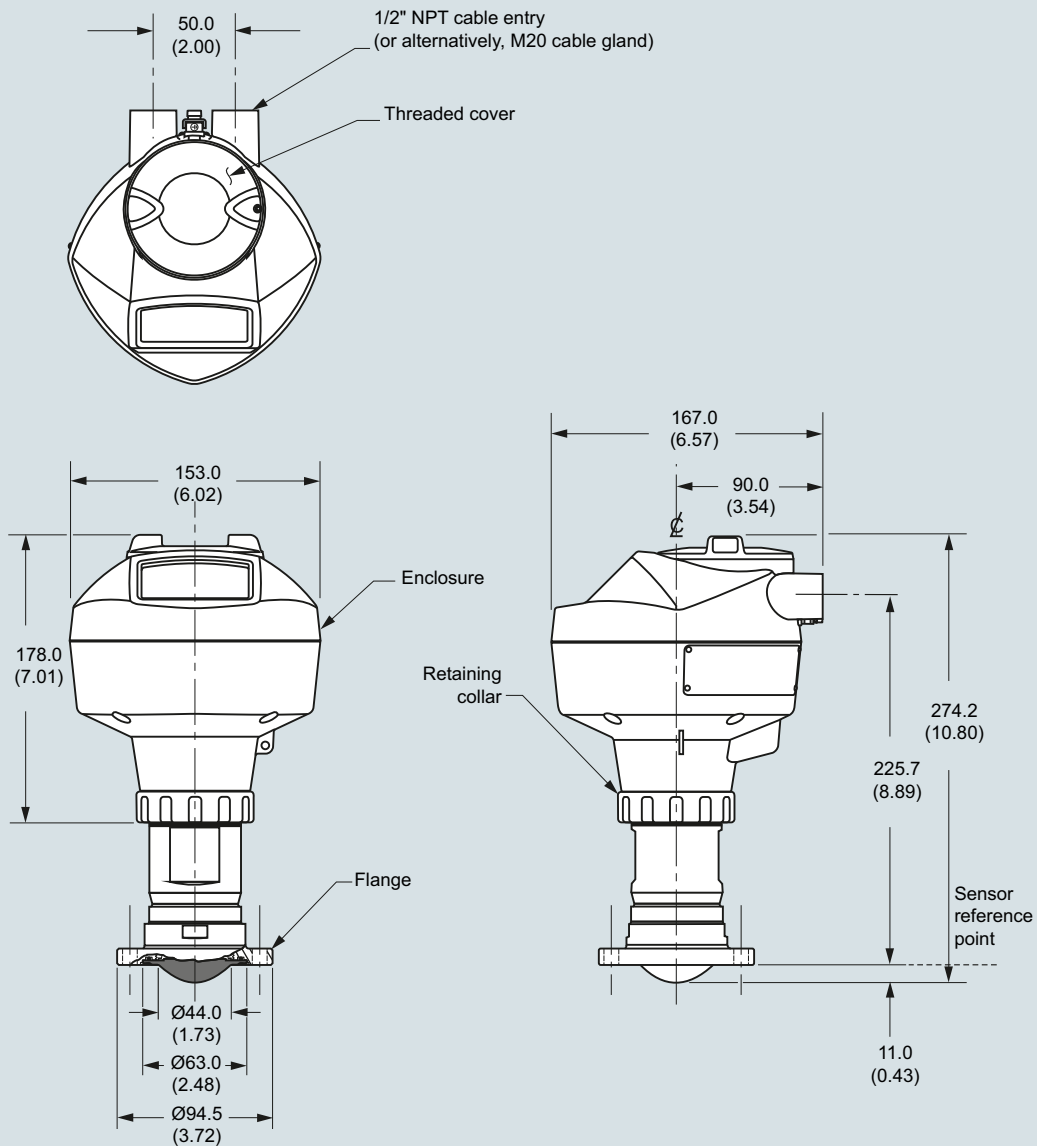
**Level measurement**

Continuous level measurement

Radar level transmitters

**SITRANS LR250 Hygienic Encapsulated Antenna****Dimensional drawings** (continued)

Hygienic encapsulated antenna (DN 50 aseptic flange to DIN 11864-2)

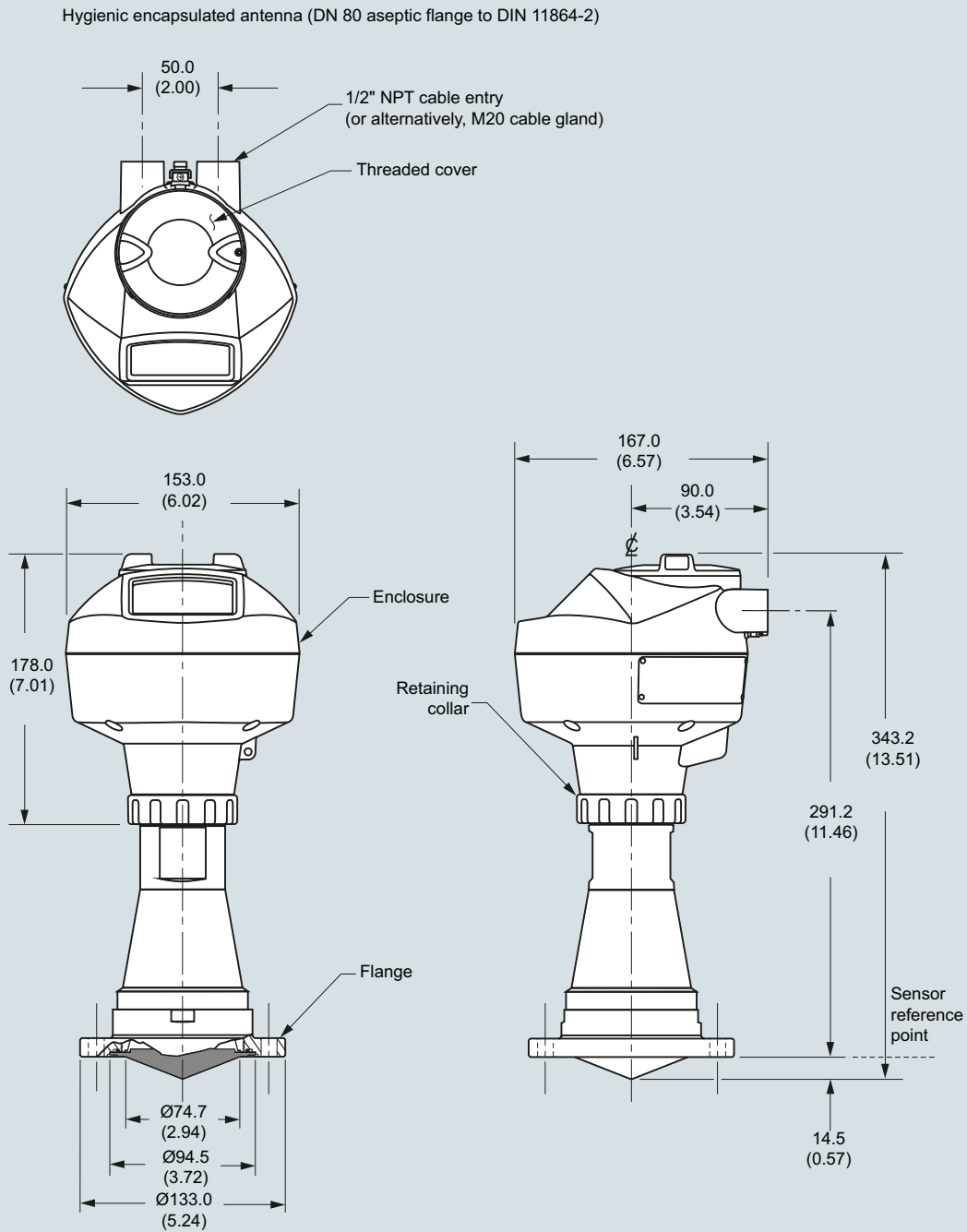


Note: Cut out of process connection and flange are shown for illustration purposes only.

SITRANS LR250 Hygienic Encapsulated Antenna (DN 50 aseptic flange to DIN 11864-2), dimensions in mm (inch)

**SITRANS LR250 Hygienic Encapsulated Antenna**

**Dimensional drawings** (continued)



Note: Cut out of process connection and flange are shown for illustration purposes only.

SITRANS LR250 Hygienic Encapsulated Antenna (DN 80 aseptic flange to DIN 11864-2), dimensions in mm (inch)

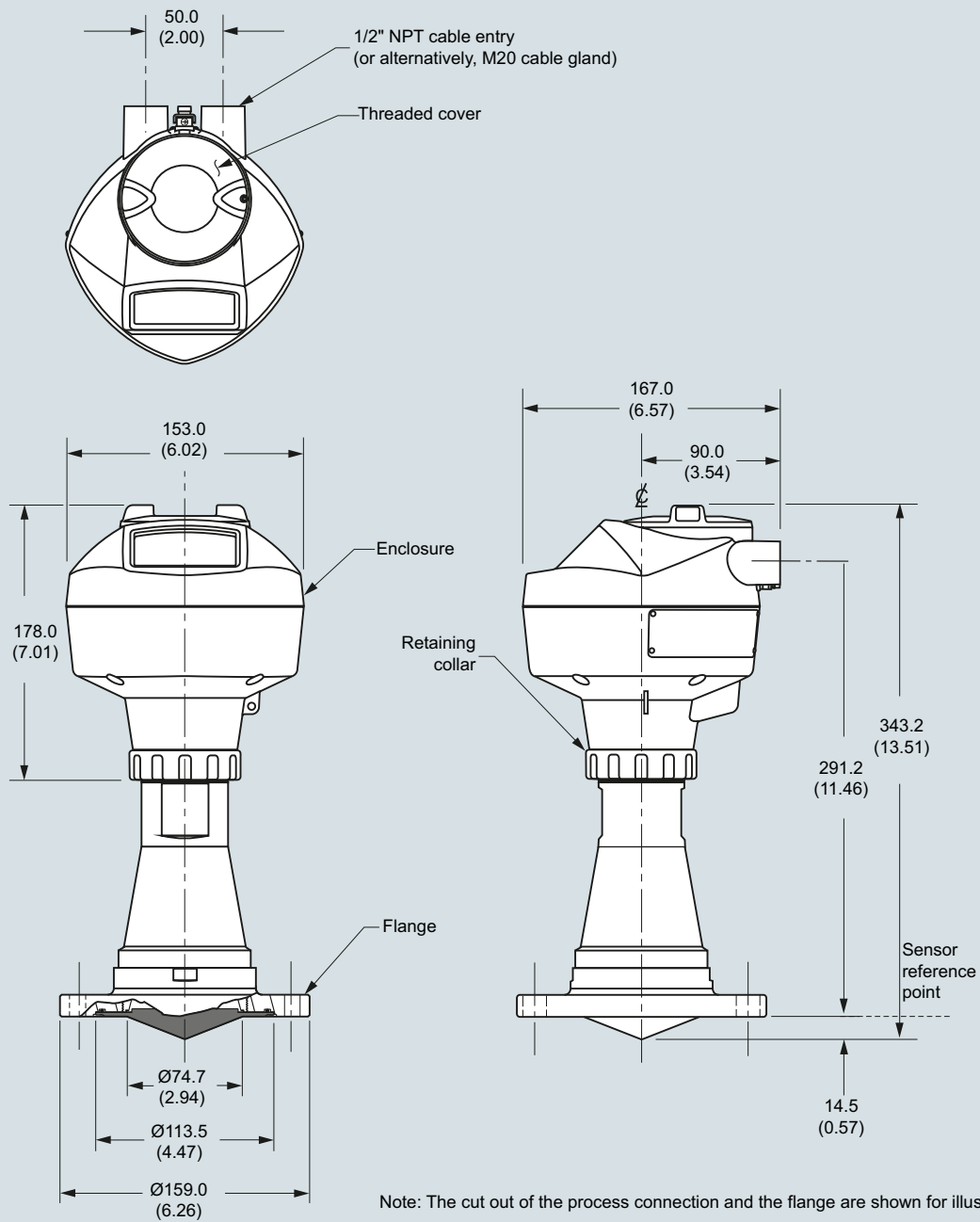
**Level measurement**

Continuous level measurement

Radar level transmitters

**SITRANS LR250 Hygienic Encapsulated Antenna****Dimensional drawings** (continued)

Hygienic encapsulated antenna (DN 100 aseptic flange to DIN 11864-2)



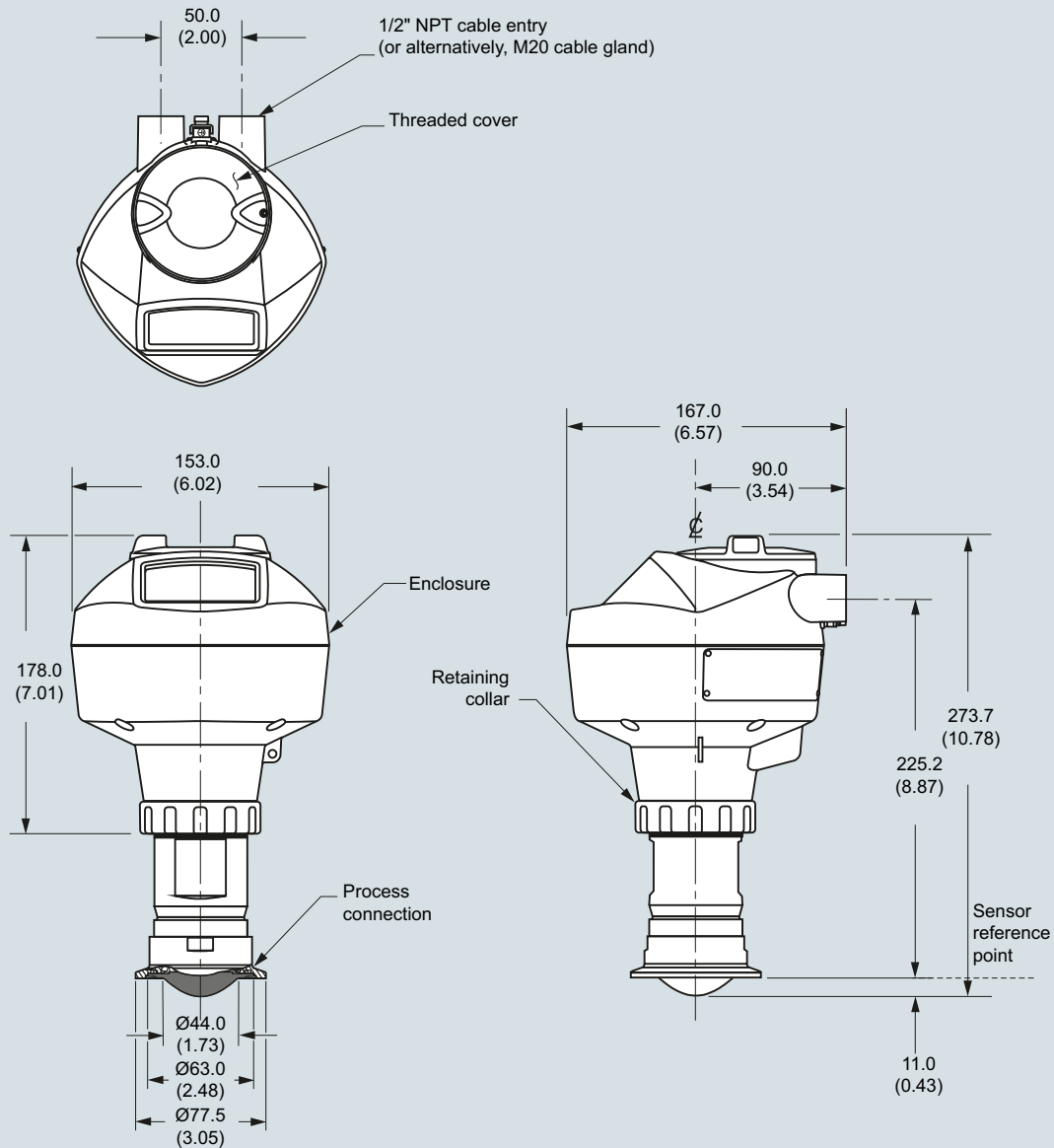
SITRANS LR250 Hygienic Encapsulated Antenna (DN 100 aseptic flange to DIN 11864-2), dimensions in mm (inch)



**SITRANS LR250 Hygienic Encapsulated Antenna**

**Dimensional drawings** (continued)

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)

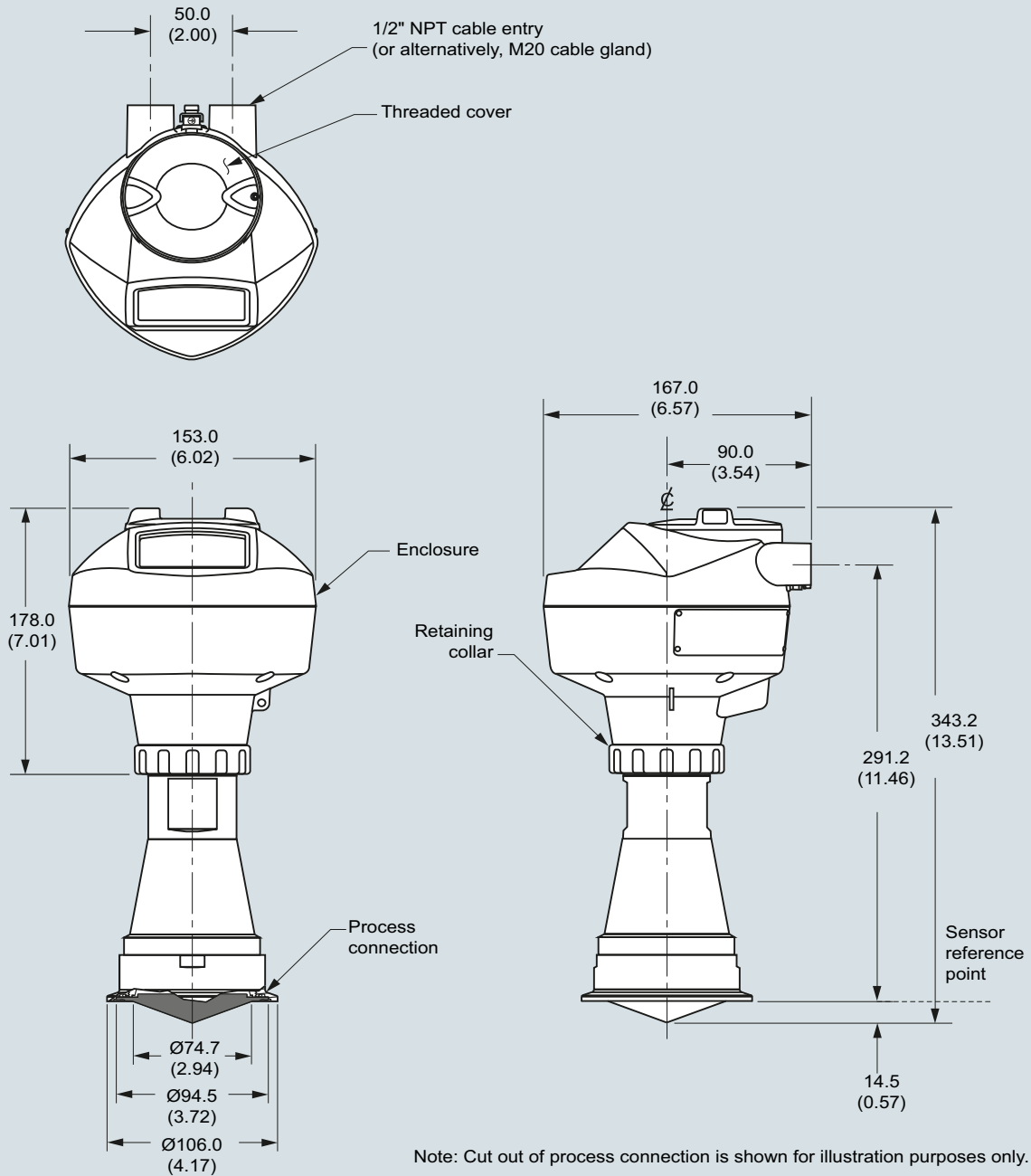
**Level measurement**

Continuous level measurement

Radar level transmitters

**SITRANS LR250 Hygienic Encapsulated Antenna****Dimensional drawings** (continued)

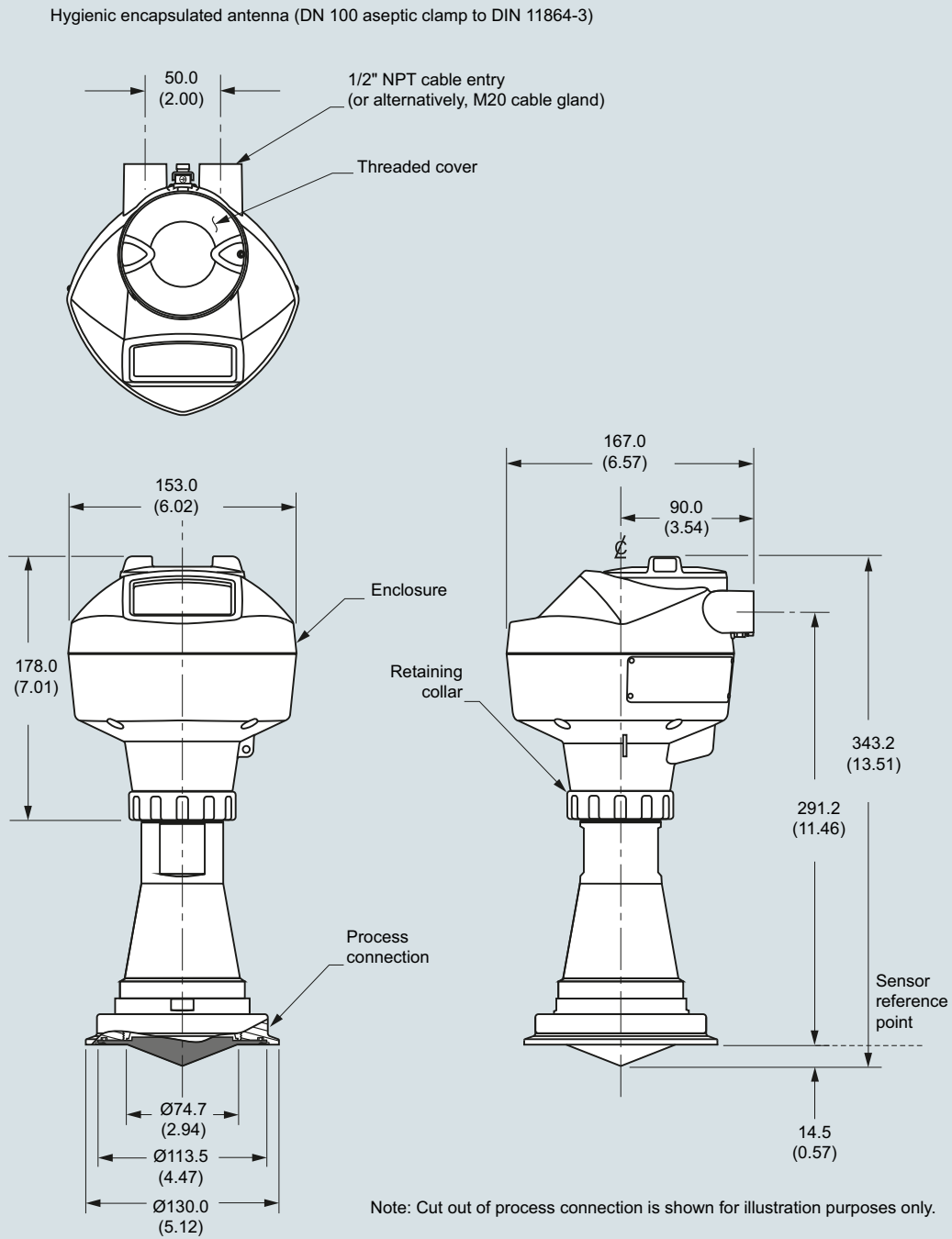
Hygienic encapsulated antenna (DN 80 aseptic clamp to DIN 11864-3)



SITRANS LR250 Hygienic Encapsulated Antenna (DN 80 aseptic clamp to DIN 11864-3), dimensions in mm (inch)

**SITRANS LR250 Hygienic Encapsulated Antenna**

**Dimensional drawings** (continued)



SITRANS LR250 Hygienic Encapsulated Antenna (DN 100 aseptic clamp to DIN 11864-3), dimensions in mm (inch)

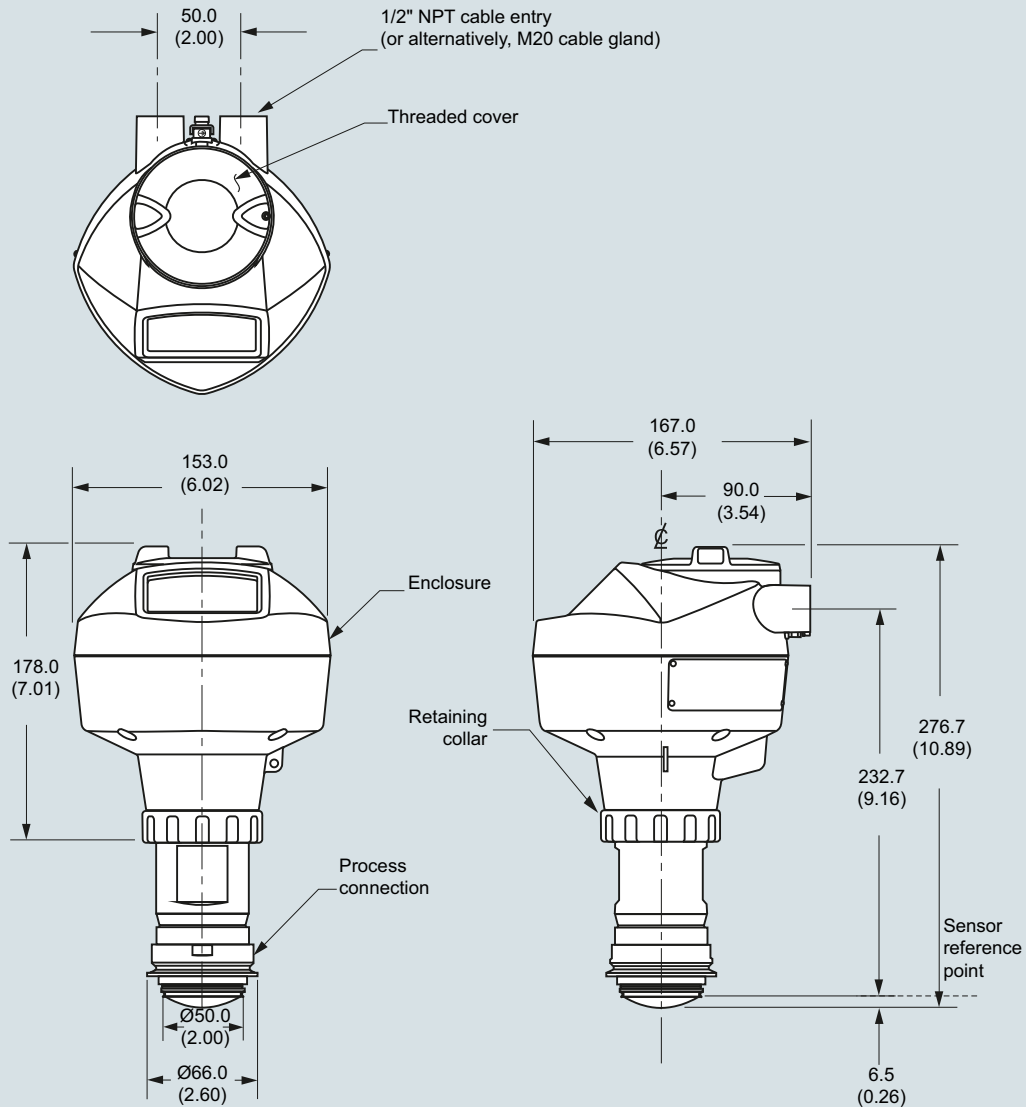
**Level measurement**

Continuous level measurement

Radar level transmitters

**SITRANS LR250 Hygienic Encapsulated Antenna****Dimensional drawings** (continued)

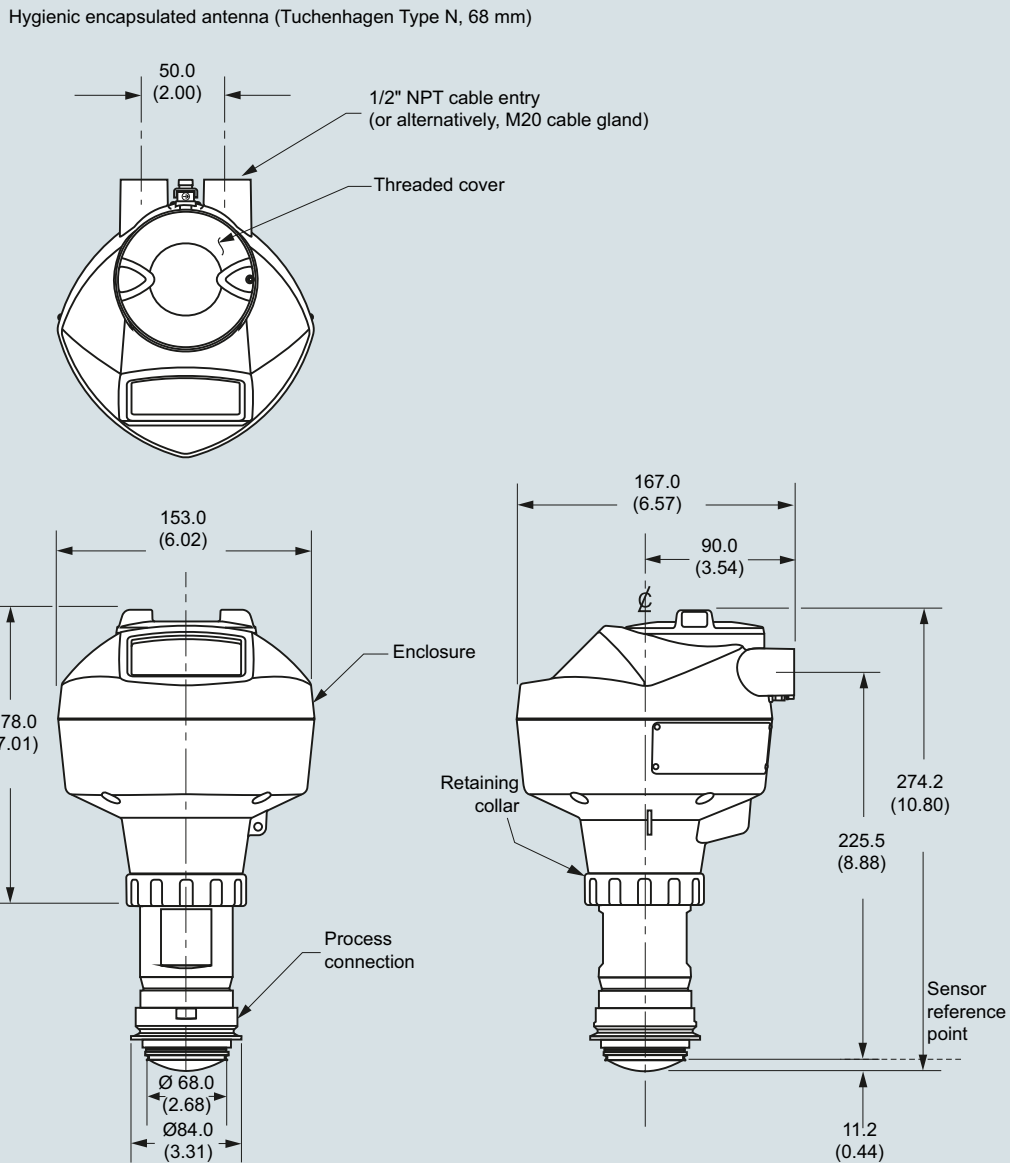
Hygienic encapsulated antenna (Tuchenhagen Type F, 50 mm)



SITRANS LR250 Hygienic Encapsulated Antenna (Tuchenhagen Type F), dimensions in mm (inch)

**SITRANS LR250 Hygienic Encapsulated Antenna**

**Dimensional drawings** (continued)



SITRANS LR250 Hygienic Encapsulated Antenna (Tuchenhagen Type N), dimensions in mm (inch)

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR250 Hygienic Encapsulated Antenna

#### Circuit diagrams

4

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, PROFIBUS PA, and FOUNDATION Fieldbus 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 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

#### 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.

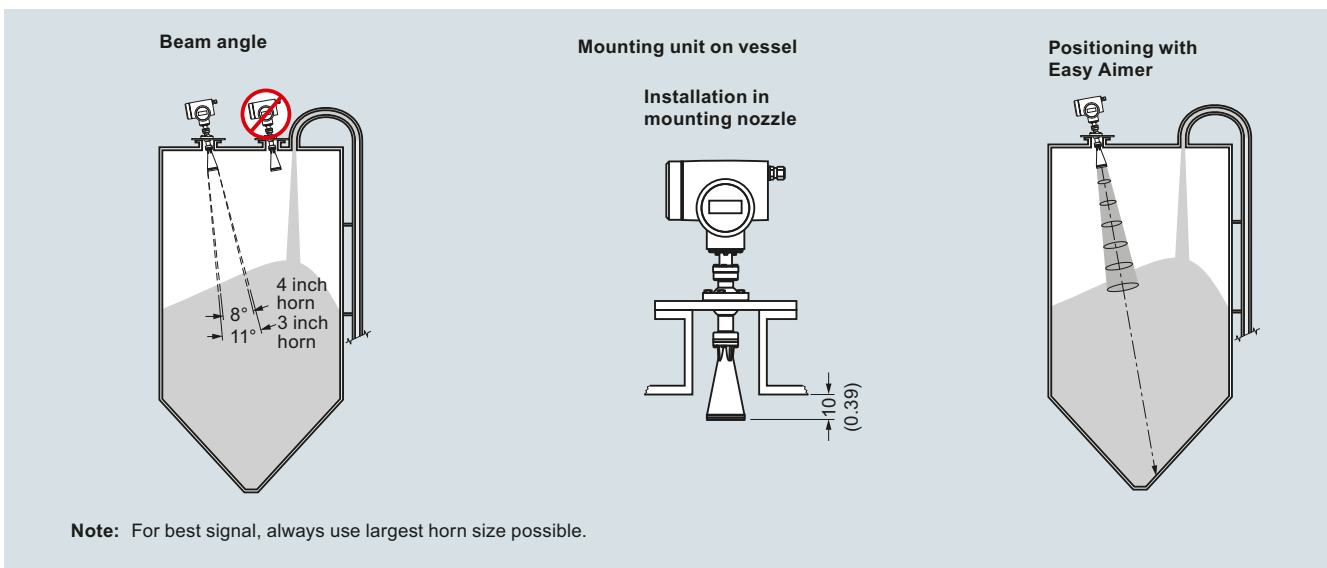
An optional dust cap is available for sticky solids. Optional air purging is also available for extremely sticky applications.

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



SITRANS LR460 installation, dimensions in mm (inch)

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR460

#### Technical specifications

<b>Mode of operation</b>	
Measuring principle	FMCW radar level measurement
Frequency	24.2 ... 25.2 GHz FMCW
Measuring range	0.35 ... 100 m (1.15 ... 328.08 ft)
<b>Output</b>	
Analog output (HART)	
• Signal range	Optically isolated
• 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
PROFIBUS PA protocol	Layer 1 and 2, Class A, Profile 3.01
<b>Performance (Reference conditions according to IEC 60770-1)</b>	
Non-linearity	Greater of 25 mm (1 inch) or 0.25 % of span (including hysteresis and non-repeatability), over the full ambient temperature range
Non-repeatability	≤ 10 mm (0.4 inch)
<b>Rated operating conditions</b>	
Amb. temperature for enclosure	-40 ... +65 °C (-40 ... +149 °F)
Storage temperature	-40 ... +65 °C (-40 ... +149 °F)
Location	Indoor/outdoor
Installation category	II
Pollution degree	4
<b>Medium conditions</b>	
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
<b>Design</b>	
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

<b>Programming</b>	
Intrinsically Safe Siemens handheld programmer (ordered separately)	Infrared receiver
• 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)
Handheld communicator	HART Communicator 375
PC	SIMATIC PDM
Display (local)	Alphanumeric LCD for readout and entry
<b>Power supply</b>	
	100 ... 230 V AC ± 15 % (50/60 Hz), 6 W (12 VA) or 24 V DC +25/-20 %, 6 W (optional)
<b>Certificates and approvals</b>	
General	CSA <sub>US/C</sub> , CE, FM, RCM
Radio	European Radio (RED), Industry Canada, FCC, RCM
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 <sub>a</sub> 85 °C IP67
<b>Optional equipment</b>	
Dust cap	PTFE
Air purge connection	1/8" NPT



Selection and ordering data	Article No.	Order code
<b>SITRANS LR460 Radar level transmitter with horn</b> Continuous, non-contact, 100 m (328 ft) range, for challenging solids applications. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	<b>7ML5426-</b> 0 0 0 0 - 0 0 0	
<b>Process connection</b> 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	
<b>Antenna</b> 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 <sup>1)</sup> 3" horn antenna, fits 80 mm (3 inch) nozzles with 1 000 mm extension <sup>1)</sup> 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 <sup>1)</sup> 4" horn antenna, fits 100 mm (4 inch) nozzles with 1 000 mm extension <sup>1)</sup>	A B C D E F G H J K	
<b>Purge (self-cleaning) connection</b> No purge connection Purge connection	0 1	
<b>Output/Communication</b> 4 ... 20 mA, HART PROFIBUS PA	0 1	
<b>Power supply/cable inlet</b> 100 ... 230 V AC • 2 x M20 x 1.5 • 2 x ½" NPT 24 V DC • 2 x M20 x 1.5 • 2 x ½" NPT	A B C D	
<b>Approvals</b> General Purpose, CSAUS/C, Industry Canada, FM, FCC, CE, RED, RCM CSA/FM Class II, Div. 1, Groups E, F, and G, Class III ATEX II ½ D T6, CE, RED	A B C	
		<b>Further designs</b> Please add <b>"-Z"</b> 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 <b>Y15</b> <b>C11</b>
		<b>Operating Instructions</b> All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>
		<b>Accessories</b> Article No. Handheld programmer, Infra-red, Intrinsically Safe, EEx ia <b>7ML5830-2AJ</b> Dust cap, PTFE, for 3 inch/80 mm horn <b>7ML1930-1BL</b> Dust cap, PTFE, for 4 inch/100 mm horn <b>7ML1930-1BM</b> HART modem/USB (for use with a PC and SIMATIC PDM) <b>7MF4997-1DB</b> One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), HART <sup>1)</sup> <b>7ML1930-1AP</b> One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), PROFIBUS PA <sup>1)</sup> <b>7ML1930-1AQ</b> SITRANS RD100, loop powered display - see Chapter 7 <b>7ML5741-.....-</b> SITRANS RD150, remote digital display for 4 ... 20 mA and HART devices - see Chapter 7 <b>7ML5742-.....-</b> SITRANS RD200, universal input display with Modbus conversion - see Chapter 7 <b>7ML5740-.....-</b> SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7 <b>7ML5744-.....-</b>
		For applicable back up point level switch - see point level measurement section <sup>1)</sup> Product shipped with plastic cable gland, rated to -20 °C. If -40 °C rating required, then metallic cable gland is recommended.

<sup>1)</sup> Available with Purge option 0 only.

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR460

#### Selection and ordering data

##### SITRANS LR460 Specials

###### Process connection part kits - non-pressure-rated

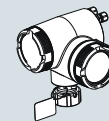
	Article No.
SITRANS LR460, 100 mm extension for horn antenna, no purge <sup>1)</sup>	<b>A5E01087872</b>
SITRANS LR460, 200 mm extension for horn antenna, no purge <sup>1)</sup>	<b>A5E01091262</b>
SITRANS LR460, 100 mm extension for horn antenna with purge <sup>1)</sup>	<b>A5E01261979</b>
SITRANS LR460, 200 mm extension for horn antenna with purge <sup>1)</sup>	<b>A5E01261981</b>
SITRANS LR460, horn 2", no purge, no emitter <sup>1)</sup>	<b>A5E02083905</b>
SITRANS LR460, horn 3", no purge, no emitter <sup>1)</sup>	<b>A5E01623511</b>
SITRANS LR460, horn 4", no purge, no emitter <sup>1)</sup>	<b>A5E01623512</b>
SITRANS LR460, horn 2", with purge, no emitter <sup>1)</sup>	<b>A5E02083906</b>
SITRANS LR460, horn 3", with purge, no emitter <sup>1)</sup>	<b>A5E01623513</b>
SITRANS LR460, horn 4", with purge, no emitter <sup>1)</sup>	<b>A5E01623514</b>
SITRANS LR460, 3" universal flat faced flange <sup>1)</sup>	<b>A5E02303897</b>
SITRANS LR460, 4" universal flat faced flange <sup>1)</sup>	<b>A5E01259467</b>
SITRANS LR460, 6" universal flat faced flange <sup>1)</sup>	<b>A5E01261834</b>
SITRANS LR460 O-Rings for Easy Aimer <sup>1)</sup>	<b>A5E01261836</b>
Kit, Emitter for LR460 <sup>1)</sup>	<b>A5E02360694</b>

###### Purge conversion kit - non-pressure-rated (no flange or extension included)

SITRANS LR460 purge conversion, 2" horn <sup>1)</sup>	<b>A5E02083914</b>
SITRANS LR460 purge conversion, 3" horn <sup>1)</sup>	<b>A5E02083915</b>
SITRANS LR460 purge conversion, 4" horn <sup>1)</sup>	<b>A5E02083916</b>

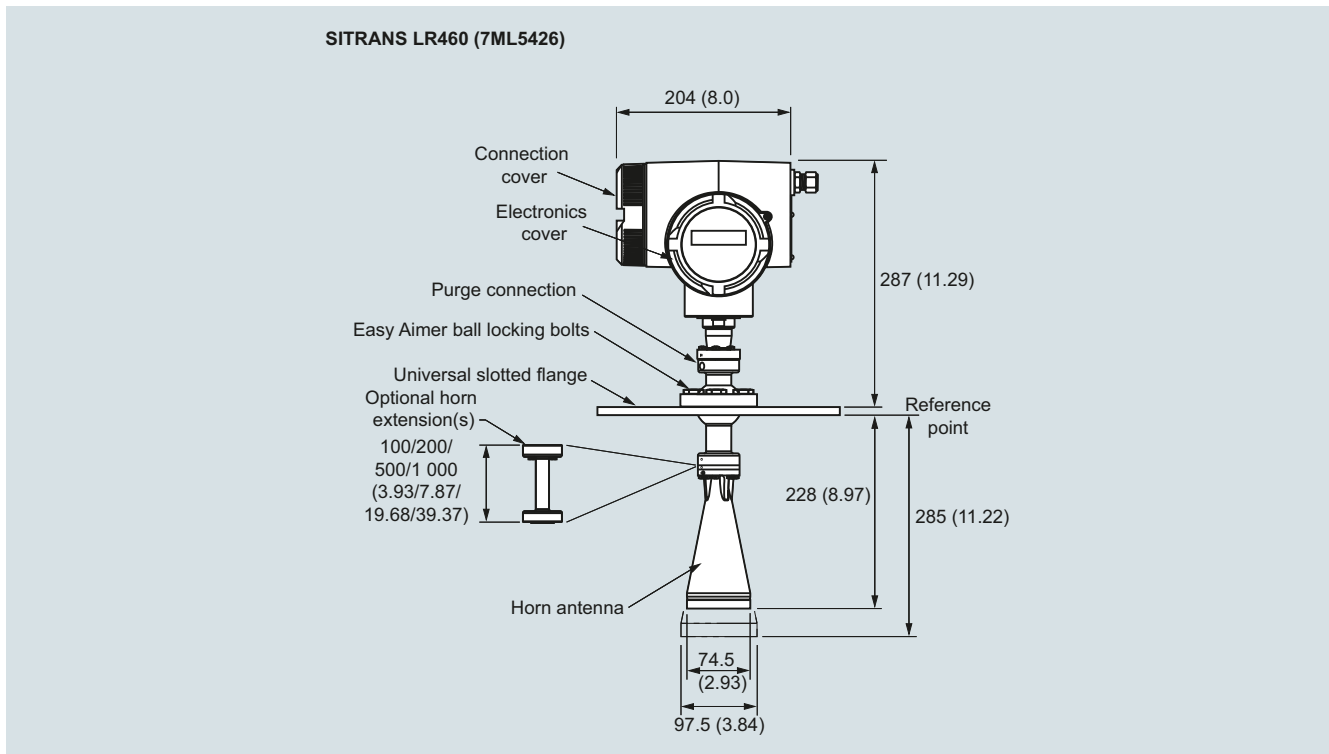
###### Enclosure with electronics (LR460)

	Article No.
SITRANS LR460 enclosure with board stack, HART communication, AC power, M20 cable inlet, approval option A, no process connection	<b>A5E02182085</b>
SITRANS LR460 enclosure with board stack, PROFIBUS PA communication, AC power, M20 cable inlet, approval option A, no process connection	<b>A5E02212422</b>
SITRANS LR460 enclosure with board stack, HART communication, AC power, NPT cable inlet, approval option A, no process connection	<b>A5E02212423</b>
SITRANS LR460 enclosure with board stack, PROFIBUS PA communication, AC power, NPT cable inlet, approval option A, no process connection	<b>A5E02212424</b>
SITRANS LR460 enclosure with board stack, HART communication, DC power, M20 cable inlet, approval option A, no process connection	<b>A5E02212425</b>
SITRANS LR460 enclosure with board stack, PROFIBUS PA communication, DC power, M20 cable inlet, approval option A, no process connection	<b>A5E02212426</b>
SITRANS LR460 enclosure with board stack, HART communication, DC power, NPT cable inlet, approval option A, no process connection	<b>A5E02212428</b>
SITRANS LR460 enclosure with board stack, PROFIBUS PA communication, DC power, NPT cable inlet, approval option A, no process connection	<b>A5E02212429</b>



<sup>1)</sup> 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.usa.siemens.com/level>.

### Dimensional drawings



SITRANS LR460, dimensions in mm (inch)

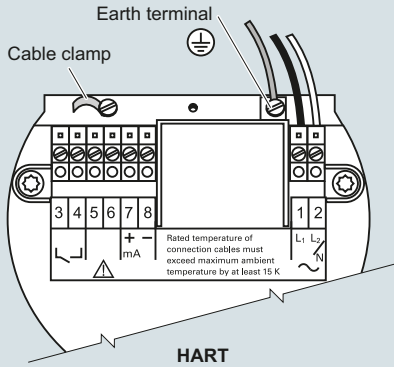
## Level measurement

Continuous level measurement  
Radar level transmitters

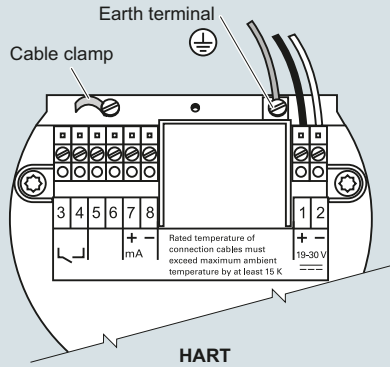
### SITRANS LR460

#### Circuit diagrams

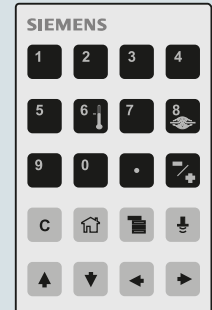
##### AC version



##### DC version

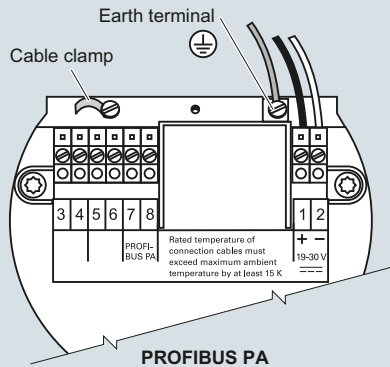
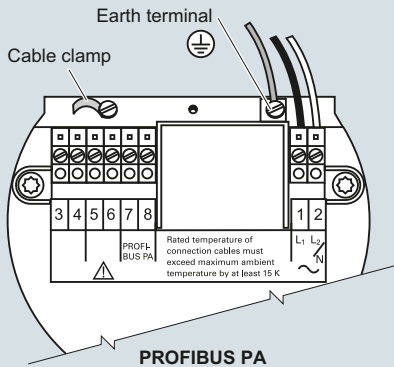


##### Hand programmer



##### SITRANS LR460

Part number:  
7ML5830-2AJ

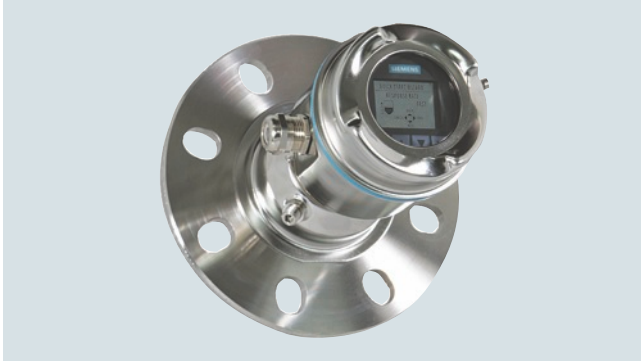


#### Notes

- 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

## 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).

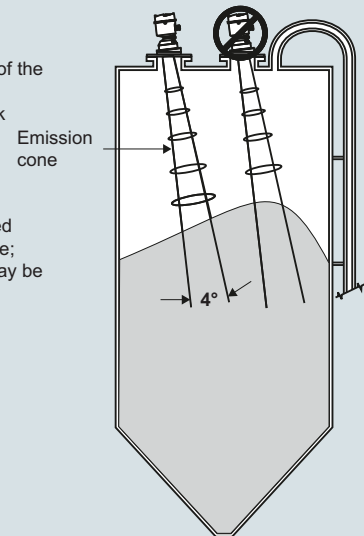
- Key Applications: cement powder, plastic powder/pellets, grain, coal, wood powder, fly ash

## Configuration

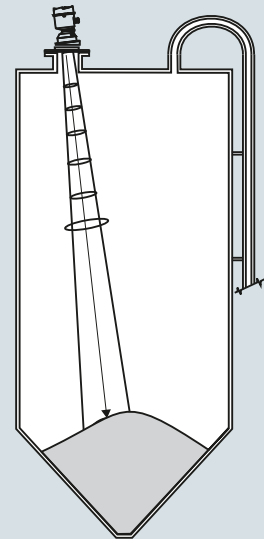
### Installation

#### 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 level 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 <sup>1)</sup>	<ul style="list-style-type: none"> <li>• 40 m (131 ft) version</li> <li>• 100 m (328 ft) version</li> </ul>

##### Output

Analog output	4 ... 20 mA
Communications	<ul style="list-style-type: none"> <li>• HART</li> <li>• Optional: PROFIBUS PA</li> </ul>
Fail-safe	<ul style="list-style-type: none"> <li>• Programmable as high, low or hold (Loss of Echo)</li> <li>• NE43 programmable</li> </ul>

##### Performance (according to reference conditions IEC60770-1)

Maximum measured error (including hysteresis and non-repeatability <sup>2)</sup> )	5 mm (0.2 inch)
--	-----------------

##### Rated operating conditions (according to reference conditions IEC60770-1)

Installation conditions	Indoor/outdoor
• Location	
Ambient conditions (enclosure)	
• Ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
• Storage temperature	-40 ... +80 °C (-40 ... +176 °F)
• Installation category	I
• Pollution degree	4

##### Medium conditions

Dielectric constant $\epsilon_r$	> 1.6
Process temperature and pressure	See chart below

##### Design

Enclosure	316L/1.4404 stainless steel M20 x 1.5, or ½" NPT via adapter 1/8" NPT, 30 cfm at max. 100 psi
• Construction	
• Conduit entry	
• Purge inlet	
• Lens material	<ul style="list-style-type: none"> <li>• 40 m version: PEI</li> <li>• 100 m version: PEEK</li> </ul>
	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 <sup>3)</sup>	<ul style="list-style-type: none"> <li>• 3, 4, 6 inch/80, 100, 150 mm, 304 stainless steel</li> <li>• 3, 4, 6 inch/80, 100, 150 mm, 316L/1.4404 or 316L/1.4435 stainless steel</li> </ul>
• Aimer flanges <sup>3)</sup>	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 $\Omega$
PROFIBUS PA	13.5 mA 9 ... 32 V DC, per IEC 61158-2

##### Certificates and approvals

General	CSA <sub>US/C</sub> , 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

<sup>1)</sup> From sensor reference point

<sup>2)</sup> Under severe EMI/EMC environments per IEC61326-1 or NAMUR NE21, the device error may increase to a maximum of 25 mm (1 inch)

<sup>3)</sup> 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)



## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR560

#### Selection and ordering data

#### Article No.

#### SITRANS LR560 Specials

##### SITRANS LR560 Electronics Modules

SITRANS LR560 Electronics Module, HART, 100 m range, compatible with 7ML54401XX00XAXX, no enclosure or process connection included.

**7ML18303-AC**

SITRANS LR560 Electronics Module, PROFIBUS PA, 100 m range, compatible with 7ML54401XX00XBXX, no enclosure or process connection included.

**7ML18303-AH**

SITRANS LR560 Electronics Module, HART, 40 m range, compatible with 7ML54400XX00XAXX, no enclosure or process connection included.

**7ML18303-AK**

SITRANS LR560 Electronics Module, PROFIBUS PA, 40 m range, compatible with 7ML54400XX00XBXX, no enclosure or process connection included.

**7ML18303-AL**

##### SITRANS LR560 Miscellaneous Spare Kits

Kit, lid gasket, EPDM

**7ML18303-AA**

Kit, wrench for 4 inch and 6 inch Aimers

**7ML18303-AB**

Kit, O-rings for 3 inch Aimer

**7ML18303-AD**

Kit, O-rings for 4 inch Aimer

**7ML18303-AE**

Kit, O-rings for 6 inch Aimer

**7ML18303-AF**

Kit, lid screw and purge plug set with hex keys

**7ML18303-AG**

Kit, lid, no Window

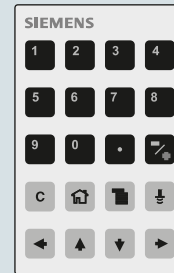
**7ML18303-AP**

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

#### Options

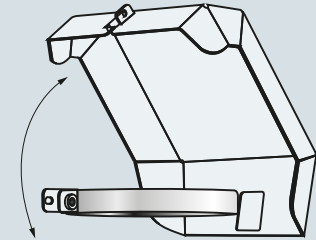
##### Handheld programmer

Article number:  
7ML1930-1BK



##### Sun shield cover (304 stainless steel)

Article number:  
7ML1930-1FK

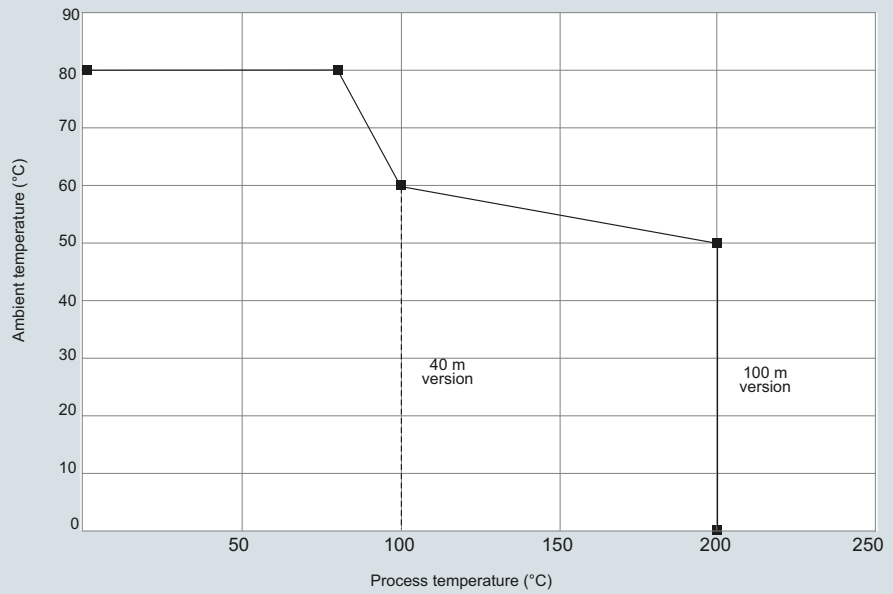
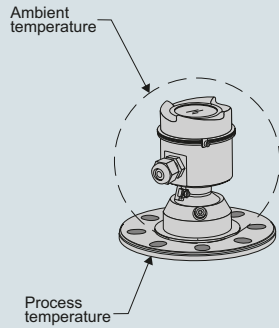


SITRANS LR560 handheld programmer and sun shield cover



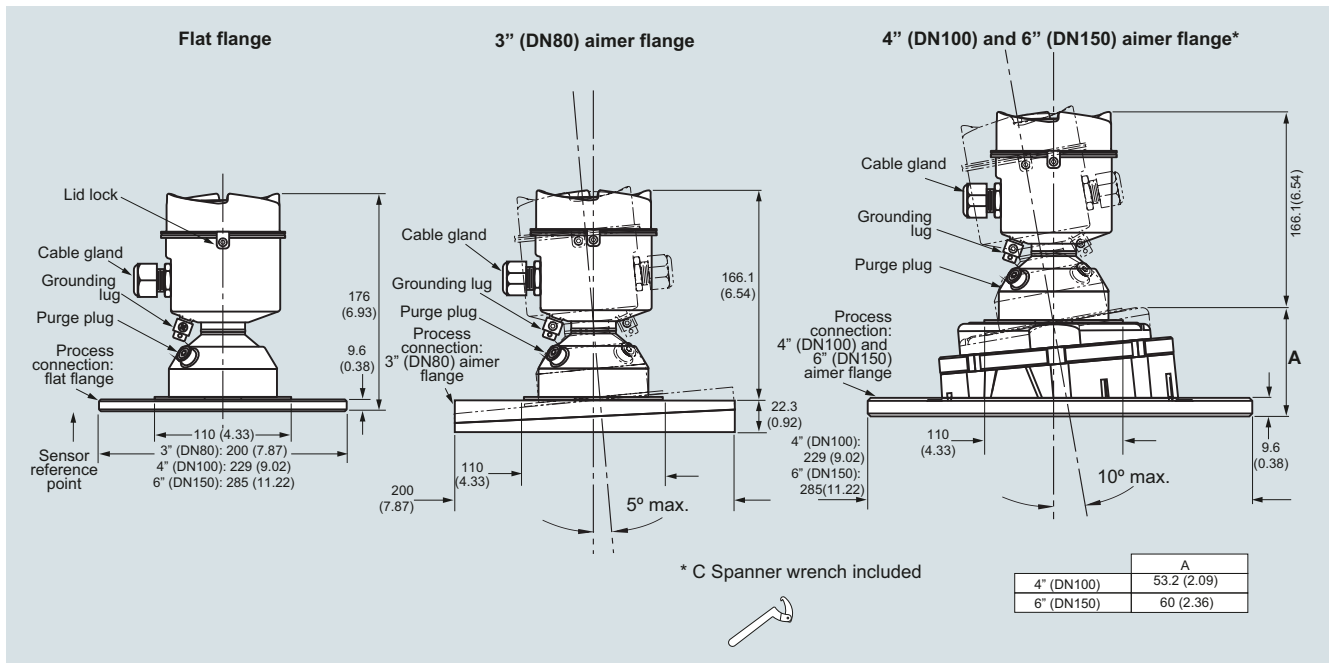
**Characteristic curves**

Temperature derating curve



SITRANS LR560 temperature derating curve

**Dimensional drawings**



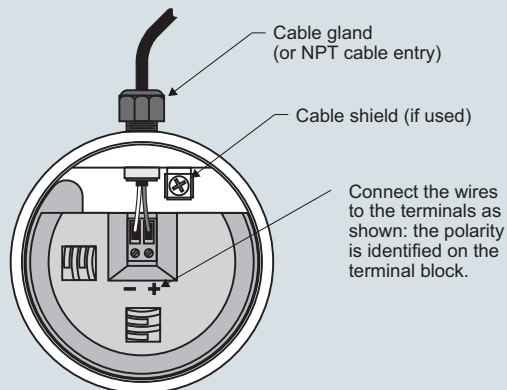
SITRANS LR560, dimensions in mm (inch)

## Level measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR560

#### 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

## Overview

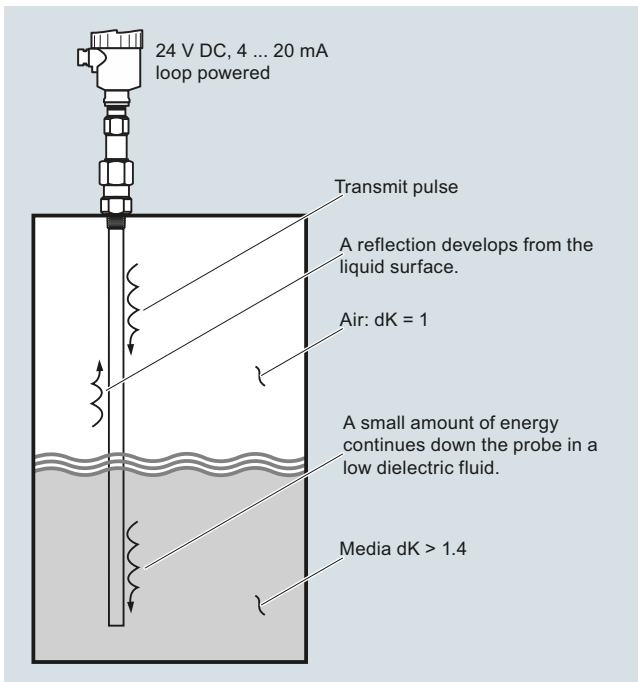
### Introduction

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.

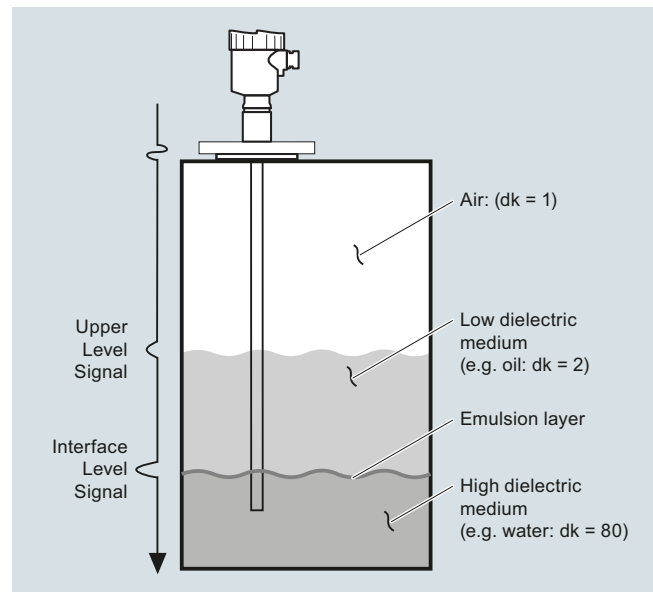
The SITRANS LG includes a transmitter and waveguide that has a characteristic impedance in air and is used as a probe. When part of the probe is immersed in a material other than air, there is lower impedance due to the increase in the dielectric. When an EM pulse is sent down the probe and meets the 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

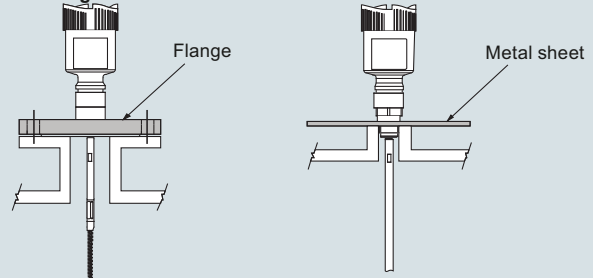
#### Application

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

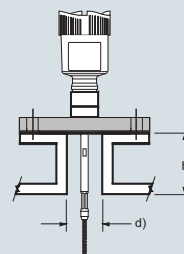
##### Mounting on nozzle



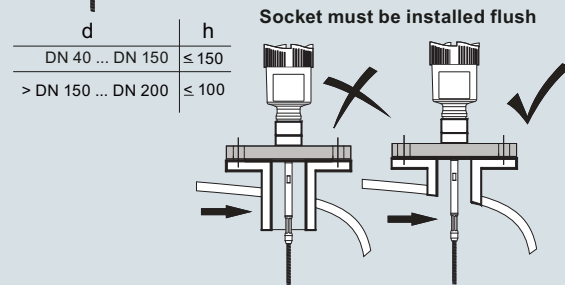
##### Installation in non-metal vessel

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,  $\text{Ø} > 200$  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



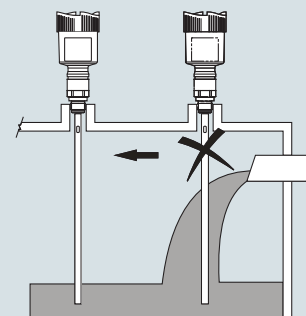
If possible, avoid sockets, mount the sensor flush with the vessel top. If this is not possible, use short sockets with small diameter. Higher sockets or sockets with a bigger diameter can generally be used. They simply increase the upper blocking distance. Check if this is relevant for your measurement. 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.

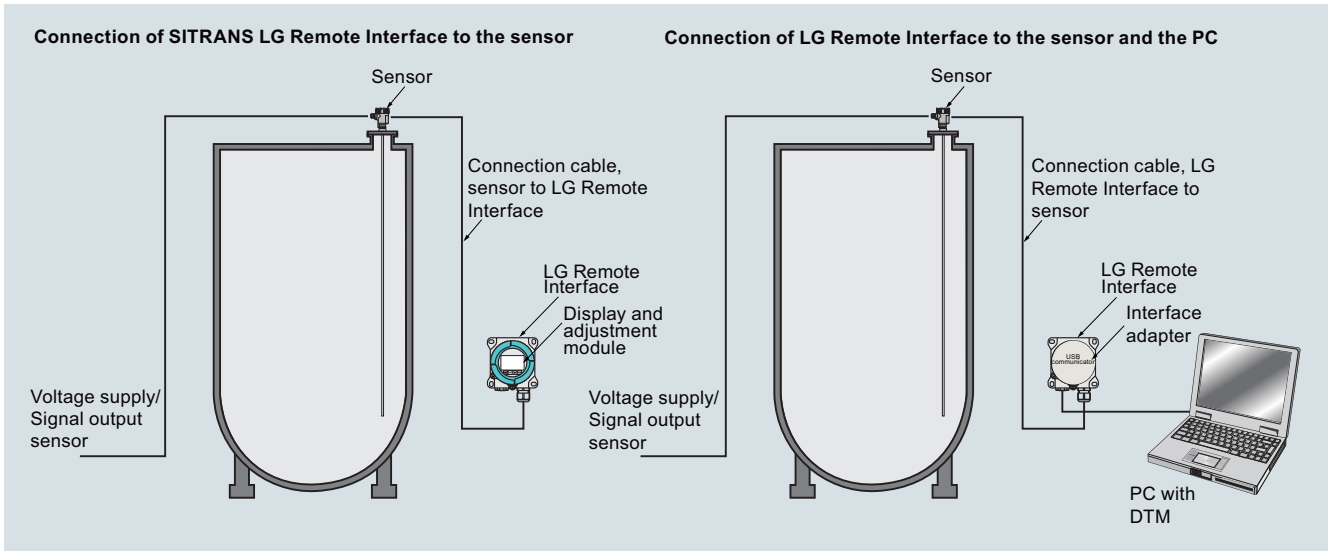


##### Inflowing medium

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

**Configuration** (continued)



SITRANS LG Remote Interface installation

## Level measurement

Continuous level measurement  
Guided wave radar transmitters

### SITRANS LG series

#### Technical specifications

<b>Mode of operation</b>		<b>Design</b>	
Measuring principle	Guided wave radar measurement	Instrument weight (dependent on process fitting) - see manual for further details	Approx. 0.8 ... 8 kg (0.176 ... 17.64 lb)
Measuring range	300 ... 75 000 mm (11.81 ... 2 952.75 inch)	Materials	<ul style="list-style-type: none"> <li>Plastic housing plastic PBT (Polyester)</li> <li>Aluminum die-cast housing, aluminum die-cast AISI10 mg, powder-coated- basis: polyester</li> <li>Stainless steel housing, precision casting 316L</li> <li>Stainless steel housing, electropolished 316L</li> </ul>
<b>Output</b>		• Enclosure	• Degree of protection
mA analog output with HART digital signal	4 ... 20 mA/HART (SIL optional)	• Cable inlet	<ul style="list-style-type: none"> <li>Type 4/NEMA 4, IP65</li> <li>Plastic housing IP66/IP67</li> <li>Aluminum and stainless steel housings are IP66/68</li> </ul>
Output range	Current: minimum 3.8 mA, maximum 20.5 mA	Process connections	2 x M20 x 1.5 or 2 x ½" NPT
• Analog	≤ 10 mA for 5 ms after switching on, ≤ 3.6 mA	• Pipe thread, cylindrical (ISO 228 T1)	G¾" A, G1" A, G1½" A according to DIN 3852-A
• Startup current	≤ 3.6 mA	• American pipe thread, conical (ASME B1.20.1)	¾" NPT, 1" NPT, 1½" NPT
Diagnostic alarm	Failure signal current output (adjustable): last valid measured value, ≥ 21 mA, ≤ 3.6 mA	• Flanged	DIN from DN 25, ASME from 1"
Digital communication	HART Version 7 x and multidrop compatible	• Hygienic	Hygienic fittings
Modbus	Modbus RTU, Modbus ASCII	Process seal instrument side	FKM (SHS FPM 70C3 GLT), FFKM (Kalrez 6375), EPDM (A+P 70.10-02), silicone FEP coated (A+P FEPO-SEAL) or Borosilicate glass GPC 540
PROFIBUS PA	PROFIBUS PA profile 3.02	Second line of defense (glass seal) (optional)	Borosilicate glass GPC 540
FOUNDATION Fieldbus	FOUNDATION Fieldbus protocol Physical layer according to IEC 61158-2		Note: The second line of defense is a second level of the process separation in the form of a gas-tight feedthrough in the lower part of the housing, preventing product from penetrating into the housing.
<b>Performance</b>		<b>Programming</b>	
• Measuring cycle time	Process reference conditions according to DIN EN 61298-1	Local	Four button, menu-driven data entry
• Step response time	< 500 ms	Handheld communicator	Hart communicator
• Temperature Effects	≤ 3 s	PC	SIMATIC PDM, AMS, PACTware
Non-linearity	The measurement error from the process conditions is in the specified pressure and temperature range of below 1 %	<b>Power</b>	
• Coaxial		2-wire Hart version	9.6 ... 35 V DC
• Single rod probes		4-wire versions	9.6 ... 48 V DC, 20 ... 42 V AC, 50/60 Hz, and 90 ... 253 V AC, 50/60 Hz
• Interface models	See manual for more details	Modbus	8 ... 30 V DC
Resolution and repeatability	Accuracy +/- 2 mm (0.08 inch)	PROFIBUS PA	9 ... 32 V DC
Accuracy		FOUNDATION Fieldbus	9 ... 32 V DC
• Coaxial/rod/cable probes	+/- 2 mm (0.08 inch)		Note: see manual for specific power based on ordered options
• Interface models	+/- 5 mm (0.197 inch)	<b>Certificates and approvals</b>	
	Note: Typical deviation, Interface measurement. See manual for full explanation.	Hazardous approvals:	ATEX, FM, CSA, IECEx Note: other regional approvals are available
<b>Rated operating conditions</b>		Hygienic approvals:	EHDG, FDA
Ambient temperature for enclosure	-40 ... +80 °C (-40 ... +176 °F)	Overfill protection	WHG, VlareM
Storage temperature	-40 ... +80 °C (-40 ... +176 °F)	Ship approval	ABS, CCS, GL, BV, LR
LCD readable temperature range	-40 ... +80 °C (-40 ... +176 °F) with display heated option		
Location	Indoor/outdoor		
Installation category	II		
Pollution degree	2		
Relative Humidity	20 ... 85 %		
<b>Medium conditions</b>			
Dielectric constant	dK ≥ 1.4 (configuration dependent) Note: for measurement below 1.4 use probe end tracking.		
Process temperature range	-196 ... +450 °C (-321 ... +842 °F)		
Vessel pressure	-1 ... +400 bar (-100 ... +40 000 kPa)		

#### Technical specifications (continued)

	<b>SITRANS LG240</b>	<b>SITRANS LG250</b>	<b>SITRANS LG260</b>	<b>SITRANS LG270</b>
<b>Industries</b>	<b>Food, Beverage and Pharmaceutical</b>	<b>Chemical/HPI/Power/General</b>	<b>Cement, power generation, food, processing, mineral processing, mining</b>	<b>Chemical/HPI/Power/General</b>
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)
Process pressure				
Standard version	-	-1 ... +40 bar/ -100 ... +4 000 kPa (-14.5 ... +580 psig), depending on the process fitting	-	-
With borosilicate glass lead-through	-	-1 ... +100 bar/ -100 ... +10 000 kPa (-14.5 ... +1 450 psig), depending on the process fitting	-	-
Communications	<ul style="list-style-type: none"> <li>• 4 ... 20 mA/HART</li> <li>• Modbus: Modbus RTU, Modbus ASCII</li> <li>• PROFIBUS PA</li> <li>• FOUNDATION Fieldbus</li> <li>• SIMATIC PDM</li> <li>• DTM/FDT for PACTware</li> <li>• Fieldcare</li> </ul>	<ul style="list-style-type: none"> <li>• 4 ... 20 mA/HART</li> <li>• Modbus: Modbus RTU, Modbus ASCII</li> <li>• PROFIBUS PA</li> <li>• FOUNDATION Fieldbus</li> <li>• SIMATIC PDM</li> <li>• DTM/FDT for PACTware</li> <li>• Fieldcare</li> </ul>	<ul style="list-style-type: none"> <li>• 4 ... 20 mA/HART</li> <li>• Modbus: Modbus RTU, Modbus ASCII</li> <li>• PROFIBUS PA</li> <li>• FOUNDATION Fieldbus</li> <li>• SIMATIC PDM</li> <li>• DTM/FDT for PACTware</li> <li>• Fieldcare</li> </ul>	<ul style="list-style-type: none"> <li>• 4 ... 20 mA/HART</li> <li>• Modbus: Modbus RTU, Modbus ASCII</li> <li>• PROFIBUS PA</li> <li>• FOUNDATION Fieldbus</li> <li>• SIMATIC PDM</li> <li>• DTM/FDT for PACTware</li> <li>• Fieldcare</li> </ul>

## Level measurement

Continuous level measurement  
Guided wave radar transmitters

### SITRANS LG series

#### Selection and ordering data

#### Article No.

#### Article No.

#### SITRANS LG240 Guided radar level transmitter

Continuous, contact, 32 m (105 ft) range. Monitors level and interface in aggressive liquids. Ideal for hygienic applications.

➤ 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) <sup>11)</sup>	0 C
ATEX II 1G, ½G, 2G Ex ia IIC T6 <sup>14)</sup>	0 E
ATEX II 1G, ½G, 2G Ex ia IIC + Overfill (WHG; VLAREM) <sup>11)</sup>	0 F
ATEX II 1G, ½G 2G Ex ia IIC + ATEX II 1D, ½D, 2D IP6x <sup>1)15)17)</sup>	0 H
ATEX II ½G, 2G Ex d ia IIC T6 <sup>3)13)16)</sup>	0 J
ATEX II ½G, 2G Ex d ia IIC + ATEX II ½D, 2D IP6x <sup>3)13)16)17)</sup>	0 K
ATEX II 1D, ½D, 2D IP6x <sup>1)17)18)</sup>	0 N
ATEX II 1G, II ½G, II 2G Ex ia IIC T6 ... T1 Ga, Ga/Gb, Gb /IEC Ex ia IIC T6 ... T1 Ga, Ga/Gb, Gb <sup>1)14)</sup>	0 W
IEC Ex ia IIC T6 <sup>14)</sup>	0 P
IEC Ex ia IIC T6 + IEC IP6x T tD <sup>1)15)17)</sup>	0 Q
IEC Ex d ia IIC T6 <sup>3)13)16)</sup>	0 R
IEC Ex d ia IIC T6 + IEC IP6x T tD <sup>3)13)16)</sup>	0 S
FM (NI) Class I, Div. 2, Groups A, B, C, D2 <sup>9)12)16)</sup>	1 A
FM (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G <sup>9)15)</sup>	1 B
FM (XP-AIS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G <sup>3)13)16)</sup>	1 C
CSA (NI) Class I, Div. 2, Groups A, B, C, D; (DIP) Class II, III, Div. 1, Groups E, F, G <sup>1)17)</sup>	1 E
CSA (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G <sup>14)</sup>	1 F
CSA (XP-IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G <sup>3)13)16)</sup>	1 G
NEPSI Ex ia IIC T6 <sup>14)</sup>	2 A
NEPSI Ex ia IIC T6 + DIP A20/21 TA T* <sup>1)15)</sup>	2 B
NEPSI Ex d ia IIC T6 <sup>9)10)13)16)</sup>	2 C
NEPSI Ex d ia IIC T6 + DIP A20/21 TA T* <sup>9)10)13)16)</sup>	2 D
NEPSI DIP A20/21 TA T* <sup>1)16)</sup>	2 G
INMETRO Ex ia IIC T6 ... T1 <sup>14)</sup>	3 A
INMETRO Ex t IIIC T* IP6X, Da, Da/Db, Da/Dc, Db + Ex ia IIC T6, Ga, Ga/Gb <sup>1)10)15)</sup>	3 B
INMETRO Ex d ia IIC T6 ... T1 <sup>9)10)13)16)</sup>	3 C
INMETRO Ex t IIIC T* IP6X, Da, Da/Db, Da/Dc, Db + Ex d ia IIC T6 Ga/Gb <sup>9)10)13)16)</sup>	3 D
INMETRO Ex t IIIC T* IP6X, Da, Da/Db, Da/Dc, Db <sup>1)10)13)16)</sup>	3 G
Korea KC ex free area	6 A
GOST-R/EAC 0 Ex ia IIC T1 ... T6 X <sup>14)</sup>	5 A
GOST-R/EAC 0 Ex ia IIC T1 ... T6 X + Ex t IIIC T ... IP66 <sup>1)15)</sup>	5 B
GOST-R/EAC 1 Ex d ia IIC T1 ... T6 X <sup>9)10)13)16)</sup>	5 C
GOST-R/EAC 1 Ex d ia IIC T1 ... T6 X + Ex t IIIC T ... IP66 <sup>9)10)13)16)</sup>	5 D

**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 <sup>17)</sup>	A
Probe exchangeable rod ø 8 mm (0.31 inch)/1.4435 (Basle standard) <sup>17)</sup>	B
Probe exchangeable rod ø 8 mm (0.31 inch)/ 1.4435 (Basle standard) can be autoclaved <sup>17)</sup>	C
Probe rod ø 10 mm (0.39 inch)/PFA <sup>17)</sup>	D
Probe exchangeable rod (ø 8 mm) /1.4435 (BN2), electropolished (Ra < 0.38 µm) <sup>17)</sup>	E

#### SITRANS LG240 Guided radar level transmitter

Continuous, contact, 32 m (105 ft) range. Monitors level and interface in aggressive liquids. Ideal for hygienic applications.

#### 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	0 8
DIN 11851/1.4435(BN2)	
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	1 3
DIN 11851/1.4435(BN2)	
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
Flange DN 80, PN 40 EN 1092-1 Form B1/PTFE-TFM 1600	2 7
Flange DN 100, PN 40 EN 1092-1 Form B1/PTFE-TFM 1600	2 8
Flange 2" 150 lb RF, ASME B16.5/PTFE-TFM 1600	3 0
Flange 2" 300 lb RF, ASME B16.5/PTFE-TFM 1600	3 1
Flange 3" 150 lb RF, ASME B16.5/PTFE-TFM 1600	3 2
Flange 4" 150 lb RF, ASME B16.5/PTFE-TFM 1600	3 3

Note: The pressure limit for all PTFE coated versions is 16 bar (per manual).



# Level measurement

## Continuous level measurement

### Guided wave radar transmitters

SITRANS LG series

Selection and ordering data	Article No.	Article No.	
<b>SITRANS LG240 Guided radar level transmitter</b> Continuous, contact, 32 m (105 ft) range. Monitors level and interface in aggressive liquids. Ideal for hygienic applications.	7ML5880-	7ML5880-	
<b>Electronics</b> Two-wire 4 ... 20 mA/HART Four-wire Modbus <sup>3)13)</sup> Two-wire 4 ... 20 mA/HART with SIL qualification <sup>9)</sup> Four-wire 4 ... 20 mA/HART; 90 ... 253 V AC; 50/60 Hz <sup>3)13)</sup> Four-wire 4 ... 20 mA/HART; 9.6 ... 48 V DC; 20 ... 42 V AC <sup>3)13)</sup> PROFIBUS PA <sup>9)</sup> FOUNDATION Fieldbus <sup>9)</sup>	Ord. code - 0 1 2 3 4 5 6	Ord. code - Y S Z Z Q 2 A Q 2 B	
<b>Seal/Process temperature</b> Without glass seal/-40 ... +150 °C (-40 ... +302 °F) <sup>2)</sup> FFKM (Kalrez 6221)/-20 ... 150 °C (-4 ... +302 °F) <sup>4)</sup> EPDM (Freudenberg 70 EPDM 291)/-20 ... 130 °C (-4 ... +266 °F) <sup>4)</sup>	A B C		
<b>Housing/Protection/Cable</b> <b>Note: for installation of remote display, 7ML5840, with LG two chamber housing options, contact PVC</b>			
Plastic IP66/IP67 M20 x 1.5/blind stopper Plastic IP66/IP67 1/2" NPT/blind stopper Aluminum/IP66/IP68 (0.2 bar) M20 x 1.5/blind stopper Aluminum/IP66/IP68 (0.2 bar) 1/2" NPT/blind stopper Aluminum double chamber/IP66/IP68 (0.2 bar) M20 x 1.5/blind stopper Aluminum double chamber/IP66/IP68 (0.2 bar) 1/2" NPT/blind stopper Stainless steel (precision casting) 316L/IP66/IP68 (0.2 bar) M20 x 1.5/blind stopper Stainless steel (precision casting) 316L/IP66/IP68 (0.2 bar) 1/2" NPT/blind stopper Stainless steel (electropolished) 316L/IP66/IP68 (0.2 bar) M20 x 1.5/blind stopper Stainless steel (electropolished) 316L/IP66/IP68 (0.2 bar) 1/2" NPT/blind stopper Stainless steel double chamber/IP66/IP68 (0.2 bar) M20 x 1.5/blind stopper Stainless steel double chamber/IP66/IP68 (0.2 bar) 1/2" NPT/blind stopper Aluminum/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland stainless steel Aluminum double chamber/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland stainless steel Stainless steel (precision casting) 316L/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland stainless steel Stainless steel (electropolished) 316L/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland stainless steel Aluminum single chamber / IP66/IP68 (0.2 bar) M20 x 1.5/cable gland brass nickel-plated Aluminum double chamber / IP66/IP68 (0.2 bar) M20 x 1.5/cable gland brass nickel-plated	A B C D E F G H J K L M N P Q R W X	<b>Lengths</b> <u>Rod ø 8 mm (0.31 inch)/1.4435 (Basle standard 300 ... 4 000 mm)</u> 300 ... 1 000 mm (11.81 ... 39.37 inch) <sup>6)</sup> 1 001 ... 2 000 mm (39.41 ... 78.74 inch) <sup>6)</sup> 2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>6)</sup> 3 001 ... 4 000 mm (118.15 ... 157.48 inch) <sup>6)</sup> <u>Rod ø 10 mm (0.24 inch)/PFA (300 ... 4 000 mm)</u> 300 mm (11.81 inch) <sup>6)</sup> 500 mm (19.69 inch) <sup>6)</sup> 300 ... 1 000 mm (11.81 ... 39.37 inch) <sup>6)</sup> 1 001 ... 5 000 mm (39.41 ... 78.74 inch) <sup>6)</sup> 2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>6)</sup> 3 001 ... 4 000 mm (118.15 ... 157.48 inch) <sup>6)</sup> <u>Cable ø 4 mm (0.16 inch)/PFA (500 ... 32 000 mm)</u> 500 mm (9.69 inch) 501 ... 1 000 mm (19.72 ... 39.37 inch) 1 001 ... 2 000 mm (39.41 ... 78.74 inch) 2 001 ... 4 000 mm (78.78 ... 157.40 inch) 4 001 ... 5 000 mm (157.52 ... 196.85 inch) 5 001 ... 10 000 mm (196.89 ... 393.70 inch) 10 001 ... 15 000 mm (393.74 ... 590.55 inch) 15 001 ... 20 000 mm (590.59 ... 787.40 inch) 20 001 ... 25 000 mm (787.44 ... 984.25 inch) 25 001 ... 32 000 mm (984.29 ... 1 259.52 inch) <u>Exchange. rod ø 8 mm (0.31 inch)/1.4435 (BN2), electropolished (Ra &lt; 0.38 µm)</u> 300 ... 1 000 mm (11.81 ... 39.37 inch) <sup>6)</sup> 1 001 ... 2 000 mm (39.41 ... 78.74 inch) <sup>6)</sup> 2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>6)</sup> 3 001 ... 4 000 mm (118.15 ... 157.48 inch) <sup>6)</sup>	0 1 2 3 9 R 1 A 9 R 1 B 9 R 1 C 9 R 1 D 9 R 1 E 9 R 1 F 9 R 1 G 9 R 1 H 9 R 1 J 9 R 1 K 9 R 1 L 9 R 1 M 9 R 1 N 9 R 1 P 9 R 1 Q 9 R 1 R 9 R 2 A 9 R 2 B 9 R 2 C 9 R 2 D

## Level measurement

Continuous level measurement  
Guided wave radar transmitters

### SITRANS LG series

#### 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<sup>10)</sup>

**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**

##### 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 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**

Material Inspection certificate 3.1 of EN 10204

**C05**

3.1-Inspection Certificate for instrument (EN 10204)<sup>8)</sup>

**C12**

Inspection certificate 3.1 (EN 10204, NACE MR 0175) - material<sup>8)19)</sup>

**D07**

Note: 316L probes include NACE MR 0175 and MR 0103, non 316L probes include MR 0175 only and plated flange designs are not available with NACE certificate.

3.1-Inspection Certificate for instrument with test data (EN 10204)<sup>8)</sup>

**C25**

2.2-Factory certificate for material (EN 10204)<sup>8)</sup>

**C15**

Quality and test plan<sup>8)</sup>

**C26**

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

**C13**

##### Further designs (optional)

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

X-ray test + 3.1 certificate/instrument<sup>8)</sup>

**C14**

Positive material identification test + 3.1 certificate/instrument<sup>8)</sup>

**C16**

Roughness test + 3.1 certificate/instrument<sup>8)</sup>

**C18**

Pressure test + 3.1 certificate/instrument<sup>8)</sup>

**C31**

Helium leak test + 3.1 certificate/instrument<sup>8)</sup>

**C32**

Ferrite measuring accuracy to DIN 32514-1 + 3.1 certificate/instrument<sup>8)</sup>

**C60**

Pressure test according to Norsok + 3.1 certificate/instrument<sup>8)</sup>

**C61**

5 point calibration certificate (min. length 300 mm)<sup>8)</sup>

**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.

**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 RD150, remote digital display for 4 ... 20 mA and HART devices - see Chapter 7

**7ML5742-.....-**

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-.....-**

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  $\varnothing$  10 mm/PFA and Cable  $\varnothing$  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.

Selection and ordering data	Article No.	Article No.
<b>SITRANS LG250 Guided radar level transmitter</b>	<b>7ML5881-</b>	<b>7ML5881-</b>
Continuous, contact, 75 m (246 ft) range. Monitors level and interface in liquids.	Ord. code	Ord. code
➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
<b>Approvals</b>		
General purpose (CSA, FM, CE)	<b>0 A</b>	<b>7 J</b>
Shipping approval <sup>(4)(6)(7)(8)(13)</sup>	<b>0 B</b>	<b>1 E</b>
Overfill protection (WHG; VLAREM) <sup>(9)(10)(13)</sup>	<b>0 C</b>	<b>1 F</b>
ATEX II 1G, ½G, 2G Ex ia IIC T6 <sup>(10)(13)</sup>	<b>0 E</b>	<b>1 G</b>
ATEX II 1G, ½G, 2G Ex ia IIC + Overfill (WHG; VLAREM) <sup>(10)(13)</sup>	<b>0 F</b>	<b>1 H</b>
ATEX II 1G, ½G, 2G Ex ia IIC T6 + shipping approval <sup>(4)(6)(7)(8)(13)</sup>	<b>0 G</b>	<b>7 K</b>
ATEX II 1G, ½G 2G Ex ia IIC + ATEX II 1D, ½D, 2D IP6x <sup>(1)(13)</sup>	<b>0 H</b>	<b>7 L</b>
ATEX II ½G, 2G Ex d ia IIC T6 <sup>(2)(8)(11)(12)(13)</sup>	<b>0 J</b>	<b>7 M</b>
ATEX II 1/2G, 2G Ex d ia IIC + ATEX II 1/2D, 2D IP6x <sup>(2)(8)(11)(12)(13)</sup>	<b>0 K</b>	<b>7 N</b>
ATEX II 1/2G, 2G Ex d IIC T6 <sup>(1)(11)(14)</sup>	<b>0 L</b>	<b>7 A</b>
ATEX II 1/2G, 2G Ex d IIC + ATEX II 1/2D, 2D IP6x <sup>(1)(11)(13)(14)</sup>	<b>0 M</b>	<b>7 B</b>
ATEX II 1D, 1/2D, 2D IP6x T <sup>(1)(13)(14)</sup>	<b>0 N</b>	<b>7 P</b>
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 <sup>(13)</sup>	<b>0 W</b>	<b>0 P</b>
ATEX II 1/2G, II 2G Ex db IIC T6 ... T1 Ga/Gb, Gb / IEC Ex db IIC T6 ... T1 Ga/Gb, Gb <sup>(13)(14)(18)</sup>	<b>1 K</b>	<b>0 Q</b>
ATEX II 1/2G, II 2G Ex d ia IIC T6 ... T1 Ga/Gb, Gb + Ship approval <sup>(2)(6)(8)(11)(12)(13)</sup>	<b>7 A</b>	<b>0 R</b>
ATEX II 1/2G, II 2G Ex db IIC T6 ... T1 Ga/Gb, Gb + Ship approval <sup>(1)(6)(8)(11)(13)</sup>	<b>7 B</b>	<b>0 S</b>
ATEX II 1/2G, II 2G Ex db IIC T6 ... T1 Ga/Gb, Gb + Overfill protection (WHG, VLAREM) <sup>(1)(11)(14)</sup>	<b>7 P</b>	<b>0 T</b>
IEC Ex ia IIC T6 <sup>(10)(13)</sup>	<b>0 P</b>	<b>0 U</b>
IEC Ex ia IIC T6 + IEC IP6x T tD <sup>(1)(14)(15)</sup>	<b>0 Q</b>	<b>7 C</b>
IEC Ex d ia IIC T6 <sup>(2)(8)(11)(12)(13)</sup>	<b>0 R</b>	<b>7 D</b>
IEC Ex d ia IIC T6 + IEC IP6x T tD <sup>(2)(8)(11)(12)(13)(15)</sup>	<b>0 S</b>	<b>7 E</b>
IEC Ex d IIC T6 <sup>(1)(11)(14)</sup>	<b>0 T</b>	<b>1 A</b>
IEC Ex d IIC T6 + IEC IP6x T tD <sup>(1)(11)(14)</sup>	<b>0 U</b>	<b>1 B</b>
IEC Ex db IIC T6...T1 Ga/Gb, Gb + Ship approval <sup>(1)(6)(8)(11)(13)(14)</sup>	<b>7 C</b>	<b>1 C</b>
IEC Ex ia IIC T6...T1 Ga, Ga/Gb, Gb + Ship approval <sup>(6)(8)(13)(16)</sup>	<b>7 D</b>	<b>1 D</b>
IEC Ex d ia IIC T6...T1 Ga/Gb, Gb + Ship approval <sup>(2)(6)(8)(11)(13)(15)</sup>	<b>7 E</b>	<b>7 F</b>
FM (NI) Class I, Div. 2, Groups A, B, C, D <sup>(3)(9)(13)(17)</sup>	<b>1 A</b>	<b>7 G</b>
FM (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F <sup>(5)(8)(13)</sup>	<b>1 B</b>	<b>7 H</b>
FM (XP-AIS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G <sup>(2)(8)(11)(12)(13)</sup>	<b>1 C</b>	
FM (XP) Class I, Div. 1, Groups A, B, C, D <sup>(2)(11)(13)(14)</sup>	<b>1 D</b>	
FM (NI) Class I, II, III, Div. 2, Groups A, B, C, D, F, G + Ship approval <sup>(4)(6)(8)(13)(17)</sup>	<b>7 F</b>	
FM (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G + Ship approval <sup>(6)(8)(13)(16)</sup>	<b>7 G</b>	
FM (XP-AIS) Class I, Div. 1, Groups A, B, C, D, + Ship approval <sup>(6)(8)(11)(13)(16)</sup>	<b>7 H</b>	
<b>SITRANS LG250 Guided radar level transmitter</b>		
Continuous, contact, 75 m (246 ft) range. Monitors level and interface in liquids.		
FM (XP) Class I, Div. 1, Groups A, B, C, D + Ship approval <sup>(2)(6)(8)(13)(14)</sup>	<b>7 J</b>	
CSA (NI) Class I, Div. 2, Groups A, B, C, D (DIP) Class II, III, Div. 1, Groups E, F, G <sup>(1)</sup>	<b>1 E</b>	
CSA (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G <sup>(5)(13)</sup>	<b>1 F</b>	
CSA (XP-IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G <sup>(2)(8)(11)(12)(13)</sup>	<b>1 G</b>	
CSA (XP) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G <sup>(8)(13)(14)(18)</sup>	<b>1 H</b>	
CSA (NI) Class I, II, III Div. 2, Groups A, B, C, D, F, G + Ship approval <sup>(1)(6)(13)</sup>	<b>7 K</b>	
CSA (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G + Ship approval <sup>(6)(13)(16)</sup>	<b>7 L</b>	
CSA (XP-IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G + Ship approval <sup>(6)(8)(11)(32)</sup>	<b>7 M</b>	
CSA (XP) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G + Ship approval <sup>(6)(8)(13)(14)(18)</sup>	<b>7 N</b>	
NEPSI Ex ia IIC T6 <sup>(5)(13)</sup>	<b>2 A</b>	
NEPSI Ex ia IIC T6 + DIP A20/21 TA T* <sup>(1)(13)</sup>	<b>2 B</b>	
NEPSI Ex d ia IIC T6 <sup>(2)(8)(11)(13)</sup>	<b>2 C</b>	
NEPSI Ex d ia IIC T6 + DIP A20/21 TA T* <sup>(2)(8)(11)(13)</sup>	<b>2 D</b>	
NEPSI Ex d IIC T6 <sup>(1)(11)(13)(14)</sup>	<b>2 E</b>	
NEPSI Ex d IIC T6 + DIP A20/21 TA T* <sup>(1)(11)(13)(14)</sup>	<b>2 F</b>	
NEPSI DIP A20/21 TA T* <sup>(1)(13)(14)</sup>	<b>2 G</b>	
INMETRO Ex ia IIC T6 ... T1 <sup>(5)(13)</sup>	<b>3 A</b>	
INMETRO Ex t IIIC T* IP6X, Da, Da/Db, Da/Dc, Db + Ex ia IIC T6, Ga, Ga/Gb <sup>(1)(11)(13)</sup>	<b>3 B</b>	
INMETRO Ex d ia IIC T6 ... T1 <sup>(2)(8)(11)(13)</sup>	<b>3 C</b>	
INMETRO Ex t IIIC T* IP6X, Da, Da/Db, Da/Dc, Db + Ex d ia IIC T6 Ga/Gb <sup>(1)(8)(11)(13)</sup>	<b>3 D</b>	
INMETRO Ex d IIC T6 ... T1 <sup>(1)(11)(13)(14)</sup>	<b>3 E</b>	
INMETRO Ex t IIIC T* IP6X, Da, Da/Db, Da/Dc, Db + Ex d IIC T6 Ga/Gb <sup>(1)(11)(13)(14)</sup>	<b>3 F</b>	
INMETRO Ex t IIIC T* IP6X, Da, Da/Db, Da/Dc, Db <sup>(1)(11)(13)(14)</sup>	<b>3 G</b>	
KOSHA Ex d IIC T6 ... T1 – KE <sup>(1)(11)(13)(14)</sup>	<b>4 A</b>	
Korea KC ex free area	<b>6 A</b>	
GOST-R/EAC 0 Ex ia IIC T1 ... T6 X <sup>(13)</sup>	<b>5 A</b>	
GOST-R/EAC 0 Ex ia IIC T1 ... T6 X + Ex t IIIC T ... IP66 <sup>(1)(13)</sup>	<b>5 B</b>	
GOST-R/EAC 1 Ex d ia IIC T1 ... T6 X <sup>(2)(8)(11)(13)</sup>	<b>5 C</b>	
GOST-R/EAC 1 Ex d ia IIC T1 ... T6 X + Ex t IIIC T ... IP66 <sup>(2)(8)(11)(13)</sup>	<b>5 D</b>	
GOST-R/EAC 1 Ex d IIC T1 ... T6 X <sup>(1)(11)(13)</sup>	<b>5 E</b>	
GOST-R/EAC 0 Ex d IIC T1 ... T6 X + Ex t IIIC T ... IP66 <sup>(1)(11)(13)</sup>	<b>5 F</b>	
GOST-R/EAC Ex t IIIC T ... IP66 <sup>(1)(13)</sup>	<b>5 G</b>	
<b>Note: Version/Material, Process fitting/Material, and Length options are available only with options of corresponding type.</b>		
<b>Probe version/Material</b>		
Probe exchangeable cable ø 2 mm (0.08 inch) with gravity weight/316 <sup>(19)(20)</sup>	<b>A</b>	
Probe exchangeable cable ø 2 mm (0.08 inch) center weight/316L <sup>(19)(20)</sup>	<b>B</b>	



## Level measurement

Continuous level measurement  
Guided wave radar transmitters

### SITRANS LG series

#### Selection and ordering data

#### Article No.

#### Article No.

SITRANS LG250 Guided radar level transmitter	7ML5881-	Ord. code
Continuous, contact, 75 m (246 ft) range. Monitors level and interface in liquids.		
Probe exchangeable cable ø 4 mm (0.16 inch) with gravity weight/316L <sup>(9)(19)(20)</sup>	<b>C</b>	
Probe exchangeable cable ø 4 mm (0.16 inch) with center weight/316L <sup>(9)(19)(20)</sup>	<b>D</b>	
Probe exchangeable rod ø 8 mm (0.31 inch)/316L <sup>(9)(19)</sup>	<b>E</b>	
Probe exchangeable rod ø 12 mm (0.47 inch)/316L <sup>(9)(19)</sup>	<b>F</b>	
Probe coax version ø 21.3 mm (0.84 inch) with single hole/316L <sup>(9)(19)(20)</sup>	<b>G</b>	
Probe coax version ø 21.3 mm (0.84 inch) with multiple hole/316L <sup>(9)(19)(20)</sup>	<b>H</b>	
Probe coax version ø 42.2 mm (1.66 inch) with multiple hole/316L <sup>(9)(19)(20)</sup>	<b>K</b>	
Probe exchangeable cable ø 4 mm (0.16 inch) with gravity weight/Alloy C22 (2.4602) <sup>(9)</sup>	<b>L</b>	
Probe exchangeable cable ø 4 mm (0.16 inch) with centre weight/Alloy C22 (2.4602) <sup>(9)</sup>	<b>M</b>	
Probe exchangeable rod ø 8 mm (0.31 inch) /Alloy C22 (2.4602) <sup>(9)</sup>	<b>N</b>	
Probe exchangeable rod ø 12 mm (0.47 inch)/ Alloy C22 (2.4602) <sup>(9)</sup>	<b>P</b>	
Probe coax version ø 21.3 mm (0.84 inch) with multiple hole/Alloy C22 (2.4602) <sup>(9)</sup>	<b>Q</b>	
Probe coax version ø 42.2 mm (1.66 inch) with multiple hole/Alloy C22 (2.4602) <sup>(9)</sup>	<b>R</b>	
Probe exchangeable rod ø 8 mm (0.31 inch)/ Duplex (1.4462) <sup>(9)</sup>	<b>S</b>	
Exchangeable rod ø 12 mm (0.47 inch)/ Alloy C22 and 400 (2.4360) <sup>(9)</sup>	<b>T</b>	
Exchangeable coated cable ø 4 mm with uncoated centering weight/PFA and 316 <sup>(2)(1)(24)(30)(35)(36)</sup>	<b>U</b>	
<b>Process fitting/Material</b>		
Thread G 3/4" (DIN 3852-A) PN 6/316L	<b>0 0</b>	
Thread 3/4" NPT (ASME B1.20.1) PN 6/316L	<b>0 1</b>	
Thread G 3/4" (DIN 3852-A) PN 40/316L	<b>0 2</b>	
Thread 3/4" NPT (ASME B1.20.1) PN 40/316L	<b>0 3</b>	
Thread G 3/4" (DIN 3852-A) PN 100 / 316L <sup>(22)</sup>	<b>0 4</b>	
Thread 3/4" NPT (ASME B1.20.1) PN 100/316L <sup>(22)</sup>	<b>0 5</b>	
Thread G 1" (DIN 3852-A) PN 40/316L	<b>0 6</b>	
Thread 1" NPT (ASME B1.20.1) PN 40/316L	<b>0 7</b>	
Thread G 1" (DIN 3852-A) PN 100/316L <sup>(22)</sup>	<b>0 8</b>	
Thread 1" NPT (ASME B1.20.1) PN 100/316L <sup>(22)</sup>	<b>1 0</b>	
Thread G 1 1/2" (DIN 3852-A) PN 40/316L	<b>1 1</b>	
Thread 1 1/2" NPT (ASME B1.20.1) PN 40/316L	<b>1 2</b>	
Thread G 1 1/2" (DIN 3852-A) PN 100/316L <sup>(22)</sup>	<b>1 3</b>	
Thread 1 1/2" NPT (ASME B1.20.1) PN 100/316L <sup>(22)</sup>	<b>1 4</b>	
Thread 2 NPT PN 40, ASME B1.20.1/316L <sup>(23)(24)</sup>	<b>1 5</b>	
Flange DN 25 PN 40 Form C, DIN 2501/316L	<b>2 0</b>	
Flange DN 25 PN 40 Form F, DIN 2501/316L	<b>2 1</b>	
Flange DN 40 PN 40 Form C, DIN 2501/316L	<b>2 2</b>	
Flange DN 50 PN 40 Form C, DIN 2501/316L	<b>2 3</b>	
Flange DN 50 PN 40 Form V13, DIN 2513/316L	<b>2 4</b>	
Flange DN 80 PN 40 Form C, DIN 2501/316L	<b>2 5</b>	

SITRANS LG250 Guided radar level transmitter	7ML5881-	Ord. code
Continuous, contact, 75 m (246 ft) range. Monitors level and interface in liquids.		
Flange DN 80 PN 40 Form V13, DIN 2501/316L	<b>2 6</b>	
Flange DN 100 PN 16 Form C, DIN 2501/316L	<b>2 7</b>	
Flange DN 100 PN 16 Form V13, DIN 2501/316L	<b>2 8</b>	
Flange DN 100 PN 40 Form C, DIN 2501 /316L	<b>3 0</b>	
Flange DN 100 PN 40 Form V13, DIN 2513/316L	<b>3 1</b>	
Flange DN 150 PN 16 Form C, DIN 2501/316L	<b>3 2</b>	
Flange DN 50 PN 40 EN 1092-1 Form B1/316L	<b>3 3</b>	
Flange DN 80 PN 40 EN 1092-1 Form B1/316L	<b>3 4</b>	
Flange 1" 150 lb RF, ASME B16.5/316L	<b>3 5</b>	
Flange 1 1/2" 150 lb RF, ASME B16.5/316L	<b>3 6</b>	
Flange 2" 150 lb RF, ASME B16.5/316L	<b>3 7</b>	
Flange 2" 300 lb RF, ASME B16.5/316L	<b>3 8</b>	
Flange 3" 150 lb RF, ASME B16.5/316L	<b>4 0</b>	
Flange 3" 300 lb RF, ASME B16.5/316L	<b>4 1</b>	
Flange 4" 150 lb RF, ASME B16.5/316L	<b>4 2</b>	
Flange 4" 300 lb RF, ASME B16.5/316L	<b>4 3</b>	
Flange 6" 150 lb RF, ASME B16.5/316L	<b>4 4</b>	
Flange 6" 300 lb RF, ASME B16.5/316L	<b>4 5</b>	
Thread G 3/4" PN 40, DIN3852-A/ Alloy C22 (2.4602) <sup>(37)</sup>	<b>4 6</b>	
Thread G 1" PN 40, DIN 3852-A/ Alloy C22 (2.4602) <sup>(37)</sup>	<b>4 7</b>	
Thread G 1 1/2" PN 40, DIN 3852-A/ Alloy C22 (2.4602)	<b>4 8</b>	
Thread 1 1/2" NPT PN 40, ASME B1.20.1/Alloy C22 (2.4602)	<b>5 0</b>	
Flange DN 50 PN 40 Form C, DIN 2501/ 316L with Alloy C22 (2.4602) coating	<b>5 1</b>	
Flange DN 50 PN 40 Form B1, EN 1092-1/ 316L with Alloy C22 (2.4602) coating	<b>5 2</b>	
Flange DN 80 PN 40 Form B1, EN 1092-1/ 316L with Alloy C22 (2.4602) coating	<b>5 3</b>	
Flange DN 100 PN 40 Form B1, EN 1092-1/ 316L with Alloy C22 (2.4602) coating	<b>5 4</b>	
Flange DN 150 PN 16 Form B1, EN 1092-1/ 316L with Alloy C22 (2.4602) coating	<b>5 5</b>	
Flange DN 200 PN 16 Form B1, EN 1092-1/ 316L with Alloy C22 (2.4602) coating	<b>5 6</b>	
Flange 2" 150 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	<b>5 7</b>	
Flange 2" 300 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	<b>5 8</b>	
Flange 3" 150 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	<b>6 0</b>	
Flange 4" 150 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	<b>6 1</b>	
Flange 4" 300 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	<b>6 2</b>	
Flange 6" 150 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	<b>6 3</b>	
Flange 6" 300 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	<b>6 4</b>	
Thread G 3/4" (DIN 3852-A) PN 40/Duplex 1.4462	<b>6 5</b>	

## 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
<b>SITRANS LG250 Guided radar level transmitter</b>	<b>7ML5881-</b>		<b>SITRANS LG250 Guided radar level transmitter</b>	<b>7ML5881-</b>	
Continuous, contact, 75 m (246 ft) range. Monitors level and interface in liquids.			Continuous, contact, 75 m (246 ft) range. Monitors level and interface in liquids.		
Flange DN 80 PN 40 Form F, DIN 2501/Duplex (1.4462)	<b>6 6</b>		Flange 4" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	<b>9 0</b>	<b>L 1 P</b>
Flange DN 50 PN 40 Form B1, EN 1092-1/Duplex (1.4462)	<b>6 7</b>		Flange 4" 150 lb FF, ASME B16.5/Alloy C22 (2.4602) solid	<b>9 0</b>	<b>L 1 Q</b>
Flange 1" 150 lb RF, ASME B16.5/Duplex (1.4462)	<b>6 8</b>		Flange 4" 300 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	<b>9 0</b>	<b>L 1 R</b>
Flange 1 1/2" 150 lb RF, ASME B16.5/Duplex (1.4462)	<b>7 0</b>		Flange 4" 300 lb RJF, ASME B16.5/Alloy C22 (2.4602) solid	<b>9 0</b>	<b>L 1 S</b>
Flange 2" 150 lb RF, ASME B16.5/Duplex (1.4462)	<b>7 1</b>		Flange 4" 300 lb LT, ASME B16.5/Alloy C22 (2.4602) solid	<b>9 0</b>	<b>L 1 T</b>
Flange 2" 300 lb RF, ASME B16.5/Duplex (1.4462)	<b>7 2</b>		Flange 4" 600 lb RJF, ASME B16.5/Alloy C22 (2.4602) solid	<b>9 0</b>	<b>L 1 U</b>
Flange 2" 600 lb RF, ASME B16.5/Duplex (1.4462)	<b>7 3</b>		Flange 6" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	<b>9 0</b>	<b>L 1 V</b>
Flange 3" 150 lb RF, ASME B16.5/Duplex (1.4462)	<b>7 4</b>		Flange 2 1/2" 600 lb RF, Masoneilan/Alloy C22 (2.4602) solid	<b>9 0</b>	<b>L 1 W</b>
Flange 3" 300 lb RF, ASME B16.5/Duplex (1.4462)	<b>7 5</b>		Flange 2" 600 lb RF, ASME B16.5/316/316 L <sup>24)</sup>	<b>9 0</b>	<b>L 1 X</b>
Flange 4" 150 lb RF, ASME B16.5/Duplex (1.4462)	<b>7 6</b>		Flange 3" 600 lb RF, ASME B16.5/316/316 <sup>24)25)</sup>	<b>9 0</b>	<b>L 1 Y</b>
Flange 4" 150 lb FF, ASME B16.5/Duplex (1.4462)	<b>7 7</b>		Flange 4" 600 lb RF, ASME B16.5/316/316 <sup>31)</sup>	<b>9 0</b>	<b>L 2 A</b>
Flange 4" 300 lb RF, ASME B16.5/Duplex (1.4462)	<b>7 8</b>		Thread R1½ PN40, EN 10226-1/316L <sup>38)</sup>		<b>L 2 B</b>
Flange 4" 600 lb RF, ASME B16.5/Duplex (1.4462)	<b>8 0</b>				
Thread 1 1/2" NPT PN 40, ASME B1.20.1/Alloy 400 (2.4360)	<b>8 1</b>		<b>Electronics</b>		
Flange 2" 150 lb RF, ASME B16.5/Alloy 400 (2.4360)	<b>8 2</b>		Two-wire 4 ... 20 mA/HART	<b>0</b>	
Flange 2" 300 lb RF, ASME B16.5/Alloy 400 (2.4360) solid	<b>8 3</b>		Four-wire Modbus <sup>2)8)11)</sup>	<b>1</b>	
Flange 3" 150 lb RF, ASME B16.5/Alloy 400 (2.4360)	<b>8 4</b>		Two-wire 4 ... 20 mA/HART with SIL qualification <sup>9)10)</sup>	<b>2</b>	
Flange 3" 300 lb RF, ASME B16.5/Alloy 400 (2.4360)	<b>8 5</b>		Four-wire 4 ... 20 mA/HART; 90 ... 253 V AC; 50/60Hz <sup>2)8)11)34)</sup>	<b>3</b>	
Flange 3" 300 lb RJF, ASME B16.5/Alloy 400 (2.4360)	<b>8 6</b>		Four-wire 4 ... 20 mA/HART; 9.6 ... 48 V DC; 20 ... 42 V AC <sup>2)8)11)34)</sup>	<b>4</b>	
Flange 4" 150 lb RF, ASME B16.5/Alloy 400 (2.4360)	<b>8 7</b>		PROFIBUS PA <sup>5)8)</sup>	<b>5</b>	
Flange 4" 300 lb RF, ASME B16.5/Alloy 400 (2.4360)	<b>8 8</b>		FOUNDATION Fieldbus <sup>5)8)</sup>	<b>6</b>	
Flange DN 25 PN 40 Form C, DIN 2501/Alloy C22 (2.4602) solid <sup>37)</sup>	<b>9 0</b>	<b>L 1 A</b>	<b>Seal/Second line of defense/ Process temperature</b>		
Flange DN 25 PN 40 Form B1, EN 1092-1/Alloy C22 (2.4602) solid <sup>37)</sup>	<b>9 0</b>	<b>L 1 B</b>	FKM (SHS FPM 70C3 GLT)/without glass seal/-40 ... +80 °C (-40 ... +176 °F)	<b>A</b>	
Flange DN 80 PN 40 Form B1, EN 1092-1/Alloy C22 (2.4602) solid	<b>9 0</b>	<b>L 1 C</b>	FKM (SHS FPM 70C3 GLT)/without glass seal/-40 ... +150 °C (-40 ... +302 °F)	<b>B</b>	
Flange 1" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) solid <sup>37)</sup>	<b>9 0</b>	<b>L 1 D</b>	FKM (SHS FPM 70C3 GLT)/with glass seal/-40 ... +150 °C (-40 ... +302 °F) <sup>26)</sup>	<b>C</b>	
Flange 1 1/2" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) solid <sup>37)</sup>	<b>9 0</b>	<b>L 1 E</b>	FFKM (Kalrez 6375)/without/-20 ... 150 °C (-4 ... +302 °F)	<b>D</b>	
Flange 1 1/2" 300 lb RF, ASME B16.5/Alloy C22 (2.4602) solid <sup>37)</sup>	<b>9 0</b>	<b>L 1 F</b>	FFKM (Kalrez 6375)/with/-20 ... +150 °C (-4 ... +302 °F) <sup>5)</sup>	<b>E</b>	
Flange 2" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	<b>9 0</b>	<b>L 1 G</b>	FFKM (Kalrez 6375)/with glass seal/-20 ... +200 °C (-4 ... +392 °F) <sup>26)</sup>	<b>F</b>	
Flange 2" 300 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	<b>9 0</b>	<b>L 1 H</b>	EPDM (A+P 75.5/KW75F)/without glass seal/-40 ... +80 °C (-40 ... +176 °F)	<b>G</b>	
Flange 2" 600 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	<b>9 0</b>	<b>L 1 J</b>	EPDM (A+P 75.5/KW75F)/without glass seal/-40 ... +150 °C (-40 ... +302 °F) <sup>26)</sup>	<b>H</b>	
Flange 2" 1 500 lb RJF, ASME B16.5/Alloy C22 (2.4602) solid	<b>9 0</b>	<b>L 1 K</b>	EPDM (A+P 75.5/KW75F)/with glass seal/-40 ... +150 °C (-40 ... +302 °F) <sup>26)</sup>	<b>J</b>	
Flange 3" 150 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	<b>9 0</b>	<b>L 1 L</b>	Silicone FEP coated (A+P FEP-O-SEAL)/without glass seal/-40 ... +80 °C (-40 ... +176 °F)	<b>K</b>	
Flange 3" 300 lb RF, ASME B16.5/Alloy C22 (2.4602) solid	<b>9 0</b>	<b>L 1 M</b>	Silicone FEP coated (A+P FEP-O-SEAL)/without glass seal/-40 ... +150 °C (-40 ... +302 °F)	<b>L</b>	
Flange 3" 300 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	<b>9 0</b>	<b>L 1 N</b>	Silicone FEP coated (A+P FEP-O-SEAL)/with glass seal/-40 ... +150 °C (-40 ... +302 °F) <sup>26)</sup>	<b>M</b>	
			With borosilicate glass lead through for volatile substances, e.g. ammonia/with glass seal/-60 ... +150 °C (-76 ... +302 °F) <sup>26)</sup>	<b>N</b>	
			FFKM (Kalrez 6375)/without glass seal/-20 ... +200 °C (-4 ... +392 °F)	<b>P</b>	
			FKM (SHS FPM 70C3 GLT)/with glass seal/-40 ... 80 °C (-40 ... +176 °F) <sup>26)</sup>	<b>Q</b>	

## Level measurement

Continuous level measurement  
Guided wave radar transmitters

### SITRANS LG series

#### Selection and ordering data

#### Article No.

#### Article No.

SITRANS LG250 Guided radar level transmitter	7ML5881-	Ord. code
Continuous, contact, 75 m (246 ft) range. Monitors level and interface in liquids.		
<b>Housing/Protection/Cable</b>		
<b>Note: for installation of remote display, 7ML5840, with LG two chamber housing options, contact PVC</b>		
Plastic IP66/IP67 M20 x 1.5/blind stopper <sup>11)15)</sup>	A	
Plastic IP66/IP67 1/2" NPT/blind stopper <sup>8)11)</sup>	B	
Plastic 2-chamber/IP66/IP67/M20 x 1.5/blind stopper	G	
Plastic 2-chamber/IP66/IP67 1/2" NPT/blind stopper	H	
Aluminum/IP66/IP68 (0.2 bar) M20 x 1.5/Blind stopper <sup>8)11)</sup>	C	
Aluminum/IP66/IP68 (0.2 bar) 1/2" NPT/Blind stopper <sup>8)11)</sup>	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 <sup>9)11)</sup>	L	
Stainless Steel (precision casting) 316L/IP66/IP68 (0.2 bar) 1/2" NPT/Blind stopper <sup>9)11)</sup>	M	
Stainless Steel (electropolished) 316L/IP66/IP68 (0.2 bar) M20 x 1.5/Blind stopper <sup>9)11)</sup>	N	
Stainless Steel (electropolished) 316L/IP66/IP68 (0.2 bar) 1/2" NPT/Blind stopper <sup>9)11)</sup>	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 <sup>8)11)</sup>	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 <sup>11)28)</sup>	U	
Stainless Steel (electropolished) 316L/IP66/IP68 (0.2 bar) M20 x 1.5/Cable gland stainless steel <sup>11)28)</sup>	V	
Stainless steel single chamber (precision casting)/IP66/IP68 (0.2 bar) M20 x 1.5/Cable gland brass nickel-plated	W	
Aluminum single 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	
Aluminum single chamber/IP66/IP68 (0.2 bar) with M20 x 1.5/Plug connector Harting HAN 7D (straight)	Z	Q 1 A
Aluminum single chamber/IP66/IP68 (0.2 bar) with M20 x 1.5/Special HARTING plug (bent) according to Tier One (ZB7555)	Z	Q 1 B
Remote stainless steel single chamber housing, electropolished/IP66/IP67 with cable outlet IP68 (electronics separated by cable); M20 x 1.5/blind plug <sup>11)27)</sup>	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 <sup>11)27)</sup>	Z	Q 2 B

SITRANS LG250 Guided radar level transmitter	7ML5881-	Ord. code
Continuous, contact, 75 m (246 ft) range. Monitors level and interface in liquids.		
<b>Lengths</b>		
<u>Rod ø 8 mm/316L</u>		
300 ... 1 000 mm (11.81 ... 39.37 inch) <sup>29)</sup>		0
1 001 ... 2 000 mm (39.41 ... 78.74 inch) <sup>29)</sup>		1
2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>29)</sup>		2
3 001 ... 4 000 mm (118.15 ... 157.48 inch) <sup>29)</sup>		3
4 001 ... 5 000 mm (157.52 ... 196.85 inch) <sup>29)</sup>		4
5 001 ... 6 000 mm (196.89 ... 236.22 inch) <sup>29)</sup>		5
<u>Rod ø 8 mm/Duplex</u>		
300 ... 1 000 mm (11.81 ... 39.37 inch) <sup>29)</sup>		9 R 1 A
1 001 ... 2 000 mm (39.41 ... 78.74 inch) <sup>29)</sup>		9 R 1 B
2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>29)</sup>		9 R 1 C
3 001 ... 4 000 mm (118.15 ... 157.48 inch) <sup>29)</sup>		9 R 1 D
4 001 ... 5 000 mm (157.52 ... 196.85 inch) <sup>29)</sup>		9 R 1 E
5 001 ... 6 000 mm (196.89 ... 236.22 inch) <sup>29)</sup>		9 R 1 F
<u>Rod ø 8 mm or ø 12 mm /Alloy C22 and 400</u>		
300 ... 1 000 mm (11.81 ... 39.37 inch) <sup>29)</sup>		9 R 1 J
1 001 ... 2 000 mm (39.41 ... 78.74 inch) <sup>29)</sup>		9 R 1 K
2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>29)</sup>		9 R 1 L
3 001 ... 4 000 mm (118.15 ... 157.48 inch) <sup>29)</sup>		9 R 1 M
4 001 ... 5 000 mm (157.52 ... 196.85 inch) <sup>29)</sup>		9 R 1 N
5 001 ... 6 000 mm (196.89 ... 236.22 inch) <sup>29)</sup>		9 R 1 P
<u>Rod ø 12 mm/316L</u>		
300 ... 1 000 mm (11.81 ... 39.37 inch) <sup>29)</sup>		9 R 2 A
1 001 ... 2 000 mm (39.41 ... 78.74 inch) <sup>29)</sup>		9 R 2 B
2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>29)</sup>		9 R 2 C
3 001 ... 4 000 mm (118.15 ... 157.48 inch) <sup>29)</sup>		9 R 2 D
<u>Cable lengths ø 2 or 4 mm/316L</u>		
501 ... 1 000 mm (19.72 ... 39.37 inch)		9 R 2 E
1 000 ... 5 000 mm (39.37 ... 196.85 inch)		9 R 2 F
5 001 ... 10 000 mm (196.89 ... 393.70 inch)		9 R 2 G
10 001 ... 15 000 mm (393.74 ... 590.55 inch)		9 R 2 H
15 001 ... 20 000 mm (590.59 ... 787.40 inch)		9 R 2 J
20 001 ... 25 000 mm (787.44 ... 984.25 inch)		9 R 2 K
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
60 001 ... 65 000 mm (2 362.24 ... 2 559.06 inch)		9 R 2 T
65 001 ... 70 000 mm (2 559.09 ... 2 755.91 inch)		9 R 2 U
70 001 ... 75 000 mm (2 755.94 ... 2 952.76 inch)		9 R 2 V

Selection and ordering data	Article No.	Order code
<b>SITRANS LG250 Guided radar level transmitter</b>	<b>7ML5881-</b>	<b>Ord. code</b>
Continuous, contact, 75 m (246 ft) range. Monitors level and interface in liquids.		
<b>Cable Lengths ø 2 mm or ø 4 mm/Alloy C22</b>		
501 ... 1 000 mm (19.72 ... 39.37 inch)	9 R 4 A	
1 001 ... 5 000 mm (39.41 ... 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	
45 001 ... 50 000 mm (1 771.69 ... 1 968.50 inch)	9 R 4 L	
50 001 ... 55 000 mm (1 968.54 ... 2 165.35 inch)	9 R 4 M	
55 001 ... 60 000 mm (2 165.39 ... 2 362.20 inch)	9 R 4 N	
60 001 ... 65 000 mm (2 362.24 ... 2 559.06 inch)	9 R 4 P	
65 001 ... 70 000 mm (2 559.09 ... 2 755.91 inch)	9 R 4 Q	
70 001 ... 75 000 mm (2 755.94 ... 2 952.76 inch)	9 R 4 R	
<b>Coax ø 21.3 mm/316L</b>		
300 ... 1 000 mm (11.81 ... 39.37 inch) <sup>29)</sup>	9 R 3 A	
1 001 ... 2 000 mm (39.41 ... 78.74 inch) <sup>29)</sup>	9 R 3 B	
2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>29)</sup>	9 R 3 C	
3 001 ... 4 000 mm (118.15 ... 157.48 inch) <sup>29)</sup>	9 R 3 D	
4 001 ... 5 000 mm (157.52 ... 196.85 inch) <sup>29)</sup>	9 R 3 E	
5 001 ... 6 000 mm (196.89 ... 236.22 inch) <sup>29)</sup>	9 R 3 F	
<b>Coax ø 21.3 mm/Alloy C22</b>		
300 ... 1 000 mm (11.81 ... 39.37 inch) <sup>29)</sup>	9 R 5 A	
1 001 ... 2 000 mm (39.41 ... 78.74 inch) <sup>29)</sup>	9 R 5 B	
2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>29)</sup>	9 R 5 C	
3 001 ... 4 000 mm (118.15 ... 157.48 inch) <sup>29)</sup>	9 R 5 D	
4 001 ... 5 000 mm (157.52 ... 196.85 inch) <sup>29)</sup>	9 R 5 E	
5 001 ... 6 000 mm (196.89 ... 236.22 inch) <sup>29)</sup>	9 R 5 F	
<b>Coax ø 42.2 mm/316L</b>		
300 ... 1 000 mm (11.81 ... 39.37 inch) <sup>29)</sup>	9 R 3 G	
1 001 ... 2 000 mm (39.41 ... 78.74 inch) <sup>29)</sup>	9 R 3 H	
2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>29)</sup>	9 R 3 J	
3 001 ... 4 000 mm (118.15 ... 157.48 inch) <sup>29)</sup>	9 R 3 K	
4 001 ... 5 000 mm (157.52 ... 196.85 inch) <sup>29)</sup>	9 R 3 L	
5 001 ... 6 000 mm (196.89 ... 236.22 inch) <sup>29)</sup>	9 R 3 M	
<b>Coax ø 42.2 mm/Alloy C22</b>		
300 ... 1 000 mm (11.81 ... 39.37 inch) <sup>29)</sup>	9 R 5 G	
1 001 ... 2 000 mm (39.41 ... 78.74 inch) <sup>29)</sup>	9 R 5 H	
2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>29)</sup>	9 R 5 J	
3 001 ... 4 000 mm (118.15 ... 157.48 inch) <sup>29)</sup>	9 R 5 K	
4 001 ... 5 000 mm (157.52 ... 196.85 inch) <sup>29)</sup>	9 R 5 L	
5 001 ... 6 000 mm (196.89 ... 236.22 inch) <sup>29)</sup>	9 R 5 M	
<b>Cable lengths ø 4 mm PFA</b>		
300 ... 1 000 mm (12 ... 39.37 inch)	9 R 6 A	
1 001 ... 2 000 mm (39.41 ... 78.74 inch)	9 R 6 B	
2 001 ... 5 000 mm (78.77 ... 196.85 inch)	9 R 6 C	
5 001 ... 10 000 mm (196.89 ... 393.70 inch)	9 R 6 D	
10 001 ... 15 000 mm (393.74 ... 590.55 inch)	9 R 6 E	
15 001 ... 20 000 mm (590.59 ... 787.40 inch)	9 R 6 F	
20 001 ... 25 000 mm (787.44 ... 984.25 inch)	9 R 6 G	
25 001 ... 32 000 mm (984.29 ... 1 259.84 inch)	9 R 6 H	
<b>Further designs (mandatory)</b>		
Please add "-Z" to Article No. and specify Order code(s).		
<b>Supplementary electronics</b>		
Without		A00
Additional current output 4 ... 20 mA <sup>11)</sup>		A01
<b>Dimensions centering weight (diameter/height)</b>		
Without		B00
ø 40/30 mm		B01
ø 45/30 mm (for 2 inch tubes)		B02
ø 75/30 mm (for 3 inch tubes)		B03
ø 95/30 mm (for 4 inch tubes)		B04
ø 40 mm/30 mm		B05
ø 1.57/1.18 inch (for 2 inch Schedule 160)		B06
ø 45 mm/30 mm (for 2 inch tubes)		B07
ø 1.77/1.18 inch (for 2 inch Schedule 40/80)		B08
ø 75 mm/30 mm (for 3 inch tubes)		B09
ø 2.95/1.18 inch (for 3 inch Schedule 10/40)		B10
ø 95 mm/30 mm (for 4 inch tubes)		B11
ø 3.74/1.18 inch (for 4 inch Schedule 80)		B12
<b>Rod mounted</b>		
Without Rod, applicable for coax or cable probe types only		C00
Mounted		C01
Not mounted		C02
<b>Indicating/adjustment module</b>		
Without		E00
Mounted		E01
Laterally mounted		E02
<b>Language of display</b>		
German		L00
English		L01
French		L02
Dutch		L03
Italian		L04
Spanish		L05
Portuguese		L06
Russian		L07
Chinese		L08
Japanese		L09
<b>Operating instructions</b>		
German		M00
English		M01
French		M02
Spanish		M03
<b>Further designs (optional)</b>		
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
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

## Level measurement

### Continuous level measurement Guided wave radar transmitters

#### SITRANS LG series

Selection and ordering data	Order code
Remote electronic cable lengths: 10 m (32.8 ft). Only available with Housing options Q2A and Q2B	<b>Y12</b>
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.	<b>Y17</b>
Identification Label (measurement loop) foil, 40 characters max, add in plain text. To add more than one line use a coma "," for line break.	<b>Y18</b>
Material Inspection certificate 3.1 of EN 10204	<b>C05</b>
3.1-Inspection Certificate for instrument (EN 10204) <sup>30)</sup>	<b>C12</b>
Inspection certificate 3.1 (EN 10204, NACE MR 0175) - material <sup>30)</sup> <sup>31)</sup> Note: 316L probes include NACE MR 0175 and MR 0103, non 316L probes include MR 0175 only and plated flange designs are not available with NACE certificate.	<b>D07</b>
3.1-Inspection Certificate for instrument with test data (EN 10204) <sup>30)</sup>	<b>C25</b>
2.2-Factory certificate for material (EN 10204) <sup>30)</sup>	<b>C15</b>
Quality and test plan <sup>30)</sup>	<b>C26</b>
Dye penetration test, results confirmed via a 3.1 certificate/instrument (EN10204) <sup>30)</sup>	<b>C13</b>
X-ray test + 3.1 certificate/instrument <sup>30)</sup>	<b>C14</b>
Positive material identification test + 3.1 certificate/instrument <sup>30)</sup>	<b>C16</b>
Roughness test + 3.1 certificate/instrument <sup>30)</sup>	<b>C18</b>
Pressure test + 3.1 certificate/instrument <sup>30)</sup>	<b>C31</b>
Helium leak test + 3.1 certificate/instrument <sup>30)</sup>	<b>C32</b>
Pressure test according to Norsok + 3.1 certificate/instrument <sup>30)</sup>	<b>C61</b>
5 point calibration certificate (min. length 500 mm) <sup>30)</sup>	<b>C62</b>
Pressure test (acc. to ASME B31.1), incl. 3.1 Inspection certificate <sup>30)</sup>	<b>C63</b>
Certificate suitable for tropical regions with, all attachment parts of metal (2.1 factory certificate)	<b>C65</b>
<b>Operating Instructions</b>	
All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>	
<b>Accessories</b>	
SITRANS LG, GWR sensor Display Module	Article No. <b>A5E34143449</b>
SITRANS LG, two-wire 4 ... 20 mA/HART electronic	<b>A5E35637821</b>
SITRANS LG, USB communicator	<b>A5E35192015</b>
SITRANS LG, Mounting eye M8 x 20	<b>A5E36653574</b>
SITRANS LG, Mounting eye M12 x 20	<b>PBD:51041448</b>
SITRANS LG, Mounting spring	<b>PBD:51041449</b>
Siemens Intrinsically Safe Barrier (DC powered), ATEX II 1 G EEx ia	<b>7NG4124-0AA00</b>
SITRANS RD100, loop powered display - see Chapter 7	<b>7ML5741-.....-</b>
SITRANS RD150, remote digital display for 4 ... 20 mA and HART devices - see Chapter 7	<b>7ML5742-.....-..</b>
SITRANS RD200, universal input display with Modbus conversion - see Chapter 7	<b>7ML5740-.....-..</b>
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7	<b>7ML5744-.....-..</b>
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.

- <sup>1)</sup> Not available with Plastic and Stainless steel (electropolished) Housing/Protection/Cable options and certain glands.
- <sup>2)</sup> Available only with Metallic, Double chamber Housing/Protection/Cable options and certain glands.
- <sup>3)</sup> Not available with Remote or Stainless steel (electropolished) Housing/Protection/Cable options and certain glands.
- <sup>4)</sup> Not available with Stainless steel (electropolished) Housing/Protection/Cable options and certain glands.
- <sup>5)</sup> Not available with certain glands.
- <sup>6)</sup> Not available with Version/Material option K, L, M, N, P, Q, R, S, T, and U.
- <sup>7)</sup> Not available with Length options 3, 4, 5, R2C, and R2D.
- <sup>8)</sup> Available only with Supplementary electronic option A00.
- <sup>9)</sup> Not available with Seal/Second line of defense/Process temperature option N.
- <sup>10)</sup> Not available with Housing/Protection/Cable option Q1B.
- <sup>11)</sup> Not available with Indicating/adjustment module option E02.
- <sup>12)</sup> Not available with Process fitting/Material options 00 and 01.
- <sup>13)</sup> Available only with Electronic options 0 ... 4.
- <sup>14)</sup> Available only with glass seal options.
- <sup>15)</sup> Available only with Seal/Second line of defense/Process temperature options C, D, E, F, H, J, M, N, Q.
- <sup>16)</sup> Not Available with Housing/Protection/Cable options W, X, Y, J, Q1A, and Q1B.
- <sup>17)</sup> Not Available with Seal/Second line of defense/Process temperature option P.
- <sup>18)</sup> Available only with Single chamber, Aluminum and Stainless steel (precision casting) Housing/Protection/Cable options.
- <sup>19)</sup> Available only with Dimensions centering weight option B00.
- <sup>20)</sup> Available only with Rod mounted option C00.
- <sup>21)</sup> Not available with Dimensions centering weight option B00.
- <sup>22)</sup> Available only with Seal/Second line of defense/Process temperature option N.
- <sup>23)</sup> Not available with Version/Material options F, K, L, M, N, P, Q, R, S, and T.
- <sup>24)</sup> Not available with Seal/Process temperature options A, G, K, N, and Q.
- <sup>25)</sup> Available only with Version/Material options A ... K.
- <sup>26)</sup> Not available with Remote Housing/Protection/Cable options.
- <sup>27)</sup> Not available with some Seal/Process temperature options including glass.
- <sup>28)</sup> Not available with Supplementary electronics options.
- <sup>29)</sup> Not available with Y02.
- <sup>30)</sup> Listed Certificates are not available with all configurations, please contact factory for more information.
- <sup>31)</sup> Available only with 316L Probes. NACE is not available with coated, plated, or hygienic connections.
- <sup>32)</sup> Available only with Housing/Protection/Cable options E, F, N, Q, R, T.
- <sup>33)</sup> Available only with Housing/Protection/Cable options C, D, E, F, L, M, N, P, Q, R, S, T, U, V, Q2A, and Q2B.
- <sup>34)</sup> Available only with Double chamber, Plastic and Metallic Housing/Protection/Cable options and certain glands.
- <sup>35)</sup> Available only with Approvals options OA (CE only) and 1D.
- <sup>36)</sup> Available only with ø 4 mm PFA Length options.
- <sup>37)</sup> Not available with Probe version/Material option P.
- <sup>38)</sup> Available only with Probe version/Material options G and H.

Note: Please consult manual for further details.



Selection and ordering data	Article No.	Article No.
<b>SITRANS LG260 Guided radar level transmitter</b>	<b>7ML5882-</b>	<b>7ML5882-</b>
Continuous, contact, 60 m (197 ft) range. Monitors level in solids.	Ord. code	Ord. code
➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
<b>Approvals</b>		
General purpose (CSA, FM, CE) <sup>(6)</sup>	<b>0 A</b>	
Shipping approval <sup>(4)(5)(7)(8)(9)</sup>	<b>0 B</b>	
Overfill protection (WHG; VLAREM) <sup>(5)(8)</sup>	<b>0 C</b>	
ATEX II 1G, 1/2G, 2G Ex ia IIC T6 <sup>(5)(8)</sup>	<b>0 E</b>	
ATEX II 1G, 1/2G, 2G Ex ia IIC + Overfill (WHG; VLAREM) <sup>(5)(8)</sup>	<b>0 F</b>	
ATEX II 1G, 1/2G, 2G Ex ia IIC T6 + shipping approval <sup>(4)(5)(7)(8)(9)(10)</sup>	<b>0 G</b>	
ATEX II 1G, 1/2G, 2G Ex ia IIC + II 1D, 1/2D, 1/3D, 2D IP66 <sup>(1)(5)(8)</sup>	<b>0 H</b>	
ATEX II 1/2G, 2G Ex d ia IIC T6 <sup>(2)(5)(8)(9)(10)</sup>	<b>0 J</b>	
ATEX II 1/2G, 2G Ex d ia IIC + shipping approval <sup>(2)(5)(7)(8)(9)(10)</sup>	<b>0 L</b>	
ATEX II 1/2G, II 2G Ex db ia IIC T6 ... T1 Ga/Gb, Gb + II 1D, 1/2D, 1/3D, 2D Ext IIIC T* Da, Da/Db, Da/Dc, Db <sup>(2)(5)(8)(9)(10)</sup>	<b>0 M</b>	
ATEX II 1/2G, 2G Ex d IIC T6 <sup>(1)(8)(10)(11)</sup>	<b>0 N</b>	
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 <sup>(8)</sup>	<b>0 W</b>	
ATEX II 1/2G, 2G Ex d IIC + shipping approval <sup>(1)(7)(8)(9)(10)(11)</sup>	<b>0 Q</b>	
ATEX II 1/2G, 2G Ex d IIC + II 1D, 1/2D, 1/3D, 2D IP66 <sup>(1)(8)(10)(11)</sup>	<b>0 R</b>	
ATEX II 1D, 1/2D, 2D IP6x T <sup>(1)(8)(11)</sup>	<b>0 S</b>	
IEC Ex ia IIC T6 <sup>(5)(8)</sup>	<b>0 T</b>	
IEC Ex ia IIC T6...T1 Ga, Ga/Gb, Gb + Ex t IIC T <sup>(1)(8)(11)</sup>	<b>0 U</b>	
IEC Ex d ia IIC T6 <sup>(2)(5)(8)(9)(10)</sup>	<b>1 A</b>	
IEC Ex d ia IIC T6 + IEC IP6x T <sup>(2)(5)(8)(9)(10)</sup>	<b>1 B</b>	
IEC Ex db IIC T6 ... T1 Ga/Gb, Gb <sup>(1)(8)(10)(11)</sup>	<b>1 C</b>	
IEC Ex db IIC T6 ... T1 Ga/Gb, Gb + IEC Ex t IIC T <sup>(8)(10)(11)(19)</sup>	<b>1 D</b>	
FM (NI) Class I, Div. 2, Groups A, B, C, D <sup>(3)(5)(8)(9)</sup>	<b>1 F</b>	
FM (NI) Class I, Div. 2, Groups A, B, C, D + Ship approval <sup>(3)(5)(7)(8)(9)(10)</sup>	<b>1 G</b>	
FM (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F <sup>(5)(8)(9)</sup>	<b>1 H</b>	
FM (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G + shipping approval <sup>(4)(5)(7)(8)(9)(10)</sup>	<b>1 J</b>	
FM (XP-AIS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G <sup>(2)(5)(8)(9)(10)</sup>	<b>1 K</b>	
FM (XP-AIS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G + shipping approval <sup>(2)(5)(7)(8)(9)(10)</sup>	<b>1 L</b>	
FM (XP) Class I, Div. 1, Groups A, B, C, D <sup>(8)(10)(19)</sup>	<b>1 M</b>	
CSA (NI) Class I, Div. 2, Groups A, B, C, D; (DIP) Class II, III, Div. 1, Groups E, F, G <sup>(1)(5)(10)</sup>	<b>1 N</b>	
CSA (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G <sup>(5)(8)</sup>	<b>1 P</b>	
CSA (XP-IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G <sup>(2)(5)(8)(9)(10)</sup>	<b>1 Q</b>	
CSA (XP) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G <sup>(8)(9)(10)(11)(19)</sup>	<b>1 R</b>	
NEPSI Ex ia IIC T6 <sup>(5)(8)</sup>	<b>2 A</b>	
NEPSI Ex ia IIC T6 + DIP A20/21 TA T* <sup>(1)(5)(8)</sup>	<b>2 B</b>	
NEPSI Ex d ia IIC T6 <sup>(2)(5)(8)(9)(10)</sup>	<b>2 C</b>	
NEPSI Ex d ia IIC T6 + DIP A20/21 TA T* <sup>(2)(5)(8)(9)(10)</sup>	<b>2 D</b>	
NEPSI Ex d IIC T6 <sup>(8)(10)(19)</sup>	<b>2 E</b>	
NEPSI Ex d IIC T6 + DIP A20/21 TA T* <sup>(8)(10)(19)</sup>	<b>2 F</b>	
NEPSI DIP A20/21 TA T* <sup>(1)(8)</sup>	<b>2 G</b>	
INMETRO Ex ia IIC T6 ... T1 <sup>(5)(8)</sup>	<b>3 A</b>	
INMETRO Ex t IIIC T* IP6X, Da, Da/Db, Da/Dc, Db + Ex ia IIC T6, Ga, Ga/Gb <sup>(1)(5)(8)(10)</sup>	<b>3 B</b>	
INMETRO Ex d ia IIC T6 ... T1 <sup>(2)(5)(8)(9)(10)</sup>	<b>3 C</b>	
INMETRO Ex t IIIC T* IP6X, Da, Da/Db, Da/Dc, Db + Ex d ia IIC T6 Ga/Gb <sup>(2)(5)(8)(9)(10)</sup>	<b>3 D</b>	
INMETRO Ex d IIC T6 ... T1 <sup>(8)(10)(19)</sup>	<b>3 E</b>	
INMETRO Ex t IIIC T* IP6X, Da, Da/Db, Da/Dc, Db + Ex d IIC T6 Ga/Gb <sup>(8)(10)(19)</sup>	<b>3 F</b>	
INMETRO Ex t IIIC T* IP6X, Da, Da/Db, Da/Dc, Db <sup>(1)(5)(8)(10)</sup>	<b>3 G</b>	
KOSHA Ex d IIC T6 ... T1 - KE <sup>(8)(10)(19)</sup>	<b>4 A</b>	
Korea KC ex free area <sup>(8)</sup>	<b>6 A</b>	
GOST-R/EAC 0 Ex ia IIC T1 ... T6 X <sup>(8)</sup>	<b>5 A</b>	
GOST-R/EAC 0 Ex ia IIC T1 ... T6 X + Ex t IIC T ... IP66 <sup>(1)(8)</sup>	<b>5 B</b>	
GOST-R/EAC 1 Ex d ia IIC T1 ... T6 X <sup>(2)(8)(9)(10)</sup>	<b>5 C</b>	
GOST-R/EAC 1 Ex d ia IIC T1 ... T6 X + Ex t IIC T ... IP66 <sup>(2)(8)(9)(10)</sup>	<b>5 D</b>	
GOST-R/EAC 1 Ex d IIC T1 ... T6 X <sup>(8)(10)(19)</sup>	<b>5 E</b>	
GOST-R/EAC 0 Ex d IIC T1 ... T6 X + Ex t IIC T ... IP66 <sup>(8)(10)(19)</sup>	<b>5 F</b>	
GOST-R/EAC Ex t IIIC T ... IP66 <sup>(1)(8)</sup>	<b>5 G</b>	
<b>Note: Version/Material, Process fitting/Material, and Length options are available only with options of corresponding type.</b>		
<b>Probe version/Material</b>		
Probe exchangeable cable ø 4 mm (0.16 inch) with gravity weight/316 <sup>(3)(14)</sup>	<b>A</b>	
Probe exchangeable cable ø 6 mm (0.24 inch) with gravity weight/316 <sup>(3)(14)</sup>	<b>B</b>	
Probe exchangeable cable ø 6 mm (0.24 inch) with gravity weight/PA coated <sup>(15)</sup>	<b>C</b>	
Probe exchangeable cable ø 11 mm (0.43 inch) with gravity weight/PA coated <sup>(15)</sup>	<b>D</b>	
Probe exchangeable rod ø 16 mm (0.63 inch)/316L <sup>(13)</sup>	<b>E</b>	
<b>Process fitting/Material</b>		
Thread G 3/4" (DIN 3852-A) PN 40/316L	<b>0 0</b>	
Thread 3/4" NPT (ASME B1.20.1) PN 40/316L	<b>0 1</b>	
Thread G 1" (DIN 3852-A) PN 40/316L	<b>0 2</b>	
Thread 1" NPT (ASME B1.20.1) PN 40/316L	<b>0 3</b>	
Thread G 1 1/2" (DIN 3852-A) PN 40/316L	<b>0 4</b>	
Thread 1 1/2" NPT (ASME B1.20.1) PN 40/316L	<b>0 5</b>	
Thread G 2" (DIN 3852-A) PN 40/316L	<b>0 6</b>	
Flange DN 50 PN 40 Form C, DIN 2501/316L	<b>1 0</b>	
Flange DN 80 PN 40 Form C, DIN 2501/316L	<b>1 2</b>	
Flange DN 100 PN 16 Form C, DIN 2501/316L	<b>1 3</b>	
Flange DN 100 PN 40 Form C, DIN 2501/316L	<b>1 4</b>	
Flange DN 150 PN 16 Form C, DIN 2501/316L	<b>1 5</b>	
Flange DN 50 PN 40 EN 1092-1 Form B1/316L	<b>1 6</b>	
Flange DN 80 PN 40 EN 1092-1 Form B1/316L	<b>1 7</b>	
Flange DN 100 PN 16 EN 1092-1 Form B1/316L	<b>1 8</b>	
Flange 2" 150 lb RF, ASME B16.5/316L	<b>3 0</b>	
Flange 2" 300 lb RF, ASME B16.5/316L	<b>3 2</b>	
Flange 3" 150 lb RF, ASME B16.5/316L	<b>3 3</b>	
Flange 3" 300 lb RF, ASME B16.5/316L	<b>3 4</b>	
Flange 4" 150 lb RF, ASME B16.5/316L	<b>3 5</b>	
Flange 4" 300 lb RF, ASME B16.5/316L	<b>3 6</b>	
Flange 6" 150 lb RF, ASME B16.5/316L	<b>3 7</b>	

## Level measurement

Continuous level measurement  
Guided wave radar transmitters

### SITRANS LG series

#### Selection and ordering data

#### Article No.

#### Article No.

SITRANS LG260 Guided radar level transmitter	7ML5882-	Ord. code
Continuous, contact, 60 m (197 ft) range. Monitors level in solids.	-	
<b>Electronics</b>		
Two-wire 4 ... 20 mA/HART	0	
Four-wire Modbus <sup>2)9)10)</sup>	1	
Two-wire 4 ... 20 mA/HART with SIL qualification <sup>9)</sup>	2	
Four-wire 4 ... 20 mA/HART; 90 ... 253 V AC; 50/60 Hz <sup>2)9)10)</sup>	3	
Four-wire 4 ... 20 mA/HART; 9.6 ... 48 V DC; 20 ... 42 V AC <sup>2)9)10)</sup>	4	
PROFIBUS PA <sup>9)</sup>	5	
FOUNDATION Fieldbus <sup>9)</sup>	6	
<b>Seal/Process temperature</b>		
FKM (SHS FPM 70C3 GLT)/-40 ... +80 °C (-40 ... +176 °F) <sup>16)</sup>	A	
FKM (SHS FPM 70C3 GLT)/-40 ... +150 °C (-40 ... +302 °F)	B	
FFKM (Kalrez 6375)/-20 ... +200 °C (-4 ... +392 °F)	C	
EPDM (A+P 70.10-02)/-40 ... +80 °C (-40 ... +176 °F) <sup>16)</sup>	D	
EPDM (A+P 70.10-02)/-40 ... +150 °C (-40 ... +392 °F)	E	
<b>Housing/Protection/Cable</b>		
<b>Note: for installation of remote display, 7ML5840, with LG two chamber housing options, contact PVC</b>		
Plastic IP66/IP67 M20 x 1.5/ blind stopper <sup>9)10)</sup>	A	
Plastic IP66/IP67 1/2" NPT/blind stopper <sup>9)10)</sup>	B	
Plastic 2-chamber/IP66/IP67/M20 x 1.5/ blind stopper	C	
Plastic 2-chamber/IP66/IP67/ 1/2" NPT/ blind stopper	D	
Aluminum/IP66/IP68 (0.2 bar) M20 x 1.5/blind stopper <sup>9)10)</sup>	E	
Aluminum/IP66/IP68 (0.2 bar) 1/2" NPT/ blind stopper <sup>9)10)</sup>	F	
Aluminum double chamber/IP66/IP68 (0.2 bar) M20 x 1.5/blind stopper	G	
Aluminum double chamber/IP66/ IP68 (0.2 bar) 1/2" NPT/blind stopper	H	
Stainless Steel (precision casting) 316L/IP66/IP68 (0.2 bar) M20 x 1.5/ blind stopper <sup>9)10)</sup>	J	
Stainless steel (precision casting) 316L/IP66/IP68 (0.2 bar) 1/2" NPT/ blind stopper <sup>9)10)</sup>	K	
Stainless steel (electropolished) 316L/IP66/IP68 (0.2 bar) M20 x 1.5/ blind stopper <sup>9)10)</sup>	L	
Stainless steel (electropolished) 316L/IP66/IP68 (0.2 bar) 1/2" NPT/ blind stopper <sup>9)10)</sup>	M	
Stainless steel double chamber/IP66/IP68 (0.2 bar) M20 x 1.5/blind stopper	N	
Stainless steel double chamber/IP66/ IP68 (0.2 bar) 1/2" NPT/blind stopper	P	
Aluminum/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland stainless steel <sup>9)10)</sup>	Q	

SITRANS LG260 Guided radar level transmitter	7ML5882-	Ord. code
Continuous, contact, 60 m (197 ft) range. Monitors level in solids.	-	
Aluminum double chamber/IP66/IP68 (0.2 bar) M20 x 1.5/cable gland stainless steel	R	
Stainless steel (precision casting) 316L/ IP66/ IP68 (0.2 bar) M20 x 1.5/cable gland stainless steel <sup>9)10)</sup>	S	
Stainless steel (electropolished) 316L/IP66/IP68 (0.2 bar) M20 x 1.5/ cable gland stainless steel <sup>9)10)</sup>	T	
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	U	
Remote stainless steel single chamber housing, electropolished/IP66/IP67 with cable outlet IP68 (electronics separated by cable); M20 x 1.5/blind plug <sup>10)</sup>	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 <sup>10)</sup>	Z	Q 2 B
<b>Lengths</b>		
<b>Rod ø 16 mm/316L</b>		
500 mm (19.69 inch)		0
501 ... 1 000 mm (19.72 ... 39.37 inch)		1
1 001 ... 2 000 mm (39.41 ... 78.74 inch)		2
2 001 ... 3 000 mm (78.78 ... 118.11 inch)		3
3 001 ... 4 000 mm (118.15 ... 157.48 inch)		4
4 001 ... 5 000 mm (157.52 ... 196.85 inch)		5
5 001 ... 6 000 mm (196.89 ... 236.22 inch)		6
<b>Cable lengths ø 4 mm/316</b>		
501 ... 1 000 mm (19.72 ... 39.37 inch)		9 R 2 E
1 001 ... 5 000 mm (39.41 ... 196.85 inch)		9 R 2 F
5 001 ... 10 000 mm (196.89 ... 393.70 inch)		9 R 2 G
10 001 ... 15 000 mm (393.74 ... 590.55 inch)		9 R 2 H
15 001 ... 20 000 mm (590.59 ... 787.40 inch)		9 R 2 J
20 001 ... 25 000 mm (787.44 ... 984.25 inch)		9 R 2 K
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

Selection and ordering data	Article No.	Order code
<b>SITRANS LG260 Guided radar level transmitter</b>	<b>7ML5882-</b>	<b>Ord. code</b>
Continuous, contact, 60 m (197 ft) range. Monitors level in solids.		
<u>Cable lengths ø 6 mm/316L</u>		
500 mm (19.69 inch)	9 R 4 A	
501 ... 1 000 mm (19.72 ... 39.37 inch)	9 R 4 B	
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	
10 001 ... 15 000 mm (393.74 ... 590.55 inch)	9 R 4 E	
15 001 ... 20 000 mm (590.59 ... 787.40 inch)	9 R 4 F	
20 001 ... 25 000 mm (787.44 ... 984.25 inch)	9 R 4 G	
25 001 ... 30 000 mm (984.29 ... 1 181.10 inch)	9 R 4 H	
30 001 ... 35 000 mm (1 181.14 ... 1 377.95 inch)	9 R 4 J	
35 001 ... 40 000 mm (1 377.99 ... 1 574.80 inch)	9 R 4 K	
40 001 ... 45 000 mm (1 574.84 ... 1 771.65 inch)	9 R 4 L	
45 001 ... 50 000 mm (1 771.69 ... 1 968.50 inch)	9 R 4 M	
50 001 ... 55 000 mm (1 968.54 ... 2 165.35 inch)	9 R 4 N	
55 001 ... 60 000 mm (2 165.39 ... 2 362.20 inch)	9 R 4 P	
<u>Cable lengths ø 6 mm or ø 11 mm/PA coated</u>		
501 ... 1 000 mm (19.72 ... 39.37 inch)	9 R 6 A	
1 001 ... 5 000 mm (39.41 ... 196.85 inch)	9 R 6 B	
5 001 ... 10 000 mm (196.89 ... 393.70 inch)	9 R 6 C	
10 001 ... 15 000 mm (393.74 ... 590.55 inch)	9 R 6 D	
15 001 ... 20 000 mm (590.59 ... 787.40 inch)	9 R 6 E	
20 001 ... 25 000 mm (787.44 ... 984.25 inch)	9 R 6 F	
25 001 ... 30 000 mm (984.29 ... 1 181.10 inch)	9 R 6 G	
30 001 ... 35 000 mm (1 181.14 ... 1 377.95 inch)	9 R 6 H	
35 001 ... 40 000 mm (1 377.99 ... 1 574.80 inch)	9 R 6 J	
40 001 ... 45 000 mm (1 574.84 ... 1 771.65 inch)	9 R 6 K	
45 001 ... 50 000 mm (1 771.69 ... 1 968.50 inch)	9 R 6 L	
50 001 ... 55 000 mm (1 968.54 ... 2 165.35 inch)	9 R 6 M	
55 001 ... 65 000 mm (2 165.39 ... 2 559.06 inch)	9 R 6 N	
		<b>Further designs (mandatory)</b>
		Please add "-Z" to Article No. and specify Order code(s).
		<b>Supplementary electronics</b>
		Without <b>A00</b>
		Additional current output 4 ... 20 mA <sup>10</sup> <b>A01</b>
		<b>Rod mounted</b>
		Without Rod, applicable for coax or cable probe types only <b>C00</b>
		Mounted <b>C01</b>
		Not mounted <b>C02</b>
		<b>Indicating/adjustment module</b>
		Without <b>E00</b>
		Mounted <b>E01</b>
		Laterally mounted <b>E02</b>
		<b>Language of display</b>
		German <b>L00</b>
		English <b>L01</b>
		French <b>L02</b>
		Dutch <b>L03</b>
		Italian <b>L04</b>
		Spanish <b>L05</b>
		Portuguese <b>L06</b>
		Russian <b>L07</b>
		Chinese <b>L08</b>
		Japanese <b>L09</b>
		<b>Operating instructions</b>
		German <b>M00</b>
		English <b>M01</b>
		French <b>M02</b>
		Spanish <b>M03</b>
		<b>Further designs (optional)</b>
		Please add "-Z" to Article No. and specify Order code(s).
		Enter the total insertion length in plain text description <b>Y01</b>
		Remote electronic cable lengths: 2 m (6.6 ft). Only available with Housing options Q2A and Q2B. <b>Y10</b>
		Remote electronic cable lengths: 5 m (16.4 ft). Only available with Housing options Q2A and Q2B. <b>Y11</b>
		Remote electronic cable lengths: 10 m (32.8 ft). Only available with Housing options Q2A and Q2B. <b>Y12</b>
		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. <b>Y17</b>
		Identification Label (measurement loop) foil, 40 characters max, add in plain text. To add more than one line use a coma "," for line break. <b>Y18</b>

## Level measurement

### Continuous level measurement Guided wave radar transmitters

#### SITRANS LG series

Selection and ordering data	Order code
Material Inspection certificate 3.1 of EN 10204	<b>C05</b>
3.1-Inspection Certificate for instrument (EN 10204) <sup>17)</sup>	<b>C12</b>
Inspection certificate 3.1 (EN 10204, NACE MR 0175) - material. <sup>17)18)</sup> Note: 316L probes include NACE MR 0175 and MR 0103, non 316L probes include MR 0175 only and plated flange designs are not available with NACE certificate.	<b>D07</b>
3.1-Inspection Certificate for instrument with test data (EN 10204) <sup>17)</sup>	<b>C25</b>
2.2-Factory certificate for material (EN 10204) <sup>17)</sup>	<b>C15</b>
Quality and test plan <sup>17)</sup>	<b>C26</b>
Dye penetration test, results confirmed via a 3.1 certificate/instrument (EN10204) <sup>17)</sup>	<b>C13</b>
X-ray test + 3.1 certificate/instrument <sup>17)</sup>	<b>C14</b>
Positive material identification test + 3.1 certificate/instrument <sup>17)</sup>	<b>C16</b>
Roughness test + 3.1 certificate/instrument <sup>17)</sup>	<b>C18</b>
Pressure test + 3.1 certificate/instrument <sup>17)</sup>	<b>C31</b>
Helium leak test + 3.1 certificate/instrument <sup>17)</sup>	<b>C32</b>
Pressure test according to Norsok + 3.1 certificate/instrument <sup>17)</sup>	<b>C61</b>
5 point calibration certificate (min. length 500 mm) <sup>17)</sup>	<b>C62</b>
<b>Operating Instructions</b>	
All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>	
<b>Accessories</b>	
SITRANS LG, GWR sensor Display Module	Article No. <b>A5E34143449</b>
SITRANS LG, two-wire 4 ... 20 mA/HART electronic	<b>A5E35637821</b>
SITRANS LG, USB communicator	<b>A5E35192015</b>
SITRANS LG, Mounting eye M12 x 20	<b>PBD:51041448</b>
SITRANS LG, Mounting spring	<b>PBD:51041449</b>
Siemens Intrinsically Safe Barrier (DC powered), ATEX II 1 G EEx ia	<b>7NG4124-0AA00</b>
SITRANS RD100, loop powered display - see Chapter 7	<b>7ML5741-.....-</b>
SITRANS RD150, remote digital display for 4 ... 20 mA and HART devices - see Chapter 7	<b>7ML5742-.....-</b>
SITRANS RD200, universal input display with Modbus conversion - see Chapter 7	<b>7ML5740-.....-</b>
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7	<b>7ML5744-.....-</b>
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.

- <sup>1)</sup> Not available with Plastic and Stainless steel (electropolished) Housing/Protection/Cable options and certain glands.
- <sup>2)</sup> Available only with Double chamber, Metallic Housing/Protection/Cable options and certain glands.
- <sup>3)</sup> Not available with Remote and Stainless steel (electropolished) Housing/Protection/Cable options and certain glands.
- <sup>4)</sup> Not available with Stainless steel (electropolished) Housing/Protection/Cable options and certain glands.
- <sup>5)</sup> Not available with Seal/Process temperature option C.
- <sup>6)</sup> Not available with Housing/Protection/Cable options W, X, Y, and U.
- <sup>7)</sup> Not available with Probe version/Material option E.
- <sup>8)</sup> Available only with certain Electronics options.
- <sup>9)</sup> Available only with Supplementary electronic option A00.
- <sup>10)</sup> Not available with Indicating/adjustment module option E02.
- <sup>11)</sup> Not available with Seal/Process temperature options B and E.
- <sup>12)</sup> Available only with Seal/Process temperature option C.
- <sup>13)</sup> Not available with Seal/Process temperature options A and D.
- <sup>14)</sup> Available only with Rod mounted option C00.
- <sup>15)</sup> Available only with Seal/Process temperature options A and D.
- <sup>16)</sup> Not available with Housing/Protection/Cable options Q2A and Q2B.
- <sup>17)</sup> Listed Certificates are not available with all configurations, please contact factory for more information.
- <sup>18)</sup> Available only with 316L Probes. NACE is not available with coated, plated, or hygienic connections.
- <sup>19)</sup> Available only with Single chamber, Aluminum and Stainless steel (precision casting) Housing/Protection/Cable options.

Note: Please consult manual for further details.

Selection and ordering data	Article No.	Article No.
<b>SITRANS LG270 Guided radar level transmitter</b> Continuous, contact, 60 m (197 ft) range. Monitors level and interface in liquids in extreme environments. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	<b>7ML5883-</b> Ord. code	<b>SITRANS LG270 Guided radar level transmitter</b> Continuous, contact, 60 m (197 ft) range. Monitors level and interface in liquids in extreme environments.
<b>Approvals</b> General purpose (CSA, FM, CE) <sup>32)</sup> Shipping approval <sup>1)2)3)4)5)</sup> Overfill protection (WHG; VLAREM) <sup>2)3)</sup> ATEX II 1G, 1/2G, 2G Ex ia IIC T6 <sup>2)3)2)</sup> ATEX II 1G, 1/2G, 2G Ex ia IIC + Overfill (WHG; VLAREM) <sup>2)3)</sup> ATEX II 1G, 1/2G, 2G Ex ia IIC T6 + shipping approval <sup>1)2)3)4)5)</sup> ATEX II 1G, 1/2G, 2G Ex ia IIC + ATEX II 1D, 1/2D, 2D IP6x <sup>2)7)7)</sup> ATEX II 1/2G, 2G Ex d ia IIC T6 <sup>2)5)6)8)32)</sup> ATEX II 1/2G, 2G Ex d ia IIC + shipping approval <sup>1)2)3)5)6)8)</sup> ATEX II 1/2G, 2G Ex d ia IIC + ATEX II 1/2D, 2D IP6x <sup>2)5)6)8)</sup> ATEX II 1/2G, 2G Ex d IIC T6 <sup>6)7)32)</sup> 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 <sup>2)3)</sup> ATEX II 1/2G, 2G Ex d IIC + ship approval <sup>1)2)3)5)6)7)</sup> ATEX II 1/2G, 2G Ex d IIC + ATEX II 1/2D, 2D IP6x <sup>2)6)7)</sup> ATEX II 1D, 1/2D, 2D IP6x T <sup>2)7)</sup> ATEX II 1/2G, II 2G Ex db IIC T6 ... T1 Ga/Gb, Gb + Overfill protection (WHG, VLAREM) <sup>6)7)32)</sup> IEC Ex ia IIC T6 <sup>2)</sup> IEC Ex ia IIC T6 + IEC IP6x T tD <sup>2)7)32)</sup> IEC Ex d ia IIC T6 <sup>2)5)6)8)32)</sup> IEC Ex d ia IIC T6 + IEC IP6x T tD <sup>2)5)6)8)</sup> IEC Ex d IIC T6 <sup>3)6)7)</sup> IEC Ex d IIC T6 + IEC IP6x T tD <sup>2)3)6)7)</sup> IEC Ex db IIC T6 ... T1 Ga/Gb, Gb + Ship approval <sup>2)3)5)6)7)9)</sup> IEC Ex ia IIC T6 ... T1 Ga, Ga/Gb, Gb + Ship approval <sup>2)9)12)</sup> IEC Ex d ia IIC T6 ... T1 Ga/Gb, Gb + Ship approval <sup>2)5)6)8)9)</sup> FM (NI) Class I, Div. 2, Groups A, B, C, D <sup>2)5)10)32)</sup> FM (NI) Class I, Div. 2, Groups A, B, C, D + ship approval <sup>1)2)3)5)8)</sup> FM (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F <sup>2)5)32)</sup> FM (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G + ship approval <sup>1)2)3)4)5)</sup> FM (XP-AIS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G <sup>2)5)6)8)32)</sup> FM (XP-AIS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G + shipping approval <sup>1)2)3)5)6)8)</sup> FM (XP) Class I, Div. 1, Groups A, B, C, D <sup>6)11)32)</sup> CSA (NI) Class I, Div. 2, Groups A, B, C, D; (DIP) Class II, III, Div. 1, Groups E, F, G <sup>3)6)7)</sup> CSA (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G <sup>2)3)</sup> CSA (XP-IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G <sup>2)3)5)6)8)</sup> CSA (XP) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G <sup>3)5)6)11)19)</sup> CSA (NI) Class I, II, III Div. 2, Groups A, B, C, D, F, G + Ship approval <sup>2)3)6)7)9)</sup>	<b>0 A</b> <b>0 B</b> <b>0 C</b> <b>0 E</b> <b>0 F</b> <b>0 G</b> <b>0 H</b> <b>0 J</b> <b>0 L</b> <b>0 M</b> <b>0 N</b> <b>0 W</b> <b>0 Q</b> <b>0 R</b> <b>0 S</b> <b>7 P</b> <b>0 T</b> <b>0 U</b> <b>1 A</b> <b>1 B</b> <b>1 C</b> <b>1 D</b> <b>7 C</b> <b>7 D</b> <b>7 E</b> <b>1 F</b> <b>1 G</b> <b>1 H</b> <b>1 J</b> <b>1 K</b> <b>1 L</b> <b>1 M</b> <b>1 N</b> <b>1 P</b> <b>1 Q</b> <b>1 R</b> <b>7 K</b>	<b>7 L</b> <b>7 M</b> <b>2 A</b> <b>2 B</b> <b>2 C</b> <b>2 D</b> <b>2 E</b> <b>2 F</b> <b>2 G</b> <b>3 A</b> <b>3 B</b> <b>3 C</b> <b>3 D</b> <b>3 E</b> <b>3 F</b> <b>3 G</b> <b>4 A</b> <b>6 A</b> <b>5 A</b> <b>5 B</b> <b>5 C</b> <b>5 D</b> <b>5 E</b> <b>5 F</b> <b>5 G</b>
		<b>Note: Version/Material, Process fitting/ Material, and Length options are available only with options of corresponding type.</b>
		<b>Version/Material</b> Probe exchangeable cable ø 2 mm (0.08 inch) with gravity weight/316 <sup>15)16)17)</sup> Probe exchangeable cable ø 2 mm (0.08 inch) center weight/316L <sup>15)17)18)</sup> Probe exchangeable cable ø 4 mm (0.16 inch) with gravity weight/316L <sup>15)16)17)</sup> Probe exchangeable cable ø 4 mm (0.16 inch) with center weight/316L <sup>15)17)18)</sup> Probe exchangeable rod ø 16 mm (0.63 inch)/316L <sup>16)19)20)</sup> Probe coax version ø 42.2 mm (1.66 inch) with multiple hole/316L <sup>16)17)20)</sup> Probe coax version ø 42.2 mm (1.66 inch); multiple hole; reference distances/316L <sup>16)17)20)21)26)</sup> Probe exchangeable cable ø 4 mm (0.16 inch) with gravity weight/ Alloy C22 (2.4602) <sup>22)30)</sup> Probe exchangeable rod ø 16 mm (0.63 inch)/Alloy C22 (2.4602) <sup>22)30)</sup> Coax version ø 42.2 mm (1.66 inch) with multiple hole/Alloy C22 (2.4602) <sup>22)30)</sup> Exchangeable rod, diameter 8 mm (0.32 inch)/316L <sup>19)23)</sup> Coax ø 21.3 mm (0.838 inch) with multiple hole/316L <sup>23)</sup>

## Level measurement

Continuous level measurement  
Guided wave radar transmitters

### SITRANS LG series

#### Selection and ordering data

#### Article No.

#### Article No.

SITRANS LG270 Guided radar level transmitter	7ML5883-	Ord. code
Continuous, contact, 60 m (197 ft) range. Monitors level and interface in liquids in extreme environments.		
<b>Process fitting/Material</b>		
Thread G 1 1/2" (DIN 3852-A) PN 400/316L <sup>20)</sup>	0 0	
Thread 1 1/2" NPT (ASME B1.20.1) PN 400/316L <sup>20)</sup>	0 1	
Thread G1 1/2" PN 400, DIN 3852-A/ Alloy C22 (2.4602)	0 2	
Thread 1 1/2" NPT PN 400, ASME B1.20.1/ Alloy C22 (2.4602)	0 3	
Flange DN 50 PN 40 Form C, DIN 2501/316L with Alloy C22 (2.4602) coating	0 4	
Flange DN 80 PN 40 Form C, DIN 2501/316L with Alloy C22 (2.4602) coating	0 5	
Flange DN 100 PN 16 Form C, DIN 2501/316L with Alloy C22 (2.4602) coating	0 6	
Flange DN 50 PN 40 Form B1, EN 1092-1/316L with Alloy C22 (2.4602) coating	0 7	
Flange DN 50 PN 63 Form B1, EN 1092-1/316L with Alloy C22	0 8	
Flange DN 50 PN 40 Form C, DIN 2501/316L	1 0	
Flange DN 50 PN 40 form V13, DIN 2513/316L	1 1	
Flange DN 65 PN 64 Form V13, DIN 2501/316L	1 2	
Flange DN 80 PN 40 Form C, DIN 2501/316L	1 3	
Flange DN 80 PN 40 Form V13, DIN 2501/316L	1 4	
Flange DN 80 PN 100 Form L, DIN 2501/316L <sup>20)</sup>	1 5	
Flange DN 100 PN 16 Form C, DIN 2501/316L	1 6	
Flange DN 100 PN 16 Form V13, DIN 2501/316L	1 7	
Flange DN 100 PN 40 Form C, DIN 2501/316L	1 8	
Flange DN 100 PN 40 Form V13, DIN 2513/316L	2 0	
Flange DN 150 PN 16 Form C, DIN 2501/316L	2 1	
Flange DN 50 PN 40 EN 1092-1 Form B1/316L	2 2	
Flange DN 100 PN 160 GOST 12815-80.7/316L <sup>20)</sup>	2 3	
Flange 2" 150 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	2 4	
Flange 2" 300 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	2 5	
Flange 2" 600 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	2 6	
Flange 3" 150 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	2 7	
Flange 3" 300 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	2 8	
Flange DN 80 PN 160 Form C, DIN 2501/316L <sup>20)</sup>	6 0	
Flange DN 80 PN 250 Form L, DIN 2501/316L <sup>20)</sup>	6 1	
Flange DN 50 PN 160, EN 1092-1 Form B1/316L <sup>20)</sup>	6 2	
Flange DN 50 PN 160, EN 1092-1 Form B2/316L <sup>20)</sup>	6 3	
Flange DN 50 PN 32, EN 1092-1 Form B1/316L <sup>20)</sup>	6 4	
Flange DN 65 PN 250, EN 1092-1 Form B1/316L <sup>20)</sup>	6 5	
Flange DN 100 PN 160, EN 1092-1 Form B2/316L <sup>20)</sup>	6 6	
Flange DN 80 PN 63, EN 1092-1 Form B2/316L	6 7	
Flange 4" 600 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	6 8	

SITRANS LG270 Guided radar level transmitter	7ML5883-	Ord. code
Continuous, contact, 60 m (197 ft) range. Monitors level and interface in liquids in extreme environments.		
Flange 2" 150 lb RF, ASME B16.5/316L	3 0	
Flange 2" 300 lb RF, ASME B16.5/316L	3 1	
Flange 2" 600 lb RF, ASME B16.5/316L	3 2	
Flange 2" 1 500 lb RF, ASME B16.5/316L	3 3	
Flange 3" 150 lb RF, ASME B16.5/316L	3 4	
Flange 3" 300 lb RF, ASME B16.5/316L	3 5	
Flange 3" 600 lb RF, ASME B16.5/316L	3 6	
Flange 3" 900 lb RF, ASME B16.5/316L	3 7	
Flange 3" 2 500 lb RF, ASME B16.5/316L	3 8	
Flange 3 1/2" 600 lb RF, ASME B16.5/316L	4 0	
Flange 4" 150 lb RF, ASME B16.5/316L	4 1	
Flange 4" 300 lb RF, ASME B16.5/316L	4 2	
Flange 4" 600 lb RF, ASME B16.5/316L	4 3	
Flange 6" 150 lb RF, ASME B16.5/316L	4 4	
Flange 6" 300 lb RF, ASME B16.5/316L	4 5	
Flange 6" 600 lb RF, ASME B16.5/316L	4 6	
Flange 2" 150 lb Fisher special return/316L	4 7	
Flange 3" 900 lb RJF, ASME B16.5/ Alloy C22 (2.4602)	4 8	
Flange 2" 900 lb RF, ASME B16.5/316L	5 0	
Flange 3" 1 500 lb RF, ASME B16.5/316L	5 1	
Flange 4" 900 lb RF, ASME B16.5/316L	5 2	
Flange 4" 1 500 lb RF, ASME B16.5/316L	5 3	
Flange 4" 2 500 lb RJF, ASME B16.5/316L <sup>20)</sup>	5 4	
Flange 4" 1500 lb RJF, ASME B16.5/316L <sup>20)</sup>	5 5	
Flange 3" 600 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	5 6	
Flange 4" 150 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	5 7	
Flange 4" 300 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	5 8	
Flange 6" 150 lb RF, ASME B16.5/316L with Alloy C22 (2.4602) coating	7 0	
Flange DN 50 PN 40 Form C, DIN 2501/Alloy C22 (2.4602) solid	7 1	
Flange DN 100 PN 16 Form C, DIN 2501/C22 solid	7 2	
Flange DN 100 PN 40 Form N, DIN 2501/Alloy C22 (2.4602) solid	7 3	
Flange DN 50 PN 40 Form B1, EN 1092-1/Alloy C22 (2.4602) solid	7 4	
Flange 2" 150 lb RF, ASME B16.5/ Alloy C22 (2.4602) solid	7 5	
Flange 2" 300 lb RF, ASME B16.5/ Alloy C22 (2.4602) solid	7 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	
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	

**Level measurement**  
Continuous level measurement  
Guided wave radar transmitters

**SITRANS LG series**

Selection and ordering data	Article No.			Article No.		
<b>SITRANS LG270 Guided radar level transmitter</b>	<b>7ML5883-</b>		Ord. code	<b>SITRANS LG270 Guided radar level transmitter</b>	<b>7ML5883-</b>	Ord. code
Continuous, contact, 60 m (197 ft) range. Monitors level and interface in liquids in extreme environments.				Continuous, contact, 60 m (197 ft) range. Monitors level and interface in liquids in extreme environments.		
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 <sup>24)</sup>	9 0		L 2 C			
Flange 2½" 1 500 lb RF, ASME B16.5/316/316L	9 0		L 2 D			
Flange 2" 600 lb RF, ASME B16.5/316L (Norsok) <sup>34)35)</sup>	9 0		L 2 E			
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/PN 100/316L	9 0		L 3 F			
Thread 2" NPT, ASME B1.20.1/PN 100/316L	9 0		L 3 G			
Thread G ¾ PN100, DIN 3852-A/316L <sup>31)</sup>	9 0		L 3 H			
Thread ¾ NPT PN100, ASME B1.20.1/31 <sup>31)</sup>	9 0		L 3 J			
<b>Electronics</b>						
Two-wire 4 ... 20 mA/HART	0					
Four-wire Modbus <sup>5)6)8)</sup>	1					
Two-wire 4 ... 20 mA/HART with SIL qualification <sup>5)</sup>	2					
Four-wire 4 ... 20 mA/HART; 90 ... 253 V AC; 50/60 Hz <sup>5)6)8)</sup>	3					
Four-wire 4 ... 20 mA/HART; 9.6 ... 48 V DC; 20 ... 42 V AC <sup>5)6)8)</sup>	4					
PROFIBUS PA <sup>5)</sup>	5					
FOUNDATION Fieldbus <sup>5)</sup>	6					
<b>Seal/Second line of defense/ Process temperature</b>						
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) <sup>21)</sup>		C				
PEEK-FFKM (Kalrez 6375) /with glass seal/ -20...+250 °C (-4 ... +482 °F) <sup>21)</sup>		D				
<b>Housing/Protection/Cable</b>						
<b>Note: for installation of remote display, 7ML5840, with LG two chamber housing options, contact PVC</b>						
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	
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 <sup>6)</sup>					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 <sup>6)</sup>					Z	Q 2 B



## Level measurement

Continuous level measurement  
Guided wave radar transmitters

### SITRANS LG series

#### Selection and ordering data

#### Article No.

#### Article No.

##### SITRANS LG270 Guided radar level transmitter

Continuous, contact, 60 m (197 ft) range.  
Monitors level and interface in liquids in extreme environments.

##### Lengths

###### Rod ø 16 mm/316L

300 mm (11.81 inch) <sup>25)</sup>	0
500 mm (19.69 inch) <sup>25)</sup>	1
501 ... 1 000 mm (19.72 ... 39.37 inch) <sup>25)</sup>	2
1 001 ... 2 000 mm (39.41 ... 78.74 inch) <sup>25)</sup>	3
2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>25)</sup>	4
3 001 ... 4 000 mm (118.15 ... 157.48 inch) <sup>25)</sup>	5
4 001 ... 5 000 mm (157.52 ... 196.85 inch) <sup>25)</sup>	6
5 001 ... 6 000 mm (196.89 ... 236.22 inch) <sup>25)</sup>	7

###### Rod ø 16 mm/C22

501 ... 1 000 mm (19.72 ... 39.37 inch) <sup>25)</sup>	9 R 1 A
1 001 ... 2 000 mm (39.41 ... 78.74 inch) <sup>25)</sup>	9 R 1 B
2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>25)</sup>	9 R 1 C
3 001 ... 4 000 mm (118.15 ... 157.48 inch) <sup>25)</sup>	9 R 1 D
4 001 ... 5 000 mm (157.52 ... 196.85 inch) <sup>25)</sup>	9 R 1 E
5 001 ... 6 000 mm (196.89 ... 236.22 inch) <sup>25)</sup>	9 R 1 F

###### Rod ø 8 mm/316L

300 ... 1 000 mm (11.81 ... 39.37 inch)	9 R 1 H
1 001 ... 2 000 mm (39.41 ... 78.74 inch)	9 R 1 J
2 001 ... 3 000 mm (78.78 ... 118.11 inch)	9 R 1 K
3 001 ... 4 000 mm (118.15 ... 157.48 inch)	9 R 1 L
4 001 ... 5 000 mm (157.52 ... 196.85 inch)	9 R 1 M
5 001 ... 6 000 mm (196.89 ... 236.22 inch)	9 R 1 N

###### Cable lengths ø 2 or 4 mm/316L

501 ... 1 000 mm (19.72 ... 39.37 inch)	9 R 2 E
1 000 ... 5 000 mm (39.37 ... 196.85 inch)	9 R 2 F
5 001 ... 10 000 mm (196.89 ... 393.70 inch)	9 R 2 G
10 001 ... 15 000 mm (393.74 ... 590.55 inch)	9 R 2 H
15 001 ... 20 000 mm (590.59 ... 787.40 inch)	9 R 2 J
20 001 ... 25 000 mm (787.44 ... 984.25 inch)	9 R 2 K
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

##### SITRANS LG270 Guided radar level transmitter

Continuous, contact, 60 m (197 ft) range.  
Monitors level and interface in liquids in extreme environments.

##### Cable lengths ø 4 mm/ C22

501 ... 1 000 mm (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
45 001 ... 50 000 mm (1 771.69 ... 1 968.50 inch)	9 R 4 L
50 001 ... 55 000 mm (1 968.54 ... 2 165.35 inch)	9 R 4 M
55 001 ... 60 000 mm (2 165.39 ... 2 362.20 inch)	9 R 4 N

###### Coax ø 42.2 mm/316L

300 ... 1 000 mm (11.81 ... 39.37 inch) <sup>25)</sup>	9 R 3 G
1 001 ... 2 000 mm (39.41 ... 78.74 inch) <sup>25)26)</sup>	9 R 3 H
2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>25)</sup>	9 R 3 J
3 001 ... 4 000 mm (118.15 ... 157.48 inch) <sup>25)</sup>	9 R 3 K
4 001 ... 5 000 mm (157.52 ... 196.85 inch) <sup>25)</sup>	9 R 3 L
5 001 ... 6 000 mm (196.89 ... 236.22 inch) <sup>25)</sup>	9 R 3 M

###### Coax ø 42.2 mm/C22

300 ... 1 000 mm (11.81 ... 39.37 inch) <sup>25)</sup>	9 R 3 Q
1 001 ... 2 000 mm (39.41 ... 78.74 inch) <sup>25)26)</sup>	9 R 3 R
2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>25)</sup>	9 R 3 S
3 001 ... 4 000 mm (118.15 ... 157.48 inch) <sup>25)</sup>	9 R 3 T
4 001 ... 5 000 mm (157.52 ... 196.85 inch) <sup>25)</sup>	9 R 3 U
5 001 ... 6 000 mm (196.89 ... 236.22 inch) <sup>25)</sup>	9 R 3 V

###### Coax ø 21.3 mm/316L

300 ... 1 000 mm (11.81 ... 39.37 inch)	9 R 5 A
1 001 ... 2 000 mm (39.41 ... 78.74 inch)	9 R 5 B
2 001 ... 3 000 mm (78.78 ... 118.11 inch)	9 R 5 C
3 001 ... 4 000 mm (118.15 ... 157.48 inch)	9 R 5 D
4 001 ... 5 000 mm (157.52 ... 196.85 inch)	9 R 5 E
5 001 ... 6 000 mm (196.89 ... 236.22 inch)	9 R 5 F



Selection and ordering data	Order code	Order code
<i>Further designs (mandatory)</i>		<i>Further designs (optional)</i>
Please add <b>"-Z"</b> to Article No. and specify Order code(s).		Please add <b>"-Z"</b> to Article No. and specify Order code(s).
<b>Supplementary electronics</b>		
Without	<b>A00</b>	Enter the total insertion length in plain text description
Additional current output 4 ... 20 mA <sup>6)</sup>	<b>A01</b>	Y02 rigid part is 100 mm, only applicable for cable versions
<b>Dimensions centering weight (diameter/height)</b>		Reference probe G length of reference distance = 260 mm/10.24 inches (note blanking 450 mm required with min. probe 1 000 mm)
Without	<b>B00</b>	Reference probe G length of reference distance = 500 mm/19.69 inches (note blanking 690 mm required with min. probe 1 250 mm)
ø 40/30 mm	<b>B01</b>	Reference probe G length of reference distance = 750 mm/29.53 inches (note blanking 940 mm required with min. probe 1 500 mm)
ø 45/30 mm (for 2 inch tubes)	<b>B02</b>	Remote electronic cable lengths: 2 m (6.6 ft). Only available with Housing options Q2A and Q2B
ø 75/30 mm (for 3 inch tubes)	<b>B03</b>	Remote electronic cable lengths: 5 m (16.4 ft). Only available with Housing options Q2A and Q2B
ø 95/30 mm (for 4 inch tubes)	<b>B04</b>	Remote electronic cable lengths: 10 m (32.8 ft). Only available with Housing options Q2A and Q2B
ø 40 mm/30 mm	<b>B05</b>	Customer specific adjustment (unit value, 100 % distance from seal, 0 % distance from seal)
ø 1.57 inch/1.18 inch (for 2 inch Schedule 160)	<b>B06</b>	Cleaning included certificate: oil, grease and silicone free
ø 45 mm/30 mm (for 2 inch tubes)	<b>B07</b>	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.
ø 1.77 inch/1.18 inch (for 2 inch Schedule 40/80)	<b>B08</b>	Identification Label (measurement loop) foil, 40 characters max, add in plain text. To add more than one line use a coma "," for line break.
ø 75 mm/30 mm (for 3 inch tubes)		Material Inspection certificate 3.1 of EN 10204
ø 2.95 inch/1.18 inch (for 3 inch Schedule 10/40)		3.1-Inspection Certificate for instrument (EN 10204) <sup>27)</sup>
ø 95 mm/30 mm (for 4 inch tubes)		Inspection certificate 3.1 (EN 10204, NACE MR 0175) - material. <sup>27)</sup> Note: 316L probes include NACE MR 0175 and MR 0103, non 316L probes include MR 0175 only and plated flange designs are not available with NACE certificate.
ø 3.74 inch/1.18 inch (for 4 inch Schedule 80)		3.1-Inspection Certificate for instrument with test data (EN 10204) <sup>27)</sup>
<b>Rod mounted</b>		2.2-Factory certificate for material (EN 10204) <sup>27)</sup>
Without Rod, applicable for coax or cable probe types only	<b>C00</b>	Quality and test plan <sup>27)</sup>
Mounted	<b>C01</b>	Dye penetration test, results confirmed via a 3.1 certificate/instrument (EN10204) <sup>27)</sup>
Not mounted	<b>C02</b>	X-ray test + 3.1 certificate/instrument <sup>27)</sup>
<b>Indicating/adjustment module</b>		Positive material identification test + 3.1 certificate/instrument <sup>27)</sup>
Without	<b>E00</b>	Roughness test + 3.1 certificate/instrument <sup>27)</sup>
Mounted	<b>E01</b>	Pressure test + 3.1 certificate/instrument <sup>27)</sup>
Laterally mounted	<b>E02</b>	Helium leak test + 3.1 certificate/instrument <sup>27)</sup>
<b>Language of display</b>		Pressure test according to Norsok + 3.1 certificate/instrument <sup>27)33)</sup>
German	<b>L00</b>	5 point calibration certificate (min. length 500 mm) <sup>27)</sup>
English	<b>L01</b>	Pressure test (acc. to ASME B31.1), incl. 3.1 Inspection certificate <sup>28)</sup>
French	<b>L02</b>	Certificate: Approval for steam boiler according to EN 12952-11, EN 12953-g <sup>29)</sup>
Dutch	<b>L03</b>	
Italian	<b>L04</b>	
Spanish	<b>L05</b>	
Portuguese	<b>L06</b>	
Russian	<b>L07</b>	
Chinese	<b>L08</b>	
Japanese	<b>L09</b>	
<b>Operating instructions</b>		
German	<b>M00</b>	
English	<b>M01</b>	
French	<b>M02</b>	
Spanish	<b>M03</b>	

## Level measurement

Continuous level measurement  
Guided wave radar transmitters

### SITRANS LG series

Selection and ordering data	Order code
<b>Operating Instructions</b>	
All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>	
<b>Accessories</b>	
SITRANS LG, GWR sensor Display Module	<b>A5E34143449</b>
SITRANS LG, two-wire 4 ... 20 mA/HART electronic	<b>A5E35637821</b>
SITRANS LG, USB communicator	<b>A5E35192015</b>
SITRANS LG, Mounting eye M12 x 20	<b>PBD:51041448</b>
SITRANS LG, Mounting spring	<b>PBD:51041449</b>
Siemens Intrinsically Safe Barrier (DC powered), ATEX II 1 G EEx ia	<b>7NG4124-0AA00</b>
SITRANS RD100, loop powered display - see Chapter 7	<b>7ML5741-.....-</b>
SITRANS RD150, remote digital display for 4 ... 20 mA and HART devices - see Chapter 7	<b>7ML5742-.....-....</b>
SITRANS RD200, universal input display with Modbus conversion - see Chapter 7	<b>7ML5740-.....-..</b>
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7	<b>7ML5744-.....-..</b>
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 certain Electronic options.
- 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) Not available with Indicating/adjusting module E02.
- 7) Not available with Plastic and Stainless Steel (electropolished) Housing/Protection/Cable options and certain glands.
- 8) Available only with Double chamber, Metallic Housing/Protection/Cable options and certain glands.
- 9) Available only with Version/Material options A, B, C, D, and H.
- 10) Not available with Remote and Stainless Steel (electropolished) Housing/Protection/Cable options and certain glands.
- 11) Available only with Single chamber, Aluminum and Stainless steel (precision casting) Housing/Protection/Cable options.
- 12) Available only with Housing/Protection/Cable options N, P, V, and Q2A.
- 13) Not available with Housing/Protection/Cable options W, X, Y, and J.
- 14) Available only with Housing/Protection/Cable options C, E, L, Q.
- 15) Not available with Seal/Process temperature option C.
- 16) Available only with Dimensions centering weight option B00.
- 17) Available only with Rod mounted option C00.
- 18) Not available with Dimensions centering weight option B00.
- 19) Not available with Rod mounted option C00.
- 20) Not available with Seal/Process temperature options C and D.
- 21) Not available with Remote Housing/Protection/Cable options.
- 22) Not available with Seal/Process temperature options B and D.
- 23) Available only with Seal/Process temperature option D.
- 24) Available only with Seal/Process temperature options A, B, and C.
- 25) Not available with Order code Y02.
- 26) Accuracy is application dependent, please consult factory.
- 27) Listed Certificates are not available with all configurations, please contact factory for more information.
- 28) Available only with ASME Process fitting/Material options.
- 29) Available with Version/Material options G, L, M and Electronic options 2 and 6.
- 30) Available only with Alloy C22 Process fitting/Material options.
- 31) Available only with Version/Material option M.
- 32) Available only with some Version/Material options.
- 33) Available only with Norsok Process fitting options.
- 34) Available only with Seal/Second line of defense/Process temperature options A and B.
- 35) Available only with 316L probe Version/material options. Nace not available with coated, plated, or hygienic connections.

Note: Please consult manual for further details.

Selection and ordering data	Article No.	Article No.	
<b>SITRANS LG Remote Interface</b> Provides remote display and configuration for SITRANS LG series guided radar level transmitters. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5840- - - - - - 0	<b>SITRANS LG Replacement Probes</b> For use with SITRANS LG series guided radar level transmitters. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5841- - - - - - 0
<b>Note: for installation of remote display, 7ML5840, with LG two chamber housing options, contact PVC</b>		<b>Instrument</b> LG240 <sup>4)</sup> 0 LG250 <sup>6)</sup> 1 LG260 <sup>7)</sup> 2 LG270 <sup>9)10)</sup> 3	
<b>Approval</b> For Ex-free area 0 A ATEX II 1G, 2G, Ex ia IIC T6 Ga, Gb 0 C ATEX II 2G, Ex d IIC T6 Gb <sup>1)</sup> 0 E IEC Ex ia IIC T6 Ga, Gb 0 F IEC Ex d IIC T6 Gb <sup>1)</sup> 0 G cCSA <sub>US</sub> (NI) Class I, Div. 2, Groups A, B, C, D; (DIP) Class II, III, Div. 1, Groups E, F, G 0 H cCSA <sub>US</sub> (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G 0 J cCSA <sub>US</sub> (XP) Class I, Div. 1, Groups A, B, C, D <sup>1)</sup> 0 K INMETRO Ex ia IIC T6 Ga, Gb 0 L INMETRO Ex d IIC T6 Gb <sup>1)</sup> 0 M Shipping Approval (DNV/GL) <sup>6)</sup> 0 N ATEX II 1G, 2G Ex ia IIC T6 Ga, Gb + Ship approval 0 P ATEX II 2G Ex db IIC T6 Gb + Ship approval <sup>1)</sup> 0 Q IEC Ex ia IIC T6 Ga, Gb + Ship approval 0 R IEC Ex db IIC T6 Gb + Ship approval <sup>1)</sup> 0 S cCSA <sub>US</sub> (IS) Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G + Ship approval 0 T cCSA <sub>US</sub> (XP) Class I, Div. 1, Groups A, B, C, D + Ship approval <sup>1)</sup> 0 U		<b>Probe Type<sup>3)</sup></b> Exchangeable cable ø 2 mm with gravity weight/316 <sup>1)11)</sup> A A Exchangeable cable ø 2 mm center weight/316 <sup>2)11)</sup> A C Exchangeable cable ø 4 mm without weight/316 <sup>1)11)</sup> A D Exchangeable cable ø 4 mm with gravity weight/316 <sup>1)11)</sup> A E Exchangeable cable ø 4 mm with center weight/316 <sup>2)11)</sup> A G Exchangeable cable ø 6 mm with gravity weight/316 <sup>1)8)11)</sup> A H Exchangeable rod ø 8 mm/316L <sup>1)</sup> A P Exchangeable rod ø 8 mm/1.4435 (acc. to Basle Standard) <sup>1)</sup> A Q Exchangeable rod ø 12 mm/316L <sup>1)</sup> A U Exchangeable rod ø 16 mm/316L <sup>1)</sup> A W Exchangeable coated cable ø4 mm with uncoated centering weight / PFA and 316 <sup>1)12)</sup> B A	
<b>Electronics</b> Digital (I <sup>2</sup> C communication) A		<b>Process fitting</b> Thread less than or equal to 1½ inch 0 Thread greater than or equal to 2 inch 1 Flange less than DN 50 or 2 inch 2 Flange greater or equal to DN 50 or 2 inch or hygienic fitting (not for safety ingold 25 x 46 mm) 3	
<b>Housing</b> Plastic <sup>2)4)</sup> 0 Aluminum <sup>3)5)</sup> 1 Stainless Steel (precision casting) <sup>3)5)</sup> 2		<b>Dimension centering weight</b> Without 0 ø 40 mm/30 mm 1 ø 45 mm/30 mm (for 2 inch tubes) 2 ø 75 mm/30 mm (for 3 inch tubes) 3 ø 95 mm/30 mm (for 4 inch tubes) 4 ø 1.57 inch/1.18 inch (for 2 inch Schedule 160) 5 ø 1.77 inch/1.18 inch (for 2 inch Schedule 40/80) 6 ø 2.95 inch/1.18 inch (for 3 inch Schedule 10/40) 7 ø 3.74 inch/1.18 inch (for 4 inch Schedule 80) 8	
<b>Housing protection</b> IP66/IP67 NEMA 4X 0 IP66/IP68 NEMA 6P (0.2 bar) 1		<b>Certificates</b> Without 0 2.2 Material certificate 1 3.1 Material certificate 2	
<b>Cable entry</b> M20 x 1.5/ Blind plug 3 ½" NPT/ Blind plug 5			
<b>Display</b> Without A Mounted B			
<b>Mounting</b> For wall mounting with Aluminum or stainless steel housing A For carrier rail and wall mounting with plastic housing B For carrier rail with Aluminum or stainless steel housing C For tube mounting (29 ... 60 mm) including mounting material D			
<b>Certificates</b> None 0 3.1 Certificate/Instrument with test data 1 Quality and Test plan 2			

1) Available only with Housing options 1 and 2.

2) Available only with Housing option 0.

3) Available only with Housing option 1.

4) Available only with Mounting options B and D.

5) Not available with Mounting option B.

6) Shipping approval is only available with housing options 0 and 1.

## Level measurement

Continuous level measurement  
Guided wave radar transmitters

### SITRANS LG series

#### Selection and ordering data

#### Article No.

#### Article No.

##### SITRANS LG Replacement Probes

For use with SITRANS LG series guided radar level transmitters.

##### Lengths

###### Rod ø 8 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)  
5 001 ... 6 000 mm (196.89 ... 236.22 inch)

###### Rod ø 12 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)  
5 001 ... 6 000 mm (196.89 ... 236.22 inch)

###### Rod ø 16 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)  
5 001 ... 6 000 mm (196.89 ... 236.22 inch)

###### Cable Lengths ø 2 mm and 4 mm/316

501 ... 1 000 mm (19.72 ... 39.37 inch)  
1 001 ... 5 000 mm (39.41 ... 196.85 inch)  
5 000 ... 10 000 mm (196.89 ... 393.70 inch)  
10 001 ... 15 000 mm (393.74 ... 590.55 inch)  
15 001 ... 20 000 mm (590.59 ... 787.40 inch)  
20 001 ... 25 000 mm (787.44 ... 984.25 inch)  
25 001 ... 30 000 mm  
(984.29 ... 1 181.10 inch)  
30 001 ... 35 000 mm  
(1 181.14 ... 1 377.95 inch)  
35 001 ... 40 000 mm  
(1 377.99 ... 1 574.80 inch)  
40 001 ... 45 000 mm  
(1 574.84 ... 1 771.65 inch)  
45 001 ... 50 000 mm  
(1 771.69 ... 1 968.50 inch)  
50 001 ... 55 000 mm  
(1 968.54 ... 2 165.35 inch)  
55 001 ... 60 000 mm  
(2 165.39 ... 2 362.20 inch)  
60 001 ... 65 000 mm  
(2 362.24 ... 2 559.06 inch)  
65 001 ... 70 000 mm  
(2 559.09 ... 2 755.91 inch)  
70 001 ... 75 000 mm  
(2 755.94 ... 2 952.76 inch)

7ML5841-

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##### SITRANS LG Replacement Probes

For use with SITRANS LG series guided radar level transmitters.

##### Cable Lengths ø 6 mm/316

501 ... 1 000 mm (19.72 ... 39.37 inch)  
1 001 ... 5 000 mm (39.41 ... 196.85 inch)  
5 000 ... 10 000 mm (196.89 ... 393.70 inch)  
10 001 ... 15 000 mm (393.74 ... 590.55 inch)  
15 001 ... 20 000 mm (590.59 ... 787.40 inch)  
20 001 ... 25 000 mm (787.44 ... 984.25 inch)  
25 001 ... 30 000 mm  
(984.29 ... 1 181.10 inch)  
30 001 ... 35 000 mm  
(1 181.14 ... 1 377.95 inch)  
35 001 ... 40 000 mm  
(1 377.99 ... 1 574.80 inch)  
40 001 ... 45 000 mm  
(1 574.84 ... 1 771.65 inch)  
45 001 ... 50 000 mm  
(1 771.69 ... 1 968.50 inch)  
50 001 ... 55 000 mm  
(1 968.54 ... 2 165.35 inch)  
55 001 ... 60 000 mm  
(2 165.39 ... 2 362.20 inch)  
60 001 ... 65 000 mm  
(2 362.24 ... 2 559.06 inch)  
65 001 ... 70 000 mm  
(2 559.09 ... 2 755.91 inch)  
70 001 ... 75 000 mm  
(2 755.94 ... 2 952.76 inch)

##### Cable Lengths ø 4 mm/316

300 ... 1 000 mm (12 ... 39.37 inch)  
1 001 ... 2 000 mm (39.41 ... 78.74 inch)  
2 001 ... 5 000 mm (78.77 ... 196.85 inch)  
5 001 ... 10 000 mm (196.89 ... 393.70 inch)  
10 001 ... 15 000 mm (393.74 ... 590.55 inch)  
15 001 ... 20 000 mm (590.59 ... 787.40 inch)  
20 001 ... 25 000 mm (787.44 ... 984.25 inch)  
25 001 ... 32 000 mm  
(984.29 ... 1 259.84 inch)

##### Further designs

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

Enter the total insertion length in plain text  
description

Total length: Enter the total length of rigid  
part (range 100 ... 1 000 mm LG270  
limited to 100 mm) (cable versions only)

- 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) Not available with Probe type options AH, AQ, and AW.
- 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.
- 12) Available only with Dimension centering weight options 1 ... 4.

7ML5841-

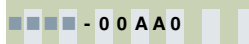
0

BM  
BN  
BP  
BQ  
BR  
BS  
BT  
BU  
BV  
BW  
BX  
BY  
CA  
CB  
CC  
CD  
DA  
DB  
DC  
DD  
DE  
DF  
DG  
DH

Order code

Y01

Y02

Selection and ordering data	Article No.
<b>SITRANS LG Spacers</b> For use with SITRANS LG series guided radar level transmitters. <a href="#">Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</a>	<b>7ML5842-</b> 
<b>Instrument</b> LG240 <sup>1)</sup> LG250 <sup>2)</sup> LG260 <sup>3)</sup> LG270 <sup>3)</sup>	<b>0</b> <b>1</b> <b>2</b> <b>3</b>
<b>Version/Material</b> Cable ø 4 mm/ PFA <sup>4)</sup> Rod ø 8 mm including fastening/ PEEK can be shortened <sup>5)</sup> Rod ø 10 mm/ PFA <sup>4)</sup> Rod ø 12 mm including fastening/ PEEK can be shortened <sup>5)</sup> Rod ø 16 mm, cable with gravity weight, including fastening/ PEEK can be shortened <sup>5)7)</sup> Cable ø 2 mm including fastening/ PEEK and 316L Rod ø 16 mm including fastening/ 1.4568 (AISI 631) flexible <sup>8)</sup> Rod ø 8 mm including fastening/ PTFE can be shortened <sup>5)</sup> Rod ø 12 mm including fastening/ 1.4568 (AISI 631) flexible <sup>5)</sup>	<b>AA</b> <b>AB</b> <b>AC</b> <b>AD</b> <b>AE</b> <b>AF</b> <b>AG</b> <b>AH</b> <b>AG</b>
<b>Tube diameter</b> 50 mm (2 inch) up to 100 mm (4 inch) 49.2 mm (1.9 inch) up to 56.3 mm (2.2 inch) 66.6 mm (2.6 inch) up to 84.9 mm (3.3 inch)	<b>1</b> <b>2</b> <b>3</b>

- 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.

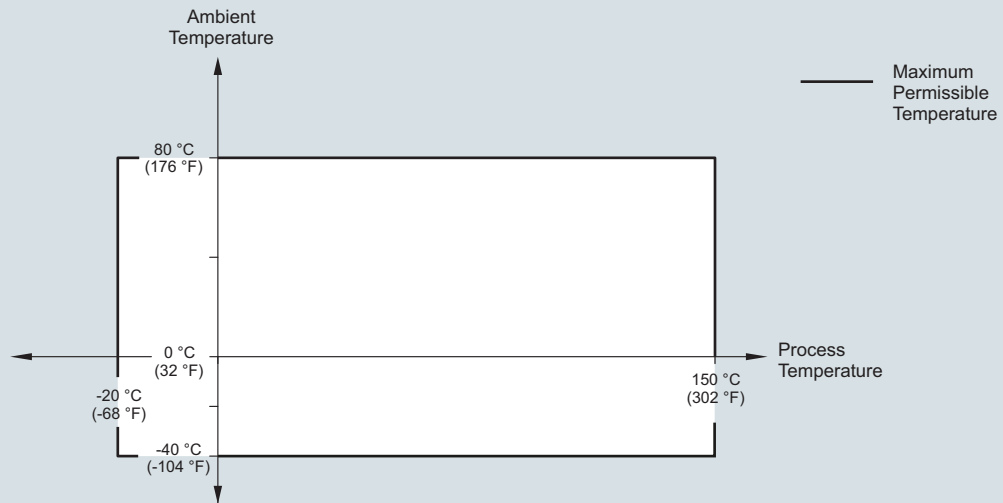
## Level measurement

Continuous level measurement  
Guided wave radar transmitters

### SITRANS LG series

#### Characteristic curves

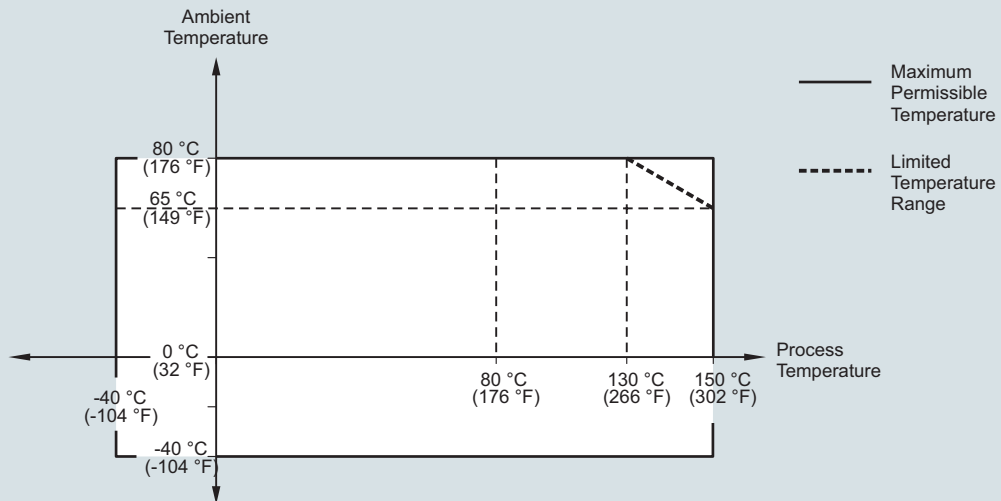
SITRANS LG240, Ambient temperature/process temperature, standard version



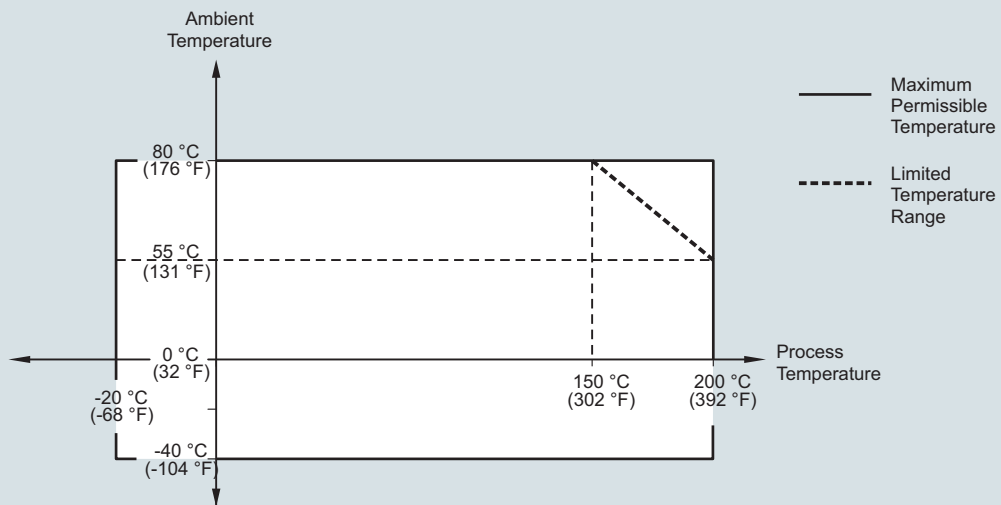
SITRANS LG240, ambient temperature/process temperature curve

## Characteristic curves (continued)

SITRANS LG250, Ambient temperature/process temperature, standard version



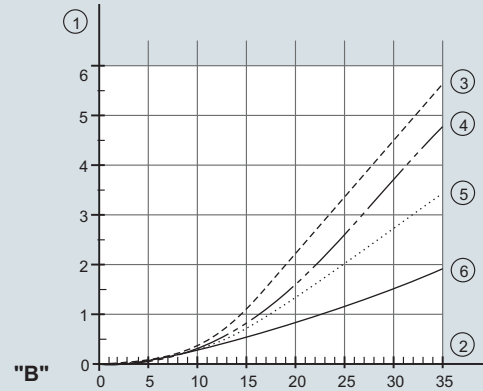
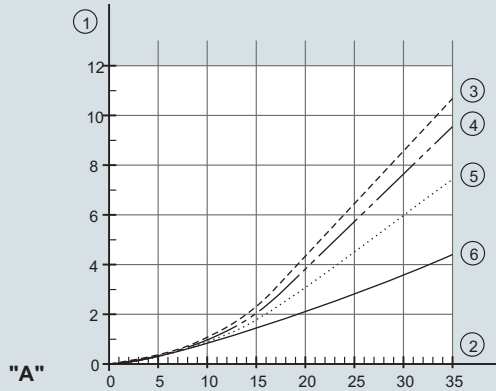
SITRANS LG250, Ambient temperature/process temperature, temperature adapter version



SITRANS LG250, ambient temperature/process temperature curves

**Level measurement**

Continuous level measurement  
Guided wave radar transmitters

**SITRANS LG series****Characteristic curves (continued)****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)

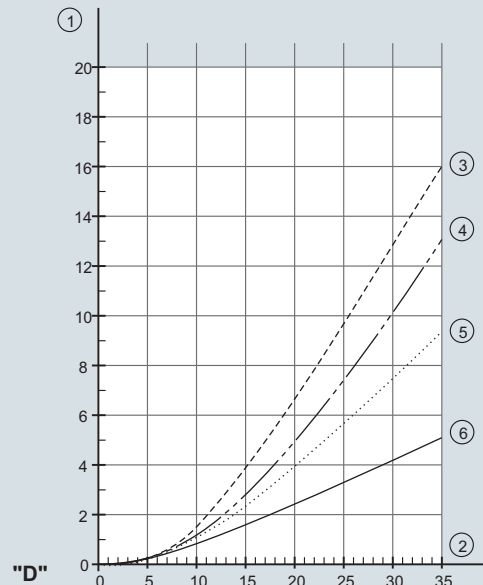
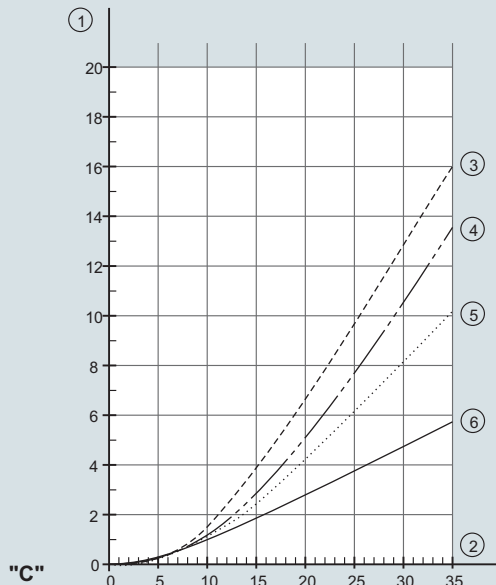
2. Cable length in m

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)

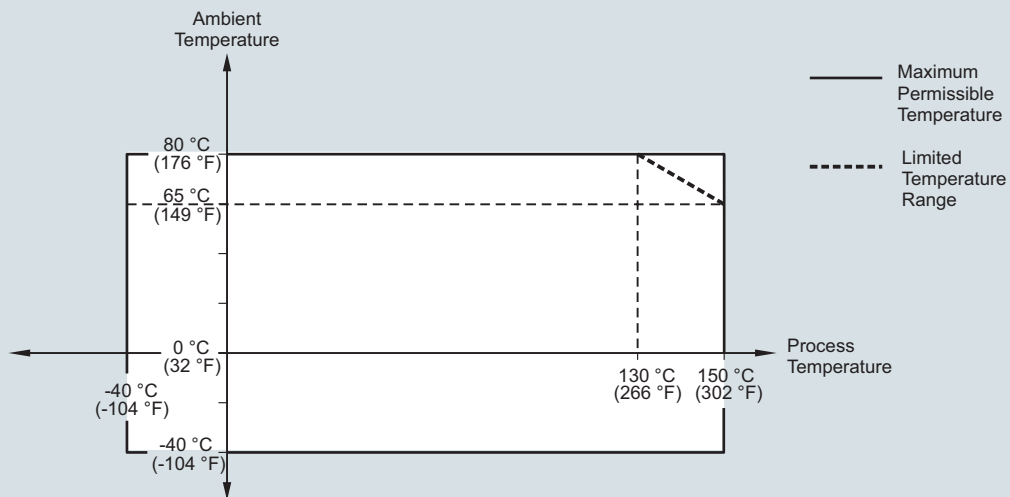
6. Vessel diameter 3 m (9.843 ft)

SITRANS LG260, maximum tensile load curves

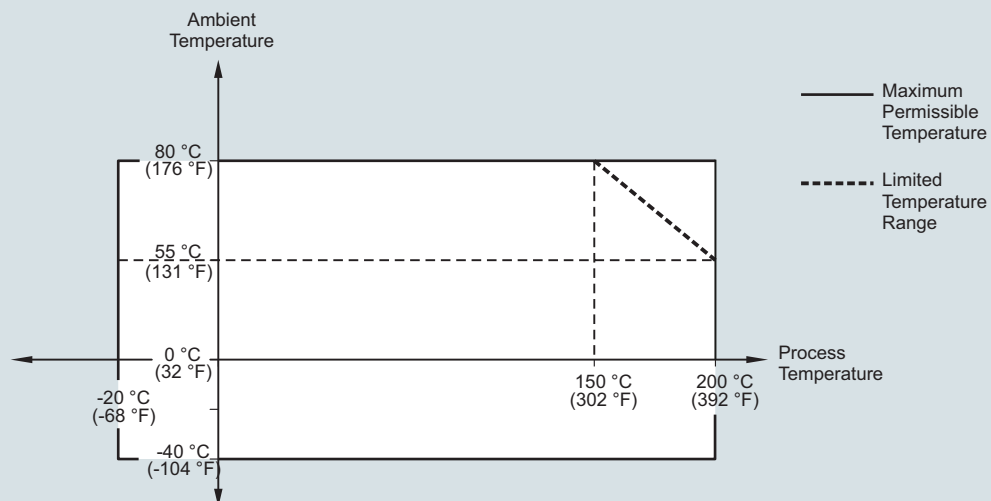


## Characteristic curves (continued)

**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

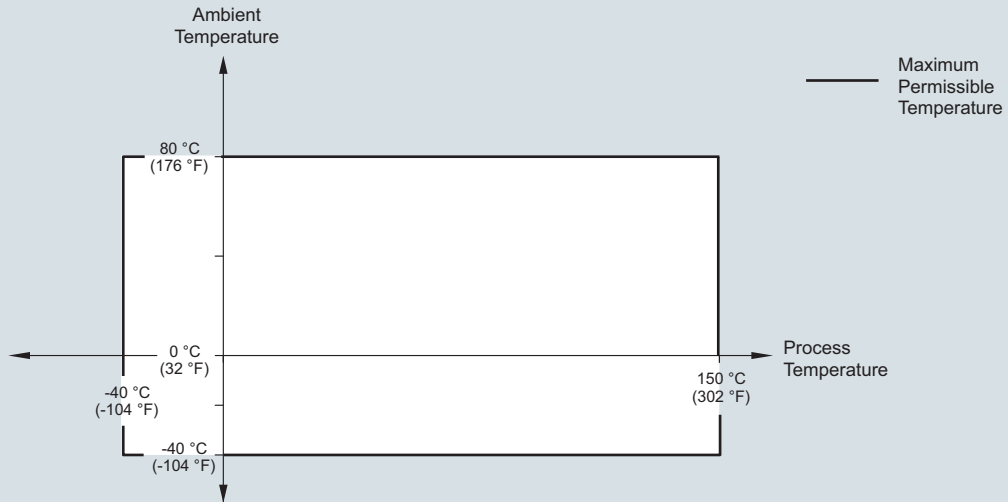
## Level measurement

Continuous level measurement  
Guided wave radar transmitters

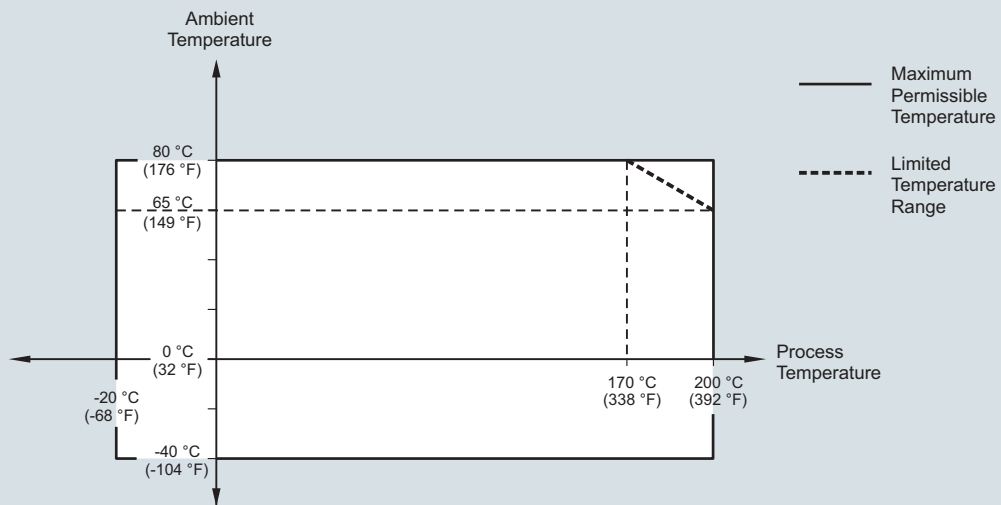
### SITRANS LG series

#### Characteristic curves (continued)

**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)



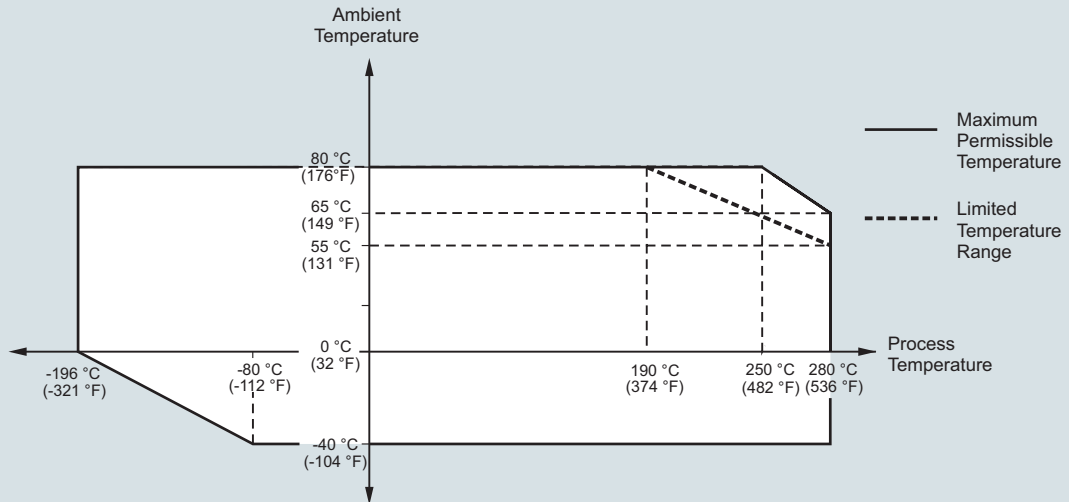
**SITRANS LG260, Ambient temperature/process temperature, temperature adapter version**  
Cable version with  $\varnothing$  6 mm (0.236 inch)  
Cable version, PA coated with  $\varnothing$  11 mm (0.433 inch)



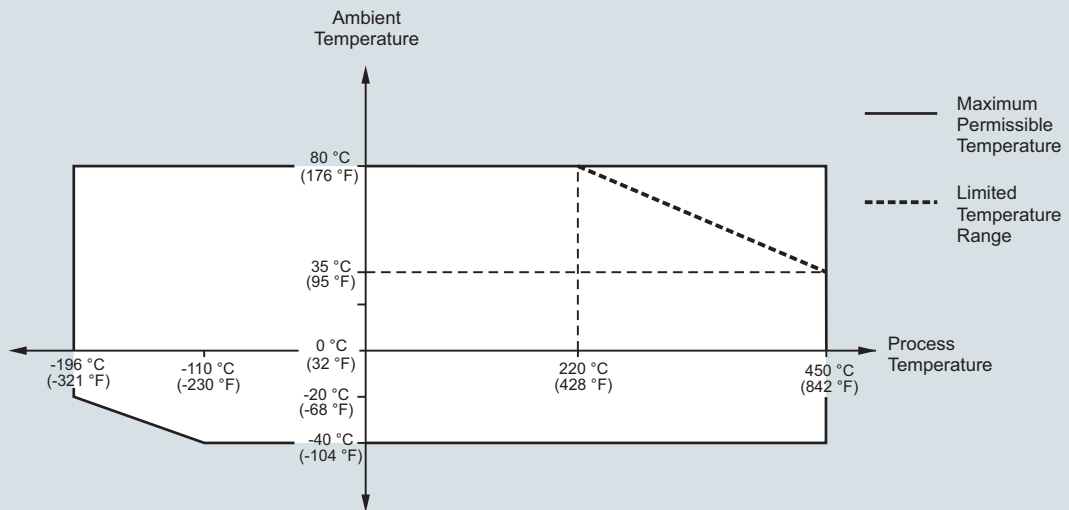
SITRANS LG260, ambient temperature/process temperature curves

## Characteristic curves (continued)

SITRANS LG270, Ambient temperature/process temperature (-196 ... +280 °C/-321 ... +536 °F version)



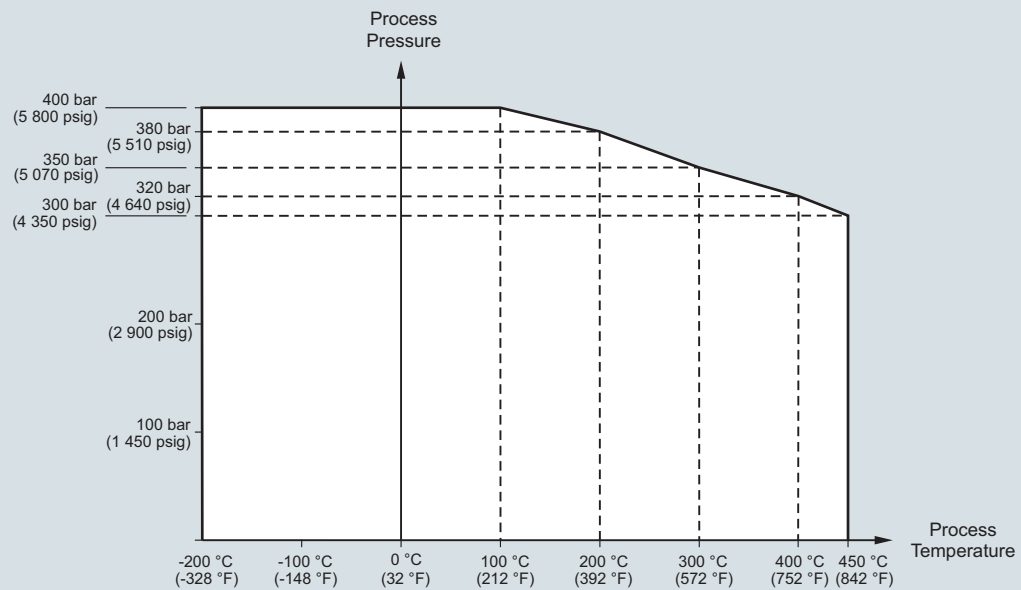
SITRANS LG270, Ambient temperature/process temperature (-196 ... +450 °C/-321 ... +842 °F version)



SITRANS LG270, ambient temperature/process temperature curves

**Level measurement**

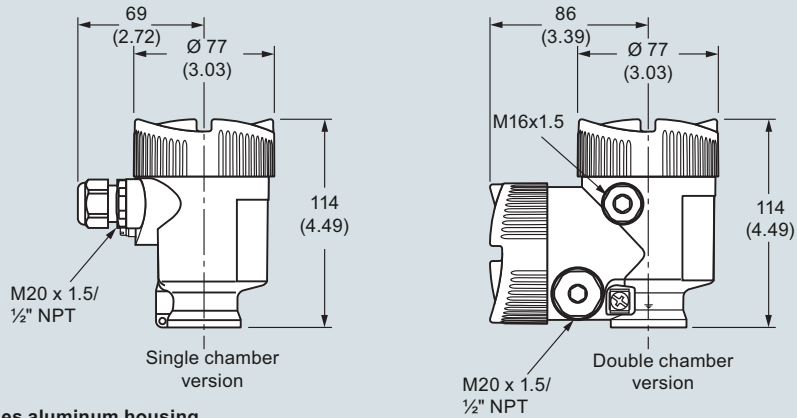
Continuous level measurement  
Guided wave radar transmitters

**SITRANS LG series****Characteristic curves** (continued)**SITRANS LG270, Process pressure/process temperature ( -196 ... +450 °C/-321 ... +842 °F version)**

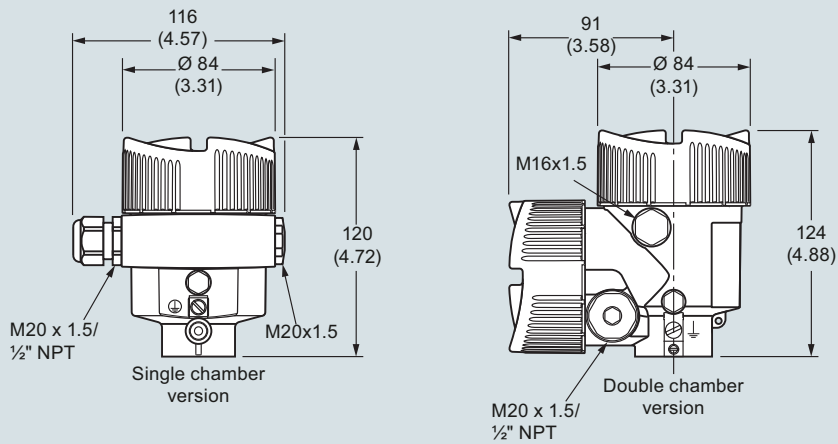
SITRANS LG270, process pressure/process temperature curve

**Dimensional drawings**

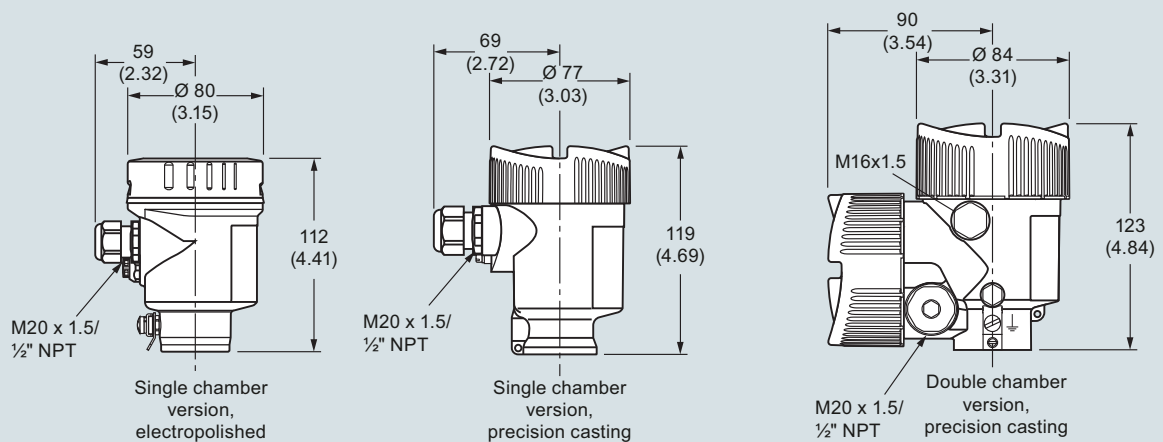
**SITRANS LG Series plastic housing**



**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

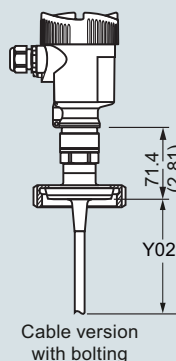
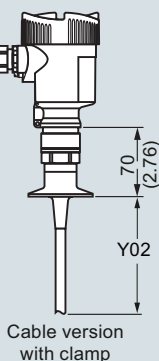
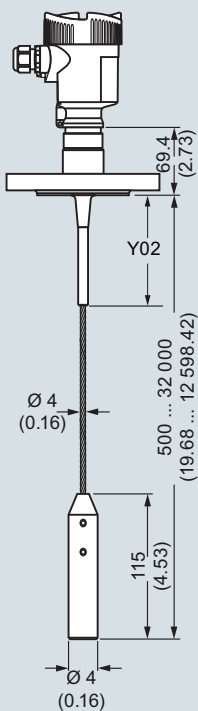
Continuous level measurement  
Guided wave radar transmitters

### SITRANS LG series

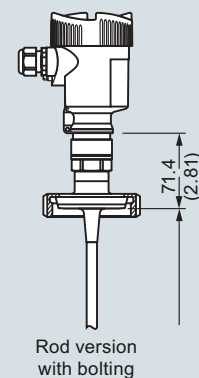
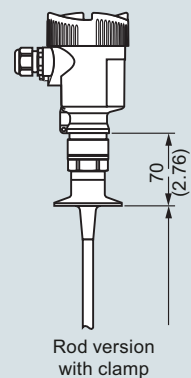
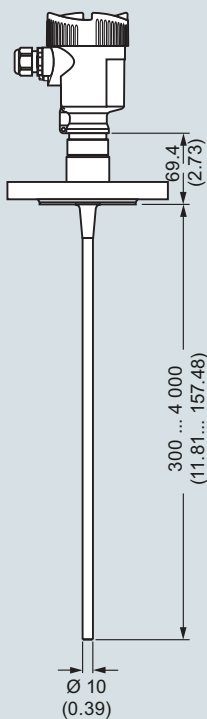
#### Dimensional drawings (continued)

#### SITRANS LG240

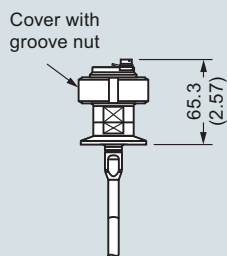
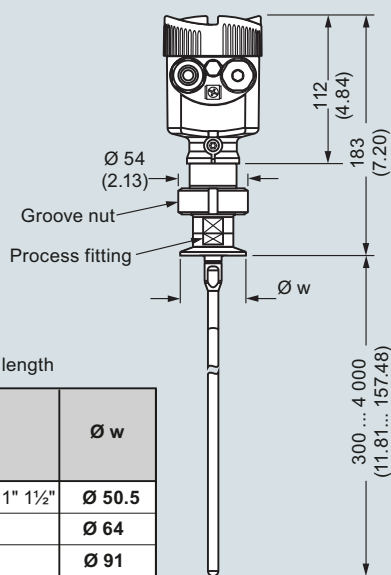
##### Cable version Ø 4 (0.157), PFA coated



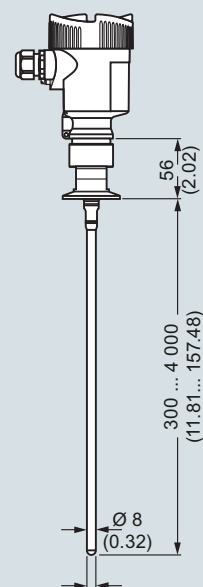
##### Rod version Ø 10 (0.394), PFA coated



##### Autoclaved version



##### Rod version Ø 8 (0.315), polished



Note: Y01 = total insertion length

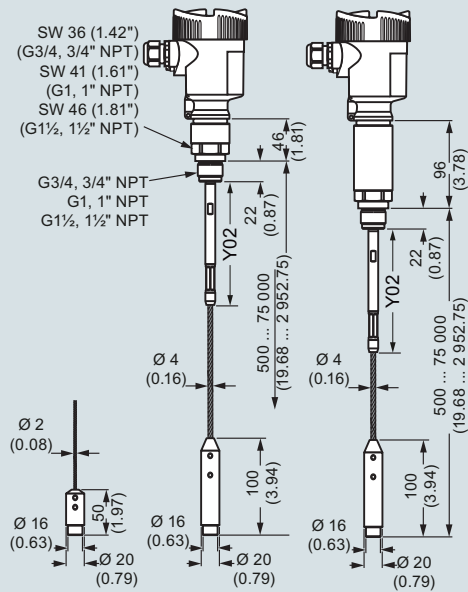
	Ø w
DIN DN 25 DN 32 DN 40/ 1" 1½"	Ø 50.5
DIN DN 50/ 2"	Ø 64
DIN DN 65/ 3"	Ø 91

SITRANS LG240, dimensions in mm (inch)

**Dimensional drawings (continued)**

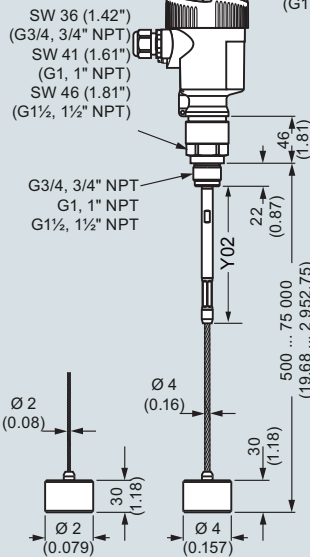
**SITRANS LG250**

**Cable version with gravity weight**

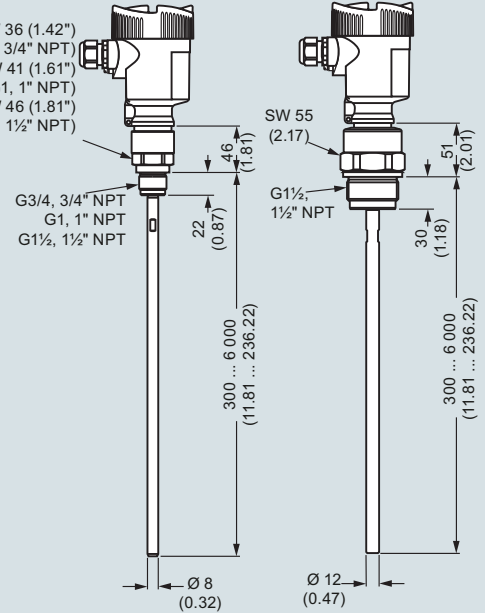


Note: Y01 = total insertion length

**Cable version with centering weight**



**Rod version**

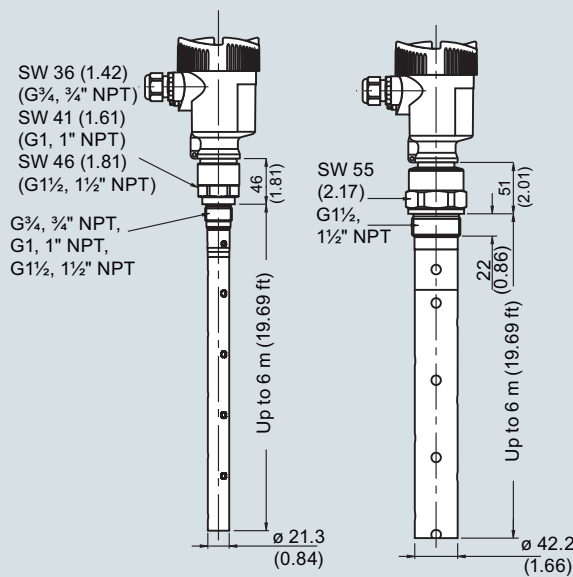


SITRANS LG250, dimensions in mm (inch)

**SITRANS LG250, coax version**

**Coaxial version  
ø 21.3 (0.839)**

**Coaxial version  
ø 42.2 (1.661)**



Note: Y01 = total insertion length

SITRANS LG250, dimensions in mm (inch)

## Level measurement

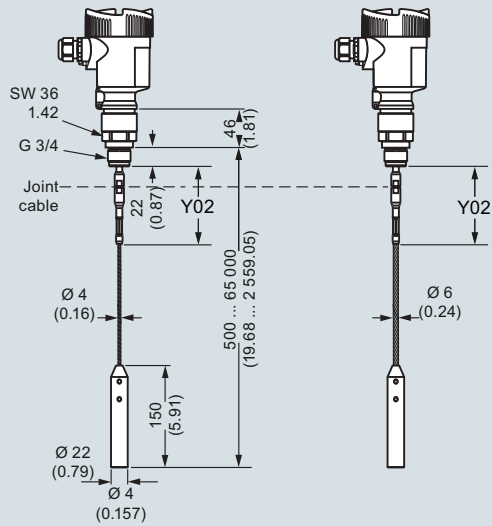
Continuous level measurement  
Guided wave radar transmitters

### SITRANS LG series

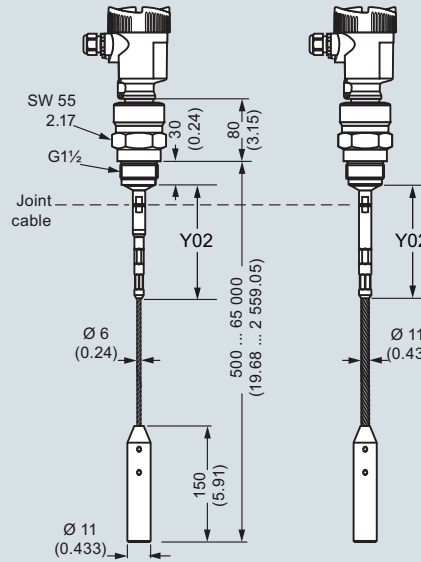
#### Dimensional drawings (continued)

#### SITRANS LG260

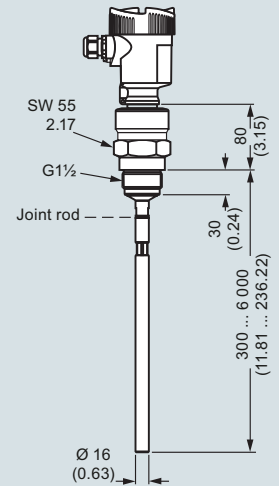
##### Cable version Ø 4 (0.157)/ Ø 6 (0.236)- PA coated



##### Cable version Ø 6 (0.236)/ Ø 11 (0.433)- PA coated



##### Rod version Ø 16 (0.63)

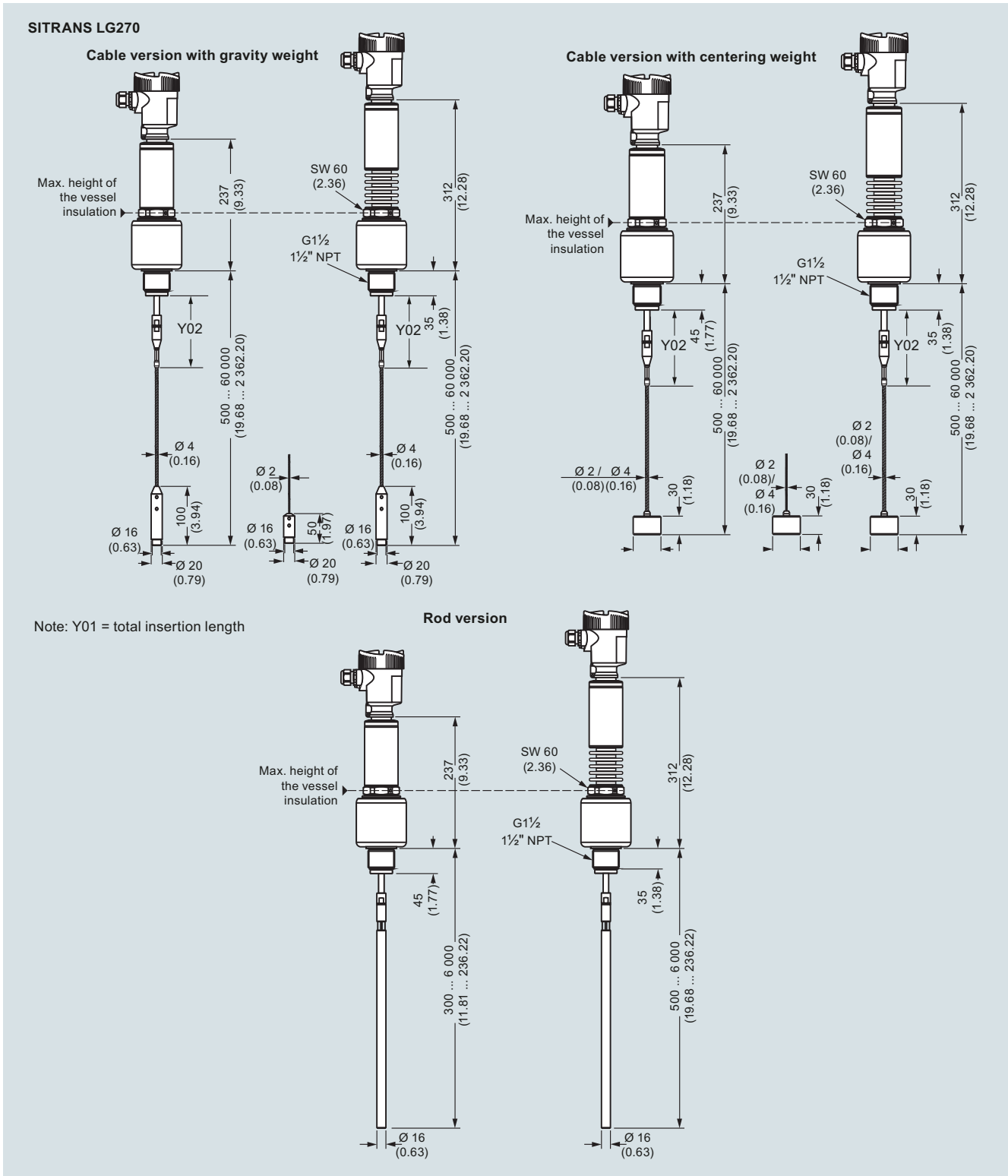


Note: Y01 = total insertion length

SITRANS LG260, dimensions in mm (inch)



**Dimensional drawings** (continued)



SITRANS LG270, dimensions in mm (inch)

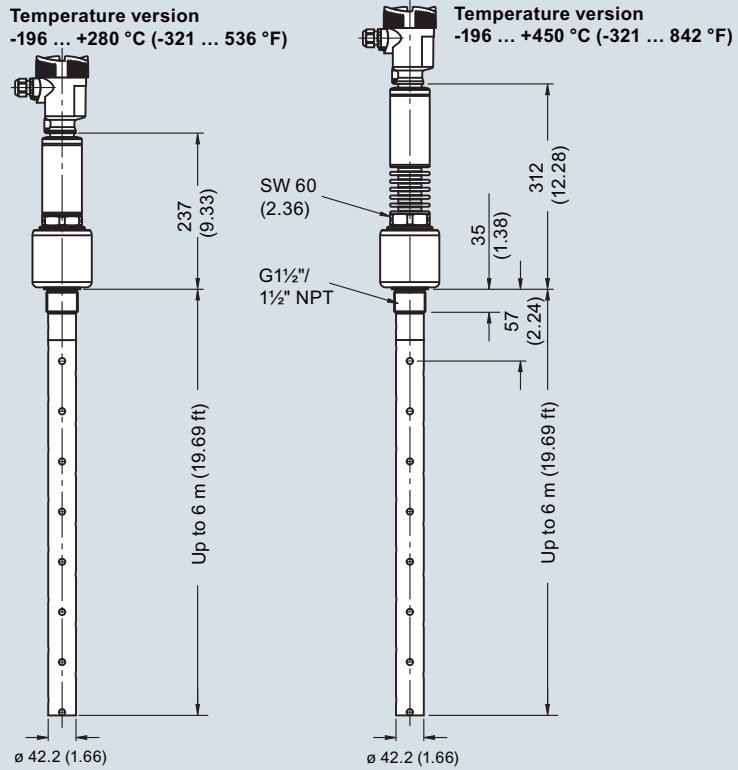
## Level measurement

Continuous level measurement  
Guided wave radar transmitters

### SITRANS LG series

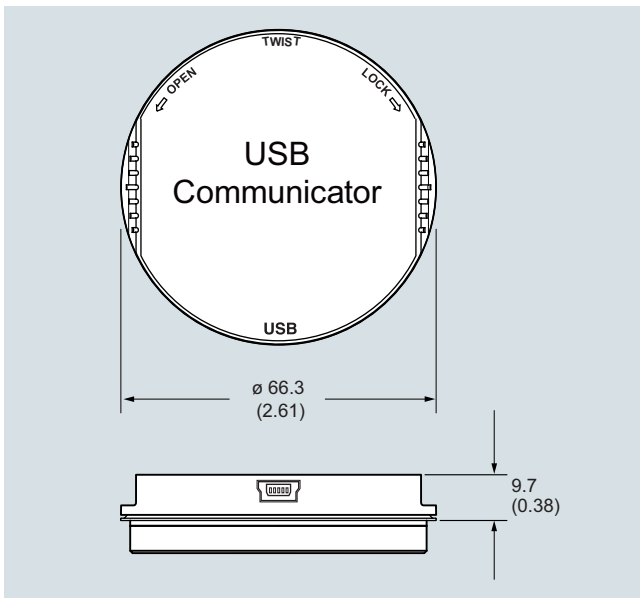
#### Dimensional drawings (continued)

#### SITRANS LG270, coax version



Note: Y01 = total insertion length

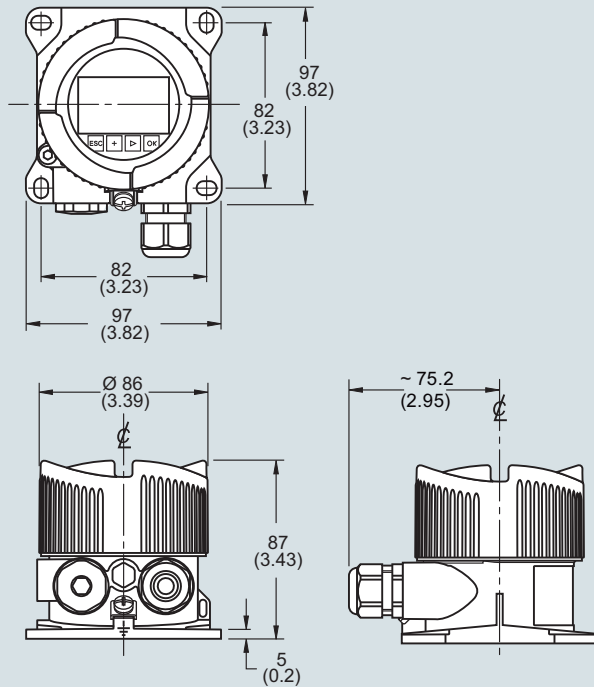
SITRANS LG270, dimensions in mm (inch)



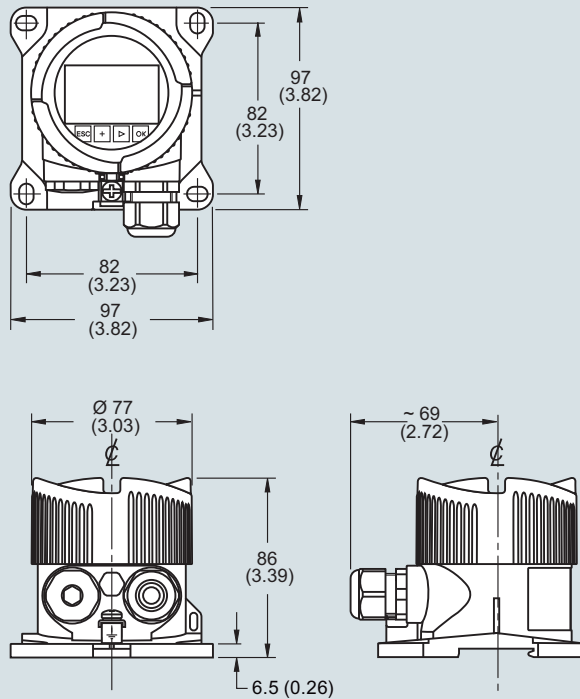
SITRANS LG USB Communicator, dimensions in mm (inch)

**Dimensional drawings** (continued)

**SITRANS LG remote interface, aluminum housing**



**SITRANS LG remote interface, plastic housing**



SITRANS LG remote interface, dimensions in mm (inch)

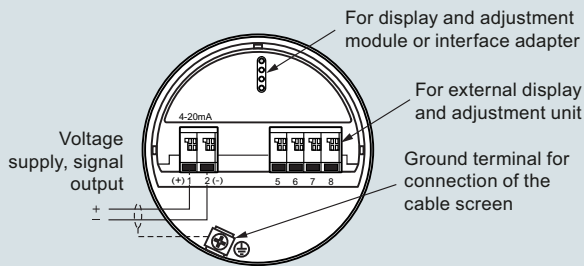
## Level measurement

Continuous level measurement  
Guided wave radar transmitters

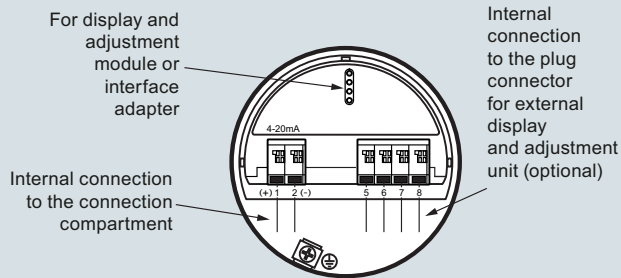
### SITRANS LG series

#### Circuit diagrams

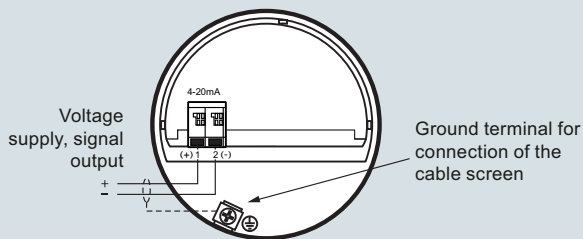
##### 2-wire HART electronic option, electronics and connection compartment, single chamber housing



##### 2-wire HART electronic option, electronics compartment, double chamber housing



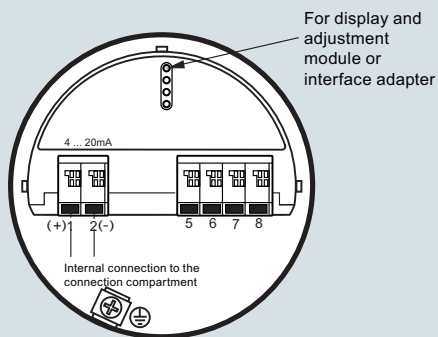
##### 2-wire HART electronic option, connection compartment, Ex-d-ia double chamber housing



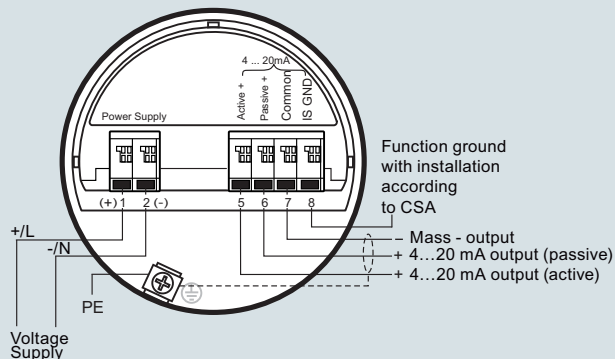
Note: All 2-wire HART connections and electronics are also available with SIL qualification.

SITRANS LG series connections

##### 4-wire HART electronic option, electronics compartment, double chamber housing



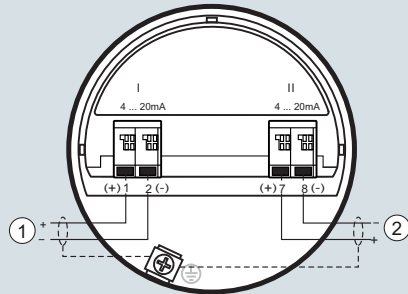
##### 4-wire electronic option, connection compartment, double chamber housing with mains voltage



SITRANS LG series connections

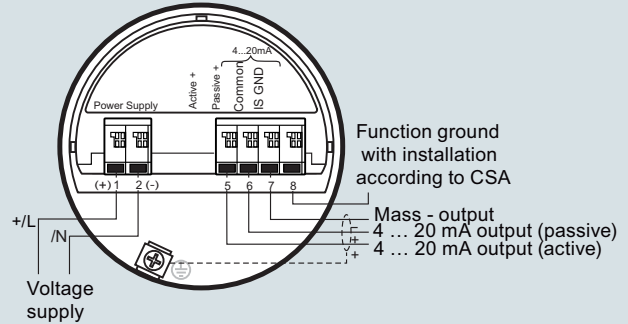
**Circuit diagrams** (continued)

**Supplementary electronics**



- ① First current output (I) - Voltage supply and signal output (HART)
- ② Second current output (II) - Voltage supply and signal output (without HART)

**Connection compartment with low voltage**



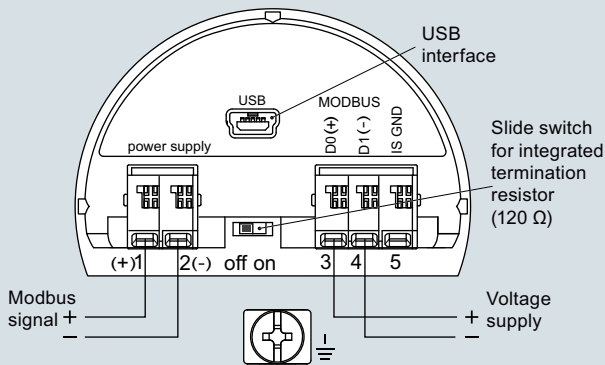
Function ground with installation according to CSA

Mass - output  
 4 ... 20 mA output (passive)  
 4 ... 20 mA output (active)

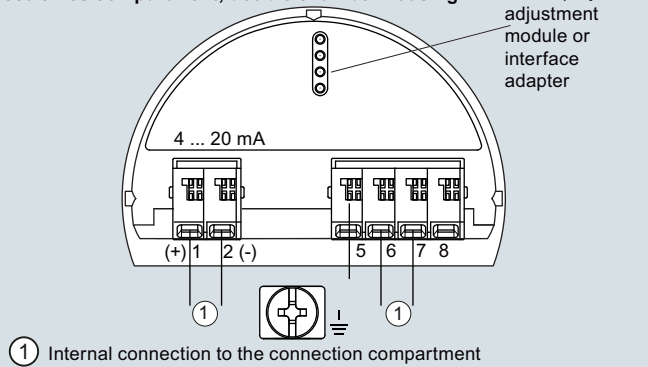
+L /N  
 Voltage supply

SITRANS LG series connections

**Modbus electronic option, connection compartment**



**Modbus electronic option, electronics compartment, double chamber housing**

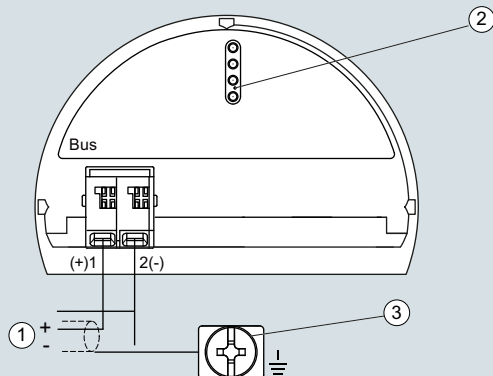


For display and adjustment module or interface adapter

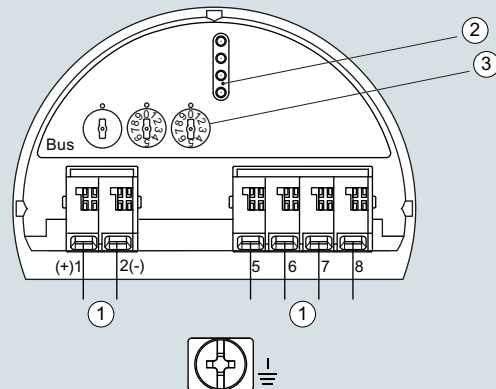
- ① Internal connection to the connection compartment

SITRANS LG series connections

**PROFIBUS electronic option, connection compartment, double chamber housing**



**PROFIBUS electronic option, electronics compartment, double chamber housing**



- ① Voltage supply, signal output
- ② For display and adjustment module or interface adapter
- ③ Ground terminal for connection of the cable screen

- ① Internal connection to the connection compartment
- ② Contact pins for the display and adjustment module or interface adapter
- ③ Selection switch for bus address

LG series connections

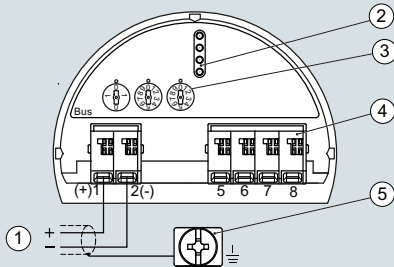
## Level measurement

Continuous level measurement  
Guided wave radar transmitters

### SITRANS LG series

#### Circuit diagrams (continued)

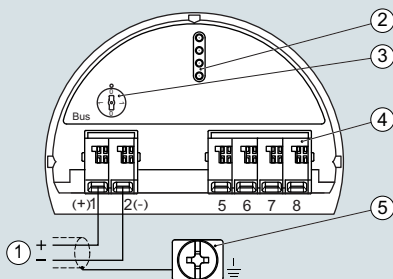
##### PROFIBUS electronic option, electronics and connection compartment, single chamber housing



- ① Voltage supply, signal output
- ② For display and adjustment module or interface adapter
- ③ Selection switch for bus address
- ④ For external display and adjustment unit
- ⑤ Ground terminal for connection of the cable screen

LG series connections

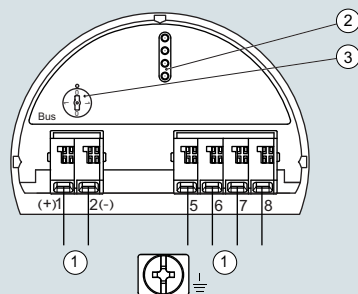
##### LG series, FOUNDATION Fieldbus electronic option, electronic and terminal compartment, single chamber housing



- ① Voltage supply, signal output
- ② Contact pins for the display and adjustment module or interface adapter
- ③ Simulation switch ("1" = mode for simulation release)
- ④ For external display and adjustment unit
- ⑤ Ground terminal for connection of the cable screen

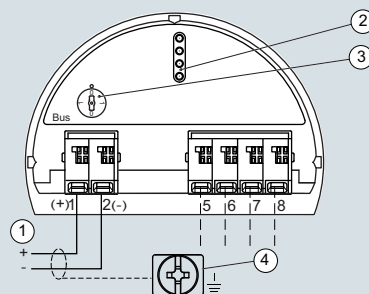
LG series connections

##### LG series, FOUNDATION Fieldbus electronic option, electronic compartment, double chamber housing



- ① Internal connection to the connection compartment
- ② Contact pins for the display and adjustment module or interface adapter
- ③ Simulation switch ("on" = simulation mode)

##### LG series, FOUNDATION Fieldbus electronic option, terminal compartment, double chamber housing



- ① Voltage supply, signal output
- ② For display and adjustment module or interface adapter
- ③ For external display and adjustment unit
- ④ Ground terminal for connection of the cable screen

LG series connections

### 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.

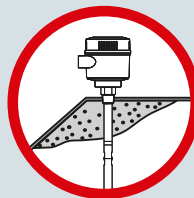
- Key Applications: conductive ( $dK \geq 20$ ) and non-conductive ( $dK < 20$ ) media including: liquids and solids in standard industrial processes, bulk solids applications involving dust, and chemical processes involving vapor

### Probe Applications

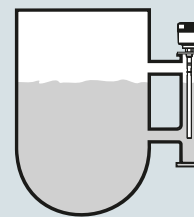
Rod version	Conductive liquids, slurries or solids
Rod version with stilling well	<ul style="list-style-type: none"> <li>• Conductive liquids or slurries in non-conductive tanks</li> <li>• Non-conductive liquids in non-conductive tanks</li> <li>• Tanks with agitation or turbulent liquids</li> <li>• Liquids with a dielectric constant below 2</li> <li>• Non-linear tanks, such as parabolic or spherical tanks</li> <li>• Interface measurements</li> </ul>
Cable version	Non-conductive solids or liquids
PFA coated cable version	Conductive or sticky liquids, slurries or solids

### Configuration

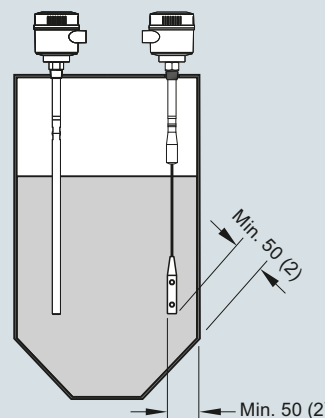
#### Installation



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)

## Level measurement

Continuous level measurement  
Capacitance transmitters

### SITRANS LC300

#### Technical specifications

<b>Input</b>	
Measuring range	1.66 ... 3 300 pF
Span	Min. 3.3 pF
<b>Output</b>	
Loop current	Continuous signal 4 ... 20 mA/20 ... 4 mA according to NAMUR 43
<b>Accuracy (transmitter)</b>	
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
<b>Rated operating conditions<sup>1)</sup></b>	
Ambient conditions	
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) <sup>2)3)</sup>
• Storage temperature	-40 ... +85 °C (-40 ... +185 °F)
• 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) <sup>4)</sup>
• Min. dielectric constant $\epsilon_r$	1.5
• Min. difference in dielectric constant for interface measurement	5
<b>Design</b>	
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]
• Threaded cable mounting	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]
• Flange mounting	1 ... 4" ASME, DN 25 ... 100
Enclosure cable inlet	2 x $\frac{1}{2}$ " NPT or 2 x M20 x 1.5

<b>Power supply</b>	12 ... 30 V DC any polarity, 2-wire current loop circuit
<b>User Interface</b>	
Display	Local LCD, 4 digit, each 0 ... 9 and limited alpha characters
<b>Safety</b>	
Measurement current signaling	According to NAMUR NE 43, signal 3.8 ... 20.5 mA, fault $\leq 3.6$ or $\geq 21$ mA (22 mA)
<b>Certificates and approvals</b>	
General	CE, CSA <sub>US/C</sub> , 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 $\frac{1}{2}$ D T100 °C
• Canada/USA	
• Europe	
Flame Proof (Intrinsically Safe probe circuit)	ATEX II $\frac{1}{2}$ G EEx d [ia] IIC T6 ... T1 ATEX II $\frac{1}{2}$ D T100 °C
• Europe	
• Brazil	Ex d [ia Ga] IIC T6 ... T4 Gb Ex tb IIIC T85 °C ... T100 °C Db IP65/IP68 EAC Ex
• Russia/Kazakhstan	
Explosion Proof (Intrinsically Safe probe circuit)	Class I, Div. 1, Groups A, B, C, D Class II, Div. 1, Groups E, F, G Class III T4
• Canada/USA	
Marine	ABS Type Approval, Lloyds Register
Overfill Protection	AIB-Vincotte
Other	Pattern Approval (AQSIQ, China), CRN, PED

- 1) When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves on page 5/16.
- 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

<b>Design: Probe</b>			
	<b>Rod version</b>	<b>Stilling well version</b>	<b>Cable version</b>
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



Selection and ordering data	Article No.	Article No.	
<b>SITRANS LC300 Capacitance level transmitter, rod design</b> Continuous, contact, monitors level or interface in liquids or solids. Extension options up to 5 m (16.40 ft). <a href="#">Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</a>	7ML5670- - - - - - 0	7ML5670- - - - - - 0	
<b>Process connection</b> 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] <u>Welded flange, 316L stainless steel, raised face<sup>1)</sup></u> 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 <u>Welded flange, 316L stainless steel, Type A flat faced<sup>1)</sup></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 Sanitary, hastelloy, duplex or other custom process connections available. Please contact a local sales person for details. For more information, please visit <a href="http://www.usa.siemens.com/level">http://www.usa.siemens.com/level</a> .	<b>0 A</b> <b>0 B</b> <b>0 C</b> <b>0 D</b> <b>1 A</b> <b>1 B</b> <b>1 D</b> <b>3 A</b> <b>3 B</b> <b>3 D</b> <b>5 A</b> <b>5 B</b> <b>5 C</b> <b>5 D</b> <b>5 E</b> <b>5 F</b> <b>5 G</b> <b>5 H</b> <b>5 J</b> <b>5 K</b> <b>5 L</b> <b>5 M</b> <b>5 N</b> <b>5 P</b> <b>5 Q</b> <b>6 A</b> <b>6 B</b> <b>6 C</b> <b>6 D</b> <b>6 E</b> <b>6 F</b> <b>6 G</b> <b>6 H</b> <b>6 J</b> <b>6 K</b>	<b>SITRANS LC300 Capacitance level transmitter, rod design</b> Continuous, contact, monitors level or interface in liquids or solids. Extension options up to 5 m (16.40 ft). <b>Probe Length (from flange face or including process thread)</b> 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 <a href="http://www.usa.siemens.com/level">http://www.usa.siemens.com/level</a> . <b>Thermal isolator</b> Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)] <b>Wetted seals</b> FKM FFKM [for process temperatures above -20 °C (4 °F) <sup>2)</sup> ] <b>Probe material</b> 19 mm (0.75 inch) diameter 316L stainless steel, PFA lined rod <b>Approvals</b> 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 <b>Enclosure</b> 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 <a href="http://www.usa.siemens.com/level">http://www.usa.siemens.com/level</a>	<b>A</b> <b>B</b> <b>C</b> <b>D</b> <b>E</b> <b>0</b> <b>1</b> <b>0</b> <b>1</b> <b>0</b> <b>0</b> <b>A</b> <b>B</b> <b>C</b> <b>D</b> <b>E</b> <b>A</b> <b>B</b> <b>C</b> <b>D</b>

<sup>1)</sup> Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.

<sup>2)</sup> Not available with FM approvals.

**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**

INMETRO<sup>1)</sup>

**E34***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 RD150, remote digital display for  
4 ... 20 mA and HART devices - see Chapter 7

**7ML5742-.....-**

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-.....-**

For applicable back up point level switch -  
see point level measurement section

<sup>1)</sup> Available only with Approvals options A and B.

Selection and ordering data	Article No.	Article No.
<p><b>SITRANS LC300 Capacitance level transmitter, stilling well design</b></p> <p>Continuous, contact, monitors level or interface in liquids. Extension options up to 5 m (16.40 ft).</p> <p>➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>	7ML5671- - - - - - 0	7ML5671- - - - - - 0
<p><b>Process connection</b></p> <p>Threaded, 316L stainless steel</p> <p>1½" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 D</b></p> <p>R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] <b>1 D</b></p> <p>G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] <b>3 D</b></p> <p><u>Welded flange, 316L stainless steel, raised face<sup>1)</sup></u></p> <p>1½" ASME, 150 lb <b>5 D</b></p> <p>1½" ASME, 300 lb <b>5 E</b></p> <p>1½" ASME, 600 lb <b>5 F</b></p> <p>2" ASME, 150 lb <b>5 G</b></p> <p>2" ASME, 300 lb <b>5 H</b></p> <p>2" ASME, 600 lb <b>5 J</b></p> <p>3" ASME, 150 lb <b>5 K</b></p> <p>3" ASME, 300 lb <b>5 L</b></p> <p>3" ASME, 600 lb <b>5 M</b></p> <p>4" ASME, 150 lb <b>5 N</b></p> <p>4" ASME, 300 lb <b>5 P</b></p> <p>4" ASME, 600 lb <b>5 Q</b></p> <p><u>Welded flange, 316L stainless steel, Type A flat faced<sup>1)</sup></u></p> <p>DN 40, PN 16 <b>6 C</b></p> <p>DN 40, PN 40 <b>6 D</b></p> <p>DN 50, PN 16 <b>6 E</b></p> <p>DN 50, PN 40 <b>6 F</b></p> <p>DN 80, PN 16 <b>6 G</b></p> <p>DN 80, PN 40 <b>6 H</b></p> <p>DN 100, PN 16 <b>6 J</b></p> <p>DN 100, PN 40 <b>6 K</b></p> <p>Sanitary, hastelloy, duplex or other custom process connections available.</p> <p>Please contact a local sales person for details. For more information, please visit <a href="http://www.usa.siemens.com/level">http://www.usa.siemens.com/level</a>.</p>		
<p><b>Probe Length (from flange face or including process thread)</b></p> <p><u>Add Order code Y01 and plain text: "Insertion length ... mm"</u></p> <p>300 ... 1 000 mm (11.81 ... 39.37 inch) <b>A</b></p> <p>1 001 ... 2 000 mm (39.41 ... 78.74 inch) <b>B</b></p> <p>2 001 ... 3 000 mm (78.78 ... 118.11 inch) <b>C</b></p> <p>3 001 ... 4 000 mm (118.15 ... 157.48 inch) <b>D</b></p> <p>4 001 ... 5 000 mm (157.52 ... 196.85 inch) <b>E</b></p>		
<p><b>Thermal isolator</b></p> <p>Without thermal isolator <b>0</b></p> <p>With thermal isolator [for process connection temperatures over 85 °C (185 °F)] <b>1</b></p>		
<p><b>Wetted seals</b></p> <p>FKM <b>0</b></p> <p>FFKM [for process temperatures above -20 °C (4 °F)]<sup>2)</sup> <b>1</b></p>		
<p><b>Probe material</b></p> <p>35 mm (1.38 inch) diameter stilling well, with 19 mm (0.75 inch) diameter 316L stainless steel, PFA lined rod with PTFE spacers <b>1</b></p>		
<p><b>SITRANS LC300 Capacitance level transmitter, stilling well design</b></p> <p>Continuous, contact, monitors level or interface in liquids. Extension options up to 5 m (16.40 ft).</p> <p><b>Approvals</b></p> <p>General Safety (CSA, FM, CE, RCM)</p> <p>Dust Ignition Proof With IS Probe CE, RCM, ATEX II 1/2 D T100 °C</p> <p>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</p> <p>Dust Ignition Proof With IS Probe CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4</p> <p>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</p> <p><b>Enclosure</b></p> <p>Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP65 <b>A</b></p> <p>Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP65 <b>B</b></p> <p>Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP68 <b>C</b></p> <p>Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP68 <b>D</b></p> <p>Stainless steel, please contact a local sales person for details.</p> <p>For more information, please visit <a href="http://www.usa.siemens.com/level">http://www.usa.siemens.com/level</a>.</p> <p><sup>1)</sup> Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.</p> <p><sup>2)</sup> Not available with FM approvals.</p>		
<p><b>Further designs</b></p> <p>Please add <b>"-Z"</b> to Article No. and specify Order code(s).</p> <p>Insertion length, specify in plain text: Y01: ... mm <b>Y01</b></p> <p>Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]; Measuring-point number/identification (max. 27 characters) specify in plain text <b>Y15</b></p> <p>Manufacturer's Test Certificate: M to DIN 55350, Part 18 and to ISO 9000 <b>C11</b></p> <p>Material inspection Certificate Type 3.1 per EN 10204 <b>C12</b></p> <p>INMMETRO<sup>1)</sup> <b>E34</b></p> <p><b>Operating Instructions</b></p> <p>All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a></p> <p><b>Accessories</b></p> <p>Electronic transmitter kit (includes transmitter and driver) <b>Article No. 7ML1830-1KN</b></p> <p>SITRANS RD100, loop powered display - see Chapter 7 <b>7ML5741-.....-</b></p> <p>SITRANS RD150, remote digital display for 4 ... 20 mA and HART devices - see Chapter 7 <b>7ML5742-.....-</b></p> <p>SITRANS RD200, universal input display with Modbus conversion - see Chapter 7 <b>7ML5740-.....-</b></p> <p>SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7 <b>7ML5744-.....-</b></p> <p>For applicable back up point level switch - see point level measurement section</p> <p><sup>1)</sup> Available only with Approvals options A and B.</p>		Order code

## Level measurement

Continuous level measurement  
Capacitance transmitters

### SITRANS LC300

#### Selection and ordering data

#### Article No.

##### SITRANS LC300 Capacitance level transmitter, cable design

Continuous, contact, monitors level or interface in liquids or solids. Extension options up to 25 m (82.02 ft).

➤ 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]

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

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

Welded flange, 316L stainless steel, raised face<sup>1)</sup>

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<sup>1)</sup>

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.usa.siemens.com/level>.

##### Probe Length

(from flange face or including process thread)

Add Order code Y01 and plain text: "Insertion length ... mm"

1 000 ... 2 000 mm (39.37 ... 78.74 inch)

2 001 ... 4 000 mm (78.78 ... 157.48 inch)

4 001 ... 6 000 mm (157.52 ... 236.22 inch)

6 001 ... 8 000 mm (236.26 ... 314.96 inch)

8 001 ... 10 000 mm (315.00 ... 393.70 inch)

8 001 ... 10 000 mm (315.00 ... 393.70 inch)

12 001 ... 14 000 mm (472.48 ... 551.18 inch)

14 001 ... 16 000 mm (551.22 ... 629.92 inch)<sup>2)</sup>

16 001 ... 18 000 mm (629.96 ... 708.66 inch)<sup>2)</sup>

18 001 ... 20 000 mm (708.70 ... 787.40 inch)<sup>2)</sup>

20 001 ... 22 000 mm (787.44 ... 866.14 inch)<sup>2)</sup>

22 001 ... 24 000 mm (866.18 ... 944.88 inch)<sup>2)</sup>

24 001 ... 25 000 mm (944.92 ... 984.25 inch)<sup>2)</sup>

##### 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)]<sup>3)</sup>

Article No.
7ML5672-
-
0
0 D
1 D
3 D
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 C
6 D
6 E
6 F
6 G
6 H
6 J
6 K
A
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1

#### Article No.

##### SITRANS LC300 Capacitance level transmitter, cable design

Continuous, contact, monitors level or interface in liquids or solids. Extension options up to 25 m (82.02 ft).

##### Probe material

Bare 316L stainless steel cable and 316L stainless steel cable weight, tinned copper crimp, PTFE backing ring, PEEK isolator and PFA lined active shield

##### 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, please contact a local sales person for details.

For more information, please visit <http://www.usa.siemens.com/level>.

- Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.
- 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.
- Not available with FM approvals.

Article No.
7ML5672-
-
0
0
A
B
C
D
E
A
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D

Selection and ordering data	Order code
<b>Further designs</b>	
Please add <b>"-Z"</b> to Article No. and specify Order code(s).	
Insertion length, specify in plain text: Y01: ... mm	<b>Y01</b>
Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	<b>Y15</b>
Manufacturer's Test Certificate: M to DIN 55350, Part 18 and to ISO 9000	<b>C11</b>
Material inspection Certificate Type 3.1 per EN 10204	<b>C12</b>
INMETRO <sup>1)</sup>	<b>E34</b>
<b>Operating Instructions</b>	
All literature is available to download for free, in a range of languages, at	
<a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>	
<b>Accessories</b>	
Electronic transmitter kit (includes transmitter and driver)	Article No. <b>7ML1830-1KN</b>
SITRANS RD100, loop powered display - see Chapter 7	<b>7ML5741-.....-</b>
SITRANS RD150, remote digital display for 4 ... 20 mA and HART devices - see Chapter 7	<b>7ML5742-.....-</b>
SITRANS RD200, universal input display with Modbus conversion - see Chapter 7	<b>7ML5740-.....-</b>
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7	<b>7ML5744-.....-</b>
For applicable back up point level switch - see point level measurement section	
<sup>1)</sup> Available only with Approvals options A and B.	

## Level measurement

Continuous level measurement  
Capacitance transmitters

### SITRANS LC300

#### Selection and ordering data

#### Article No.

##### SITRANS LC300 Capacitance level transmitter, PFA coated cable design

Continuous, contact, monitors level or interface in liquids or solids. Extension options up to 25 m (82.02 ft).

➤ 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]

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

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

Welded flange, 316L stainless steel, raised face<sup>1)</sup>

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<sup>1)</sup>

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.usa.siemens.com/level>.

##### Probe Length

(from flange face or including process thread)

Add Order code Y01 and plain text: "Insertion length ... mm"

1 000 ... 2 000 mm (39.37 ... 78.74 inch)

2 001 ... 4 000 mm (78.78 ... 157.48 inch)

4 001 ... 6 000 mm (157.52 ... 236.22 inch)

6 001 ... 8 000 mm (236.26 ... 314.96 inch)

8 001 ... 10 000 mm (315.00 ... 393.70 inch)

10 001 ... 12 000 mm (393.74 ... 472.44 inch)

12 001 ... 14 000 mm (472.48 ... 551.18 inch)

14 001 ... 16 000 mm (551.22 ... 629.92 inch)<sup>2)</sup>

16 001 ... 18 000 mm (629.96 ... 708.66 inch)<sup>2)</sup>

18 001 ... 20 000 mm (708.70 ... 787.40 inch)<sup>2)</sup>

20 001 ... 22 000 mm (787.44 ... 866.14 inch)<sup>2)</sup>

22 001 ... 24 000 mm (866.18 ... 944.88 inch)<sup>2)</sup>

24 001 ... 25 000 mm (944.92 ... 984.25 inch)<sup>2)</sup>

##### Thermal isolator

Without thermal isolator

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

7ML5673-

0 D

1 D

3 D

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 C

6 D

6 E

6 F

6 G

6 H

6 J

6 K

A

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K

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#### Article No.

##### SITRANS LC300 Capacitance level transmitter, PFA coated cable design

Continuous, contact, monitors level or interface in liquids or solids. Extension options up to 25 m (82.02 ft).

##### Wetted seals

FKM

FFKM [for process temperatures above -20 °C (-4 °F)]<sup>3)</sup>

##### Probe material

PFA coated cable and 316L stainless steel cable weight, PEEK isolator and PFA lined active shield

##### 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, please contact a local sales person for details.

For more information, please visit <http://www.usa.siemens.com/level>.

##### Mounting eye

Without Mounting eye

With mounting eye

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1

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B

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C

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D

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E

F

F

G

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O

P

P

Q

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R

S

S

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T

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U

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W

X

X

Y

Y

Z

Z

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1

- Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.
- 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.
- Not available with FM approvals.

Selection and ordering data	Article No.	Article No.
<b>Further designs</b>		<b>LC300 Specials<sup>1)</sup></b>
Please add "-Z" to Article No. and specify Order code(s).		<b>LC300 Cable Extensions, 316L stainless steel</b>
Insertion length, specify in plain text: Y01: ... mm	<b>Y01</b>	Kit, Stainless steel cable extension, 1 m, adjustable by customer
Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	<b>Y15</b>	Kit, Stainless steel cable extension, 3 m, adjustable by customer
Manufacturer's Test Certificate: M to DIN 55350, Part 18 and to ISO 9000	<b>C11</b>	Kit, Stainless steel cable extension, 5 m, adjustable by customer
Material inspection Certificate Type 3.1 per EN 10204	<b>C12</b>	Kit, Stainless steel cable extension, 10 m, adjustable by customer
INMETRO <sup>1)</sup>	<b>E34</b>	Kit, Stainless steel cable extension, 15 m, adjustable by customer
<b>Operating Instructions</b>		Kit, Stainless steel cable extension, 20 m, adjustable by customer
All literature is available to download for free, in a range of languages, at		<b>LC300 Cable Extensions, 316 stainless steel with PFA coating</b>
<a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>		Kit, PFA cable extension, 1 m
<b>Accessories</b>	Article No.	Kit, PFA cable extension, 3 m
Electronic transmitter kit (includes transmitter and driver)	<b>7ML1830-1KN</b>	Kit, PFA cable extension, 5 m
SITRANS RD100, loop powered display - see Chapter 7	<b>7ML5741-.....-</b>	Kit, PFA cable extension, 10 m
SITRANS RD150, remote digital display for 4 ... 20 mA and HART devices - see Chapter 7	<b>7ML5742-.....-</b>	Kit, PFA cable extension, 15 m
SITRANS RD200, universal input display with Modbus conversion - see Chapter 7	<b>7ML5740-.....-</b>	Kit, PFA cable extension, 20 m
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7	<b>7ML5744-.....-</b>	<b>LC300 Mounting Eye</b>
For applicable back up point level switch - see point level measurement section		Spare mounting eye (LC300 PFA versions only)
		<b>LC300 Weight Kit, 316L stainless steel</b>
		Kit, Spare stainless steel weight. To be used in any cable version of CLS300, or stainless steel cable version of LC300

<sup>1)</sup> Available only with Approvals options A and B.

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

## Level measurement

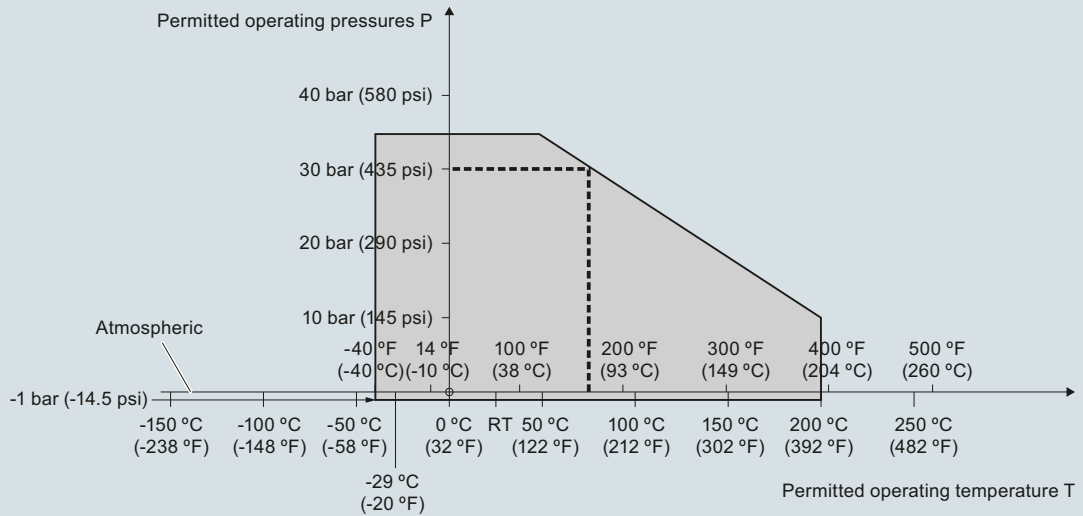
Continuous level measurement

Capacitance transmitters

### SITRANS LC300

#### Characteristic curves

**Pressure/temperature curve**  
 LC300 standard, extended rod and cable probes  
 Threaded process connections  
 (7ML5670, 7ML5671, 7ML5672 and 7ML5673)



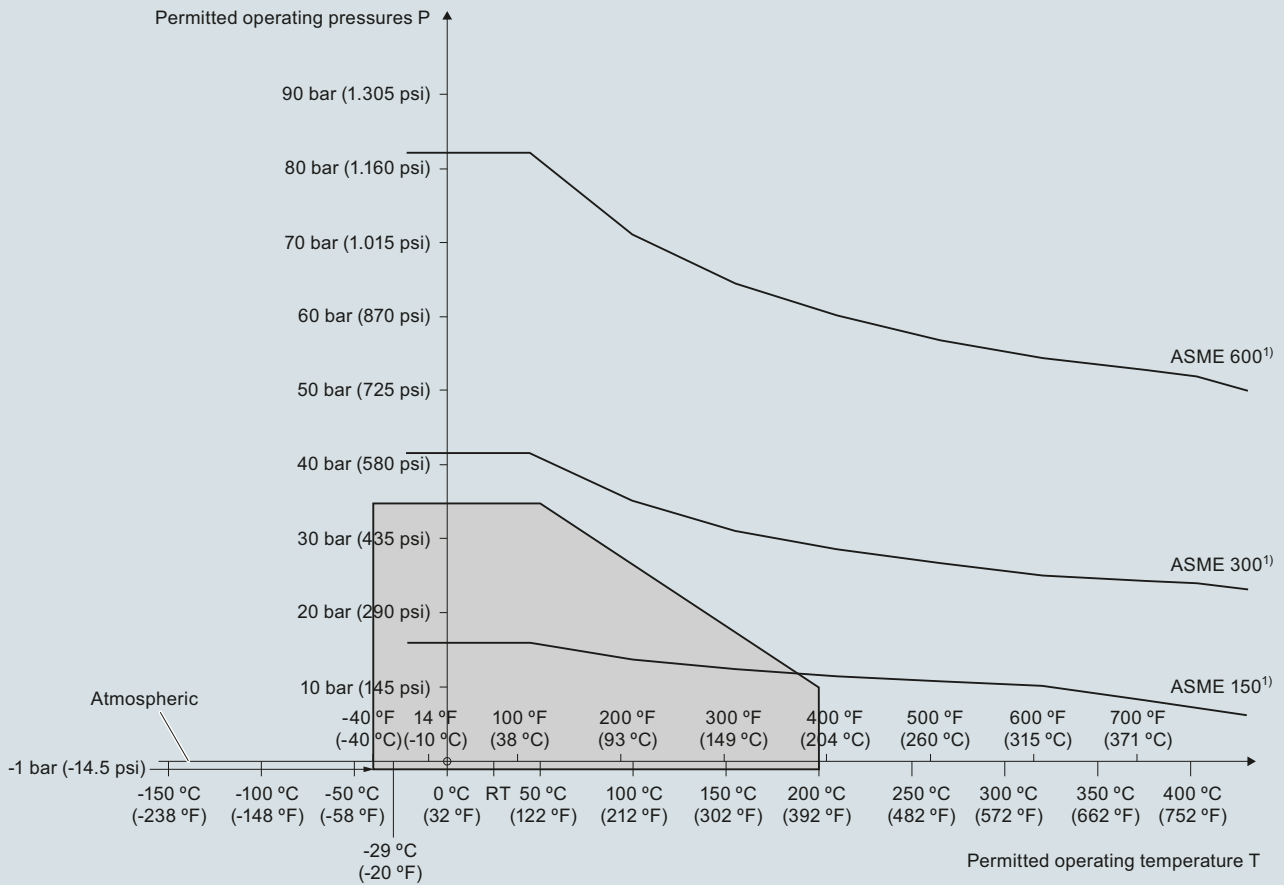
----- Example:  
 Permitted operating pressure = 30 bar (435 psi) at 75 °C

SITRANS LC300 process pressure/temperature derating curves (7ML5670, 7ML5671, 7ML5672, and 7ML5673)



**Characteristic curves (continued)**

**Pressure/temperature curve**  
 LC300 standard, extended rod and cable probes  
 ASME flanged process connections  
 (7ML5670, 7ML5671, 7ML5672 and 7ML5673)



<sup>1)</sup> 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

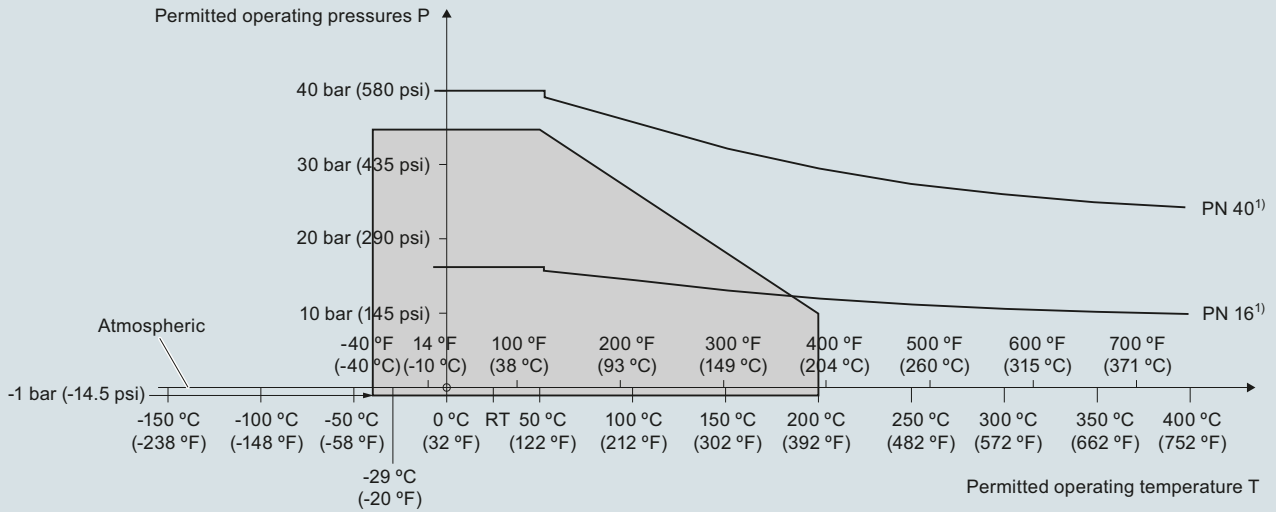
Continuous level measurement

Capacitance transmitters

### SITRANS LC300

#### Characteristic curves (continued)

**Pressure/temperature curve**  
**LC300 standard, extended rod and cable probes**  
**EN flanged process connections**  
**(7ML5670, 7ML5671, 7ML5672 and 7ML5673)**

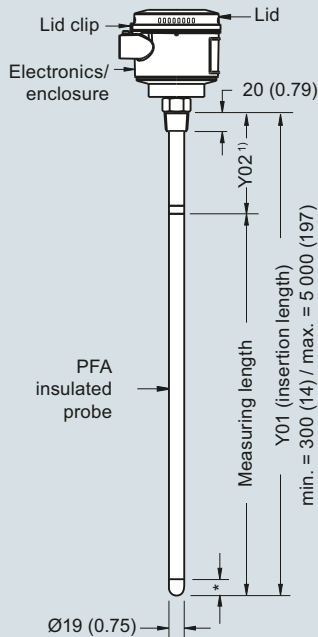


<sup>1)</sup> The curve denotes the minimum allowable flange class for the shaded area below.

SITRANS LC300 process pressure/temperature derating curves (7ML5670, 7ML5671, 7ML5672, and 7ML5673)

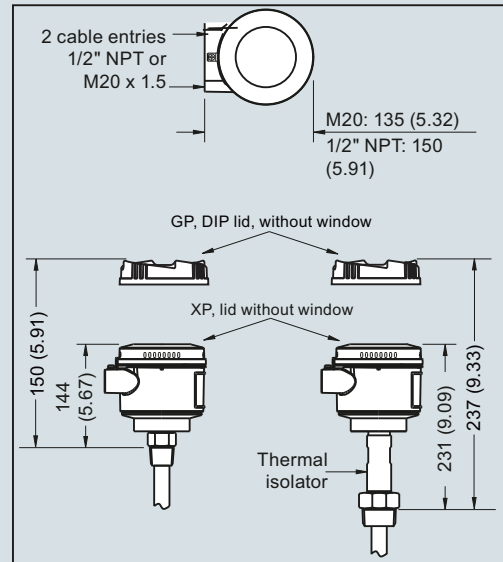
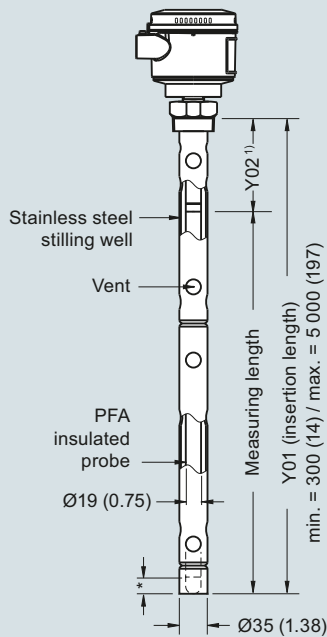
**Dimensional drawings**

**Threaded (7ML5670)**



\* = 30 (1.18) Inactive tip

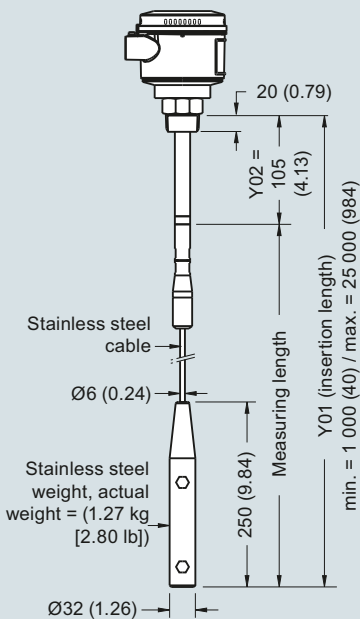
**Threaded (7ML5671)**



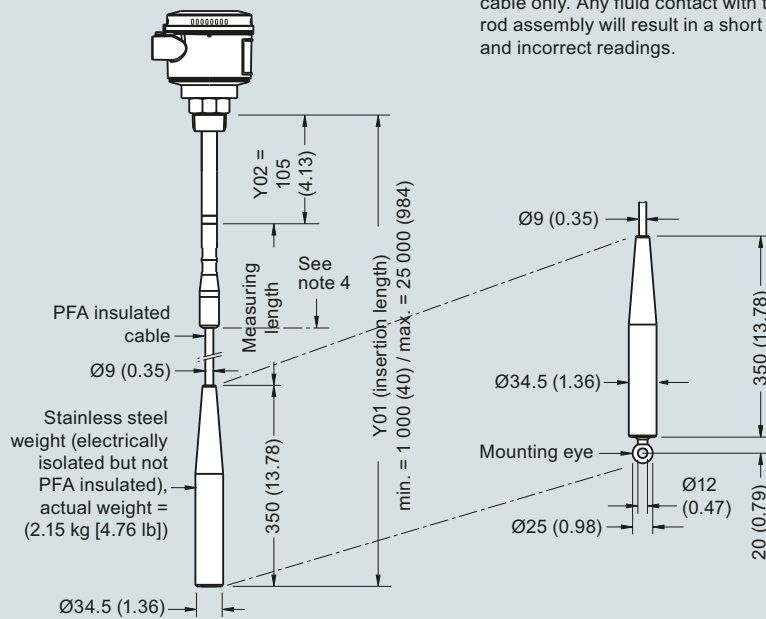
**Note:**

- 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-insulated<sup>2)</sup>**  
**Threaded (7ML5672)**



**Cable version, insulated<sup>3)</sup>**  
**Threaded (7ML5673)**



SITRANS LC300 threaded process connections, dimensions in mm (inch)

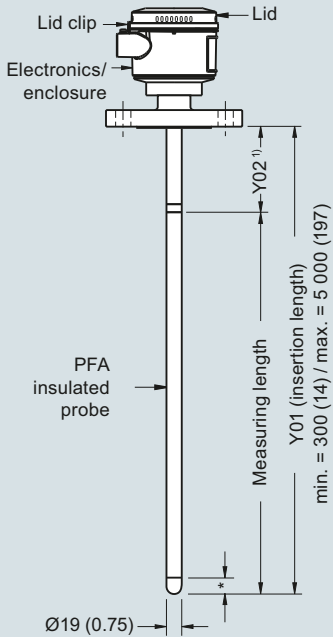
# Level measurement

Continuous level measurement  
Capacitance transmitters

## SITRANS LC300

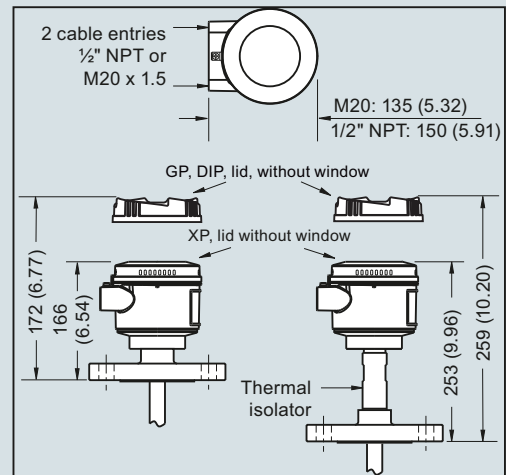
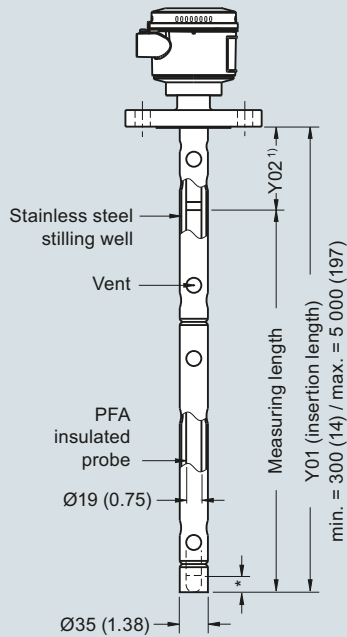
### Dimensional drawings (continued)

#### Welded Flange (7ML5670)



\* = 30 (1.18) inactive tip

#### Welded Flange (7ML5671)

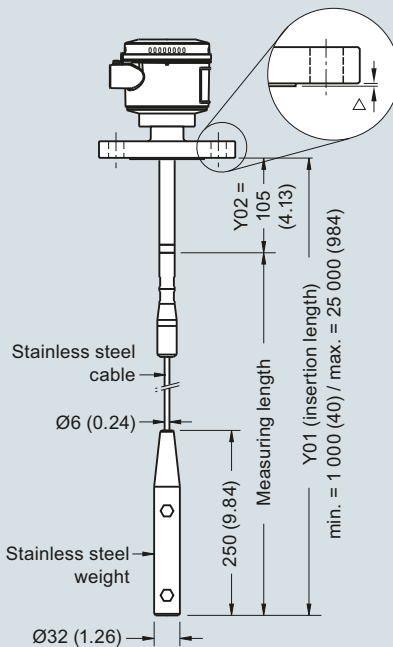


Flange Facing (raised face)	
Flange Class	Facing thickness
△ ASME 150/300	2 (0.08)
△ ASME 600/900	7 (0.28)
△ PN16/40	2 (0.08)

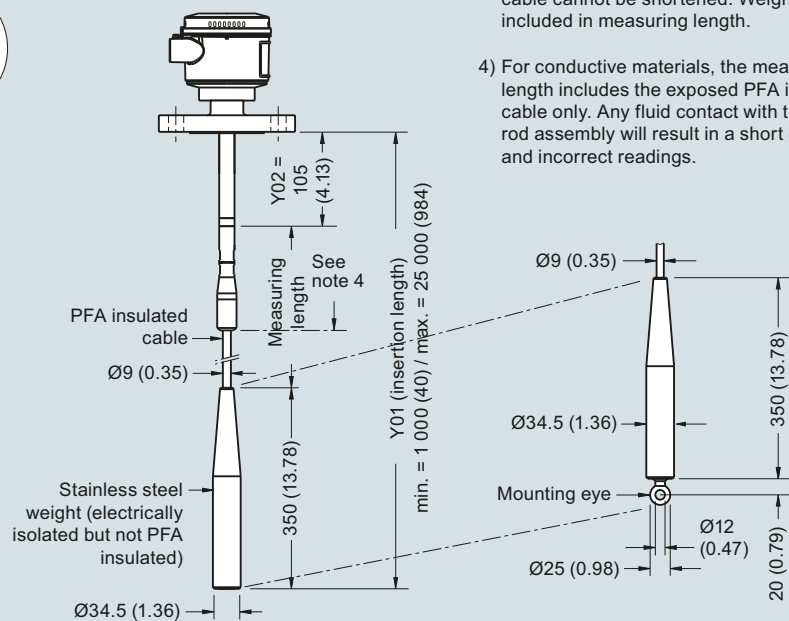
#### Notes:

- 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<sup>2)</sup> Welded Flange (7ML5672)



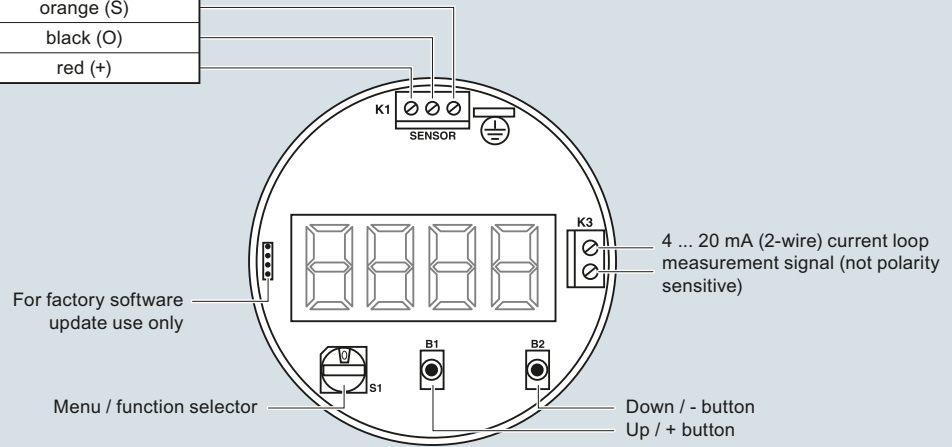
#### Cable version, insulated<sup>3)</sup> Welded Flange (7ML5673)



SITRANS LC300 flanged process connections, dimensions in mm (inch)

**Circuit diagrams**

With safety barrier	Without safety barrier
white (S)	orange (S)
black (O)	black (O)
red (+)	red (+)



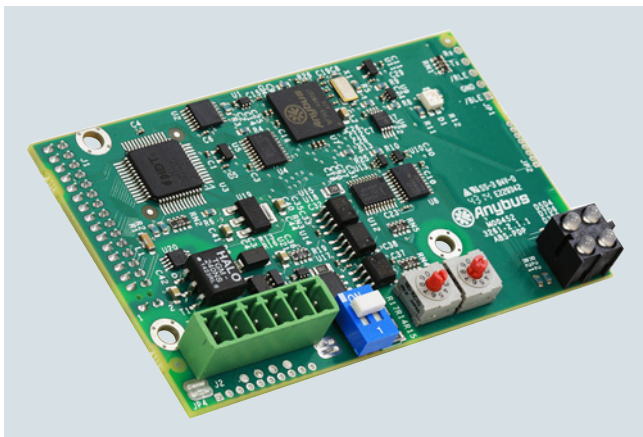
SITRANS LC300 connections

## 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 DP-V0 and DeviceNet only)
- Modules available for PROFIBUS DP-V0, PROFIBUS DP-V1, 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 DP-V0 versus PROFIBUS DP-V1

The PROFIBUS DP-V1 card was added to MultiRanger 200 HMI and HydroRanger 200 HMI to provide acyclic communication and SIMATIC PDM support over PROFIBUS and PROFINET. For backward compatibility, the PROFIBUS DP-V0 card can also be used with MultiRanger 200 HMI and HydroRanger 200 HMI.

MultiRanger 100/200, HydroRanger 200, BW500/L, and SF500 are compatible only with the PROFIBUS DP-V0 module.

##### Technical specifications

Module type	PROFIBUS DP-V0
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"> <li>• MultiRanger 200 HMI</li> <li>• MultiRanger 100/200</li> <li>• HydroRanger 200 HMI</li> <li>• HydroRanger 200</li> <li>• Milltronics BW500, BW500/L</li> <li>• Milltronics SF500</li> </ul>

Module type	PROFIBUS DP-V1
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"> <li>• MultiRanger 200 HMI</li> <li>• HydroRanger 200 HMI</li> </ul>

Module type	PROFINET IO module
Interface	RJ 45 female
Transmission rate	10/100 Mbits/s
Address	IP address though dip switches or via DCP or DHCP
Connection	Slave/server
SmartLinX module compatibility	<ul style="list-style-type: none"> <li>• MultiRanger 200 HMI</li> <li>• HydroRanger 200 HMI</li> <li>• Milltronics BW500, BW500/L</li> <li>• Milltronics SF500</li> </ul>

Module type	Modbus TCP/IP, EtherNet/IP
Interface	RJ 45 female
Transmission rate	10/100 Mbits/s
Address	IP address though dip switches or via DCP or DHCP
Connection	Slave/server
SmartLinX module compatibility	<ul style="list-style-type: none"> <li>• MultiRanger 200 HMI</li> <li>• HydroRanger 200 HMI</li> <li>• Milltronics BW500, BW500/L</li> <li>• Milltronics SF500</li> </ul>

Module type	DeviceNet
Interface	DeviceNet physical layer
Transmission rate	125, 250, 500
MAC address	0 ... 63
Connection	Slave (group 2)
SmartLinX module compatibility	<ul style="list-style-type: none"> <li>• MultiRanger 200 HMI</li> <li>• MultiRanger 100/200</li> <li>• HydroRanger 200 HMI</li> <li>• HydroRanger 200</li> <li>• Milltronics BW500, BW500/L</li> <li>• Milltronics SF500</li> </ul>

Selection and ordering data	Article No.
SmartLinX modules provide direct digital connection to popular industrial communications buses with true plug-and-play compatibility with products manufactured by Siemens.	
SmartLinX PROFIBUS DP-V0 module	<b>7ML1830-1HR</b>
SmartLinX PROFIBUS DP-V1 module	<b>A5E35778741</b>
SmartLinX DeviceNet module	<b>7ML1830-1HT</b>
Smartlinx PROFINET IO module <sup>1)</sup>	<b>7ML1830-1PM</b>
SmartLinX Modbus TCP/IP, EtherNet/IP module	<b>7ML1830-1PN</b>
<b><i>Operating Instructions</i></b>	
All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>	

<sup>1)</sup> SmartLinX PROFINET module is certified per standard V2.2.4.

## Level measurement

Communication

Notes

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