Level measurement guide

for complete level solutions

Sensor Systems

Answers for industry.

SIEMENS

Contents

Intelligence and reliability

Siemens signal processing technology is based on experience gained from over a million level instruments installed in industrial applications around the world: this technology makes Siemens instruments exceptionally intelligent and reliable.

Each of our technologies sets the standard for processing raw data into accurate and reliable level readings and can be defined by its innovative and advanced approach to measurement.

Sonic Intelligence® – Patented echo processing technology for ultrasonic level controllers. The software's advanced algorithms provide intelligent processing of echo profiles. The result is repeatable, fast, and consistent measurement you can trust.

Process Intelligence – Advanced echo processing technology for radar instruments facilitates quick installation, programming, and operation. The signal processing provides exceptional accuracy and the ability to automatically ignore obstructions.

Active shield and Inverse Frequency technology – Siemens capacitance instruments use active shield technology to ensure true and accurate level readings are recorded from the material surface. Our Inverse Frequency method of processing and measuring data is unmatched in the industry providing more reliable level readings than other capacitance instruments.

After installing Siemens level measurement instruments in your application, you gain peace of mind: the result is cost-effective measurement of continuous level, point level, and interface in a wide range of applications, including water and wastewater, chemical, petrochemical, food, mining, cement, aggregates, and bulk solids.

Our products are intelligent and reliable. That's why customers choose Siemens level instruments in millions of industrial process applications worldwide.

Point level measurement

Simply reliable cost-effective level switches

Siemens offers point level switches using ultrasonic, rotating, vibrating, and inverse frequency shift capacitance technologies. Our broad selection of switches provides cost-effective solutions for practically all solids and liquids applications.

Siemens level switches detect high, low, and demand levels in solids, including low bulk density applications such as dry powder and fine grain, and for liquid applications, including sticky material.

Our level switches offer superior performance while reducing maintenance, downtime, and equipment replacement cost. Their robust design lasts in harsh and abrasive environments, guaranteeing a long service life, and low cost of ownership. They are easy to set up, and connect to any alarm or control system.

	SITRANS LVS100 Vibrating point level switch for high or low level detection of dry powder, fine grain, and granular bulk solids with densities starting at 60 g/l (3.7 lb/ft³).	**SITRANS LVS200** Vibrating point level switch for dry powder, fine grain, and granular solids with bulk densities as low as 5 g/l (0.3 lb/ft³).
Technology	Vibrating point level switch	Vibrating point level switch
Range	170 mm to 2 m (6.7" to 6.5 ft)	• Rigid extension: 165 mm to 4 m (6.5" to 13 ft) • Cable extension: 700 mm to 20 m (27.5" to 65 ft)
Process temperature	-40 to 150 °C (-40 to 302 °F)	-40 to 150 °C (-40 to 302 °F)
Process pressure	Up to 10 bar g (145 psi g)	Up to 10 bar g (145 psi g)
Key features	• High or low level alarm • Compact design • Top, side, angle mount • Rotatable enclosure • Extended model up to 2 m (6.5 ft) • Replaceable electronics	• High or low level alarm • Compact design • Top, side, angle mount • Rotatable enclosure • Self-cleaning fork • Extended model up to 20 m (65 ft) • Interface model with detection of solids in liquids • Best-in-industry lowest density measurement below 5 g/l (0.3 lb/ft³) • Independent of dielectric and other material conditions such as vapors • Unaffected by external vibrations • Replaceable electronics • Short fork option for short insertion lengths • Remote electronics option
Output	• DPDT relay (fail-safe: high or low)	• SPDT relay (fail safe: high or low) • DPDT relay (fail safe: high or low) • 3-wire PNP • 8/16 mA or 4 to 20 mA • 2-wire without contact
Communications	Local indicator	Local indicator
Power specifications	19 to 230 V AC, +10%, 50/60 Hz, 8 VA or 19 to 50 V DC, +10%, 2 W	19 to 230 V AC, +10%, 50/60 Hz, 8 VA or 19 to 55 V DC, +10%, 1.5 W
Approvals	CE, CSA, FM, ATEX, C-TICK	CE, CSA, FM, ATEX, C-TICK

SITRANS LPS200	SITRANS LVL100	SITRANS LVL200	Pointek® ULS200
Rotary paddle switch for point level detection of powder and granular solids with bulk densities as low as 15 g/l (0.94 lb/ft³).	Compact vibrating level switch for use 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.	Standard vibrating level switch for use in all liquid and slurry applications such as overflow, high, low, and demand applications, as well as pump protection. For use in SIL-2 applications.	Ultrasonic non-contacting switch with two switch points for level detection of bulk solids, liquids, and slurries in a wide variety of industries; ideal for sticky materials.
Paddle switch	Vibrating point level switch	Vibrating point level switch	Ultrasonic point level
100 mm to 10 m (4" to 30 ft)	40 mm (1.5") insertion	40 mm to 4 m (1.5" to 13 ft)	• Liquids: 0.25 m to 5 m (0.8 to 16 ft) • Solids: 0.25 m to 3 m (0.8 to 10 ft)
• Standard: -25 to 80 °C (-13 to 176 °F) • High temperature: -25 to 350 °C (-13 to 662 °F)	• Standard: -40 to 100 °C (-40 to 212 °F) • High temperature: -40 to 150 °C (-40 to 302 °F) • Hygienic applications: -40 to 150 °C (-40 to 302 °F)	• Standard: -50 to 150 °C (-58 to 302 °F) • High temperature: -50 to 250 °C (-58 to 482 °F)	• -40 to 60 °C (-40 to 140 °F) • -20 to 60 °C (-5 to 140 °F) if mounted in metal threads
• Up to 0.5 bar g (7.25 psi g) • Up to 10 bar g (145 psi g) optional	-1 to 64 bar g (-14.5 to 928 psi g)	-1 to 64 bar g (-14.5 to 928 psi g)	Up to 0.5 bar g (7.25 psi g)
• Hinged measuring vane for lower densities and mounting through small process connections • Installation through standard process connections with boot vane starting at 1" NPT or BSP • Five point ingress protection • Motor sleep mode during switched state to provide long service life • Independent of dielectric and other material conditions such as vapors • Switch selectable AC/DC power supply options • Rotatable enclosure for easy install and wiring • Unique friction clutch mechanism to prevent impact damage from falling process materials • Compact, extended models, and cable extension up to 10 m (30 ft)	• Compact insertion length of 40 mm (1.5") for tight spaces • Test function standard to confirm correct operation • Fault monitoring for corrosion, loss of vibration, or line break to the piezo drive • Independent of dielectric and other material conditions such as vapors, gases, bubbles, foam • Robust design with threaded piezo drive system to prevent failure in aggressive applications	• Compact insertion length of 40 mm (1.5") for tight spaces • Fault monitoring for corrosion, loss of vibration, or line break to the piezo drive • SIL-2 qualified for high level and dry run applications • Hygienic process connections • Independent of dielectric and other material conditions such as vapors, gases, bubbles, foam • Modular design for ease of maintenance	• Integral temperature compensation • Two switch outputs for high-high, high, low, and low-low alarms for pump-up/pump-down control • Easy two button programming **Options** • Flange adapter • Sanitary mounting • SIL-1 functional safety in accordance with IEC 61508
• Microswitch SPDT 5 A at 250 V AC, non-inductive • Microswitch SPDT contact 4 A at 30 V DC, non-inductive	• Contactless electronic switch • Transistor output PNP	• Relay output (DPDT), two floating SPDTs • Contactless electronic switch	• AC version: 2 form C (SPDT) relays, (5 A at 250 V AC) • DC version: 2 form C (SPDT) relays, (5 A at 48 V DC) or transistor (two switches, 100 mA @ 48 V DC)
Local indicator	Local indicator	Local indicator	Local indicator
• Optional jumper selectable • 115 V AC, ±15%, 50/60 Hz, 4 VA or 230 V AC, ±15%, 50 Hz, 6 VA or 24 V AC or 48 V AC or 24 V DC ±15%, 2.5 W	• 20 to 253 V AC, 50/60 Hz • 20 to 253 V DC	• 20 to 253 V AC, 50/60 Hz • 20 to 72 V DC	• 100 to 230 V AC, ±15%, 50/60 Hz, 12 VA/5 W max. • 18 to 30 V DC, 3 W
CSA, ATEX, FM, CE, C-TICK	CE, Overfill protection (WHG), Shipping approvals, 3A	CE, Overfill protection (WHG), FM, Shipping approvals, ATEX, IECEx, SIL-2, FDA, EHEDG, 3A	CE, $CSA_{NRTL/C}$, FM, 3A, ATEX, C-TICK, INMETRO, SIL-1

Point level measurement

Level detection when precision, space, and reliability matter most

Our unique inverse frequency shift approach to capacitance technology ensures accurate, reliable, and repeatable measurement, even in dusty, turbulent, and vaporous environments, or in situations with product buildup. Because even a small level change creates a large change in frequency, our instruments provide better resolution and consistently outperform conventional devices. With special features such as tip-sensitive probes, Active-Shield technology, and modular probe options available on various models, our instruments offer practical solutions to a wide variety of point level, continuous level, and interface applications.

	Pointek CLS100 Compact 2-wire inverse frequency shift capacitance switch for level detection in constricted spaces, interfaces, solids, liquids, slurries, and foam.	**Pointek CLS200** Inverse frequency shift capacitance switch with a high level of chemical resistance; ideal for level detection of interfaces, solids, liquids, slurries, and foam, and for simple pump control.
Range	100 mm (4”)	Rod: 5.5 m (18 ft) Cable: up to 30 m (98 ft)
Process temperature	• -30 to 100 °C (-40 to 212 °F) • -10 to 100 °C (14 to 212 °F) (fully synthetic version)	-40 to 125 °C (-40 to 257 °F) with thermal isolator
Process pressure	Up to 10 bar g (145 psi g)	• Up to 25 bar g (365 psi g) • Up to 10 bar g (145 psi g) cable version
Key features	• Inverse frequency technology • Sensitivity adjustment • Level detection independent of tank wall/pipe • Suitable for hazardous areas **Options** • Intrinsically Safe • Dust-ignition proof • General purpose and hazardous approvals • SensGuard for abrasive applications • PPS or PVDF probes • IP68 (IP65 cable version)	• Inverse frequency technology • Level detection independent of tank wall/pipe • Suitable for hazardous areas • Multiple outputs • Fully adjustable hysteresis **Options** • Rigid, cable, and sanitary • SensGuard for abrasive applications • Thermal isolator • General purpose and hazardous approvals **Standard** • SIL-2 functional safety in accordance with IEC 61508
Output	• 4/20 mA or 20/4 mA 2-wire current loop • Solid-state or relay switch • Relay output (fully synthetic version)	**Standard** • One form C (SPDT) relay • Solid-state switch **Digital** • Solid-state switch
Communications	LED indicators	**Standard** • 3 LED indicators **Digital** • PROFIBUS PA • Local display • Push-button calibration • SIMATIC PDM compatible
Power specifications	• Standard: 12 to 33 V DC • Intrinsically Safe: 10 to 30 V DC	**Standard**: 12 to 250 V AC/DC, 0 to 60 Hz, 2 W max. **Digital:** 12 to 30 V DC **Intrinsically Safe:** 12 to 24 V DC
Approvals	CE, CSA, FM, ATEX Lloyd’s Register of Shipping, C-TICK, WHG	CE, CSA, FM, ATEX, Lloyd’s Register of Shipping, C-TICK, WHG, VLAREM II, SIL-2

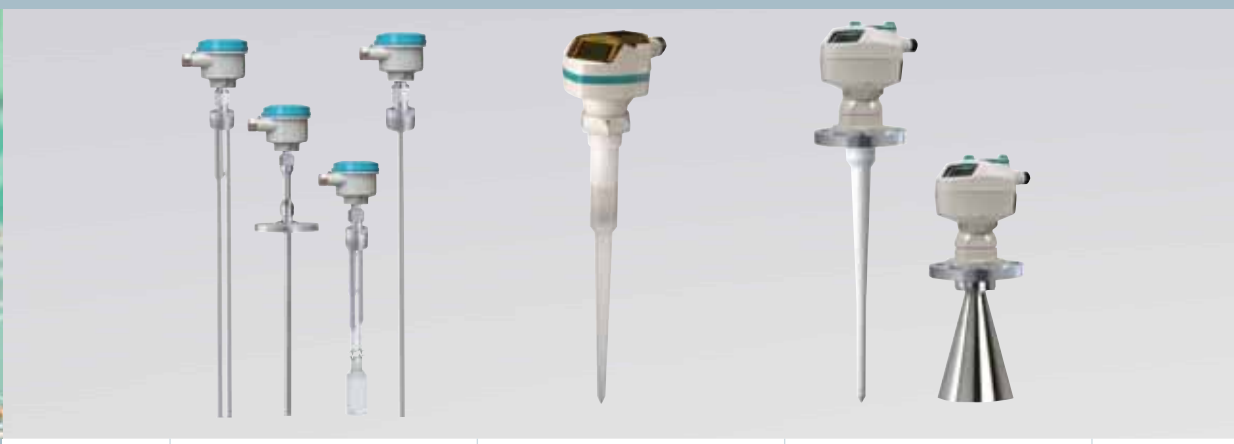
Inverse frequency shift capacitance

Level measurement when precision and reliability matter most

Pointek CLS300	Pointek CLS500	SITRANS LC300	SITRANS LC500
Inverse frequency shift capacitance level switch for detecting solids, liquids, slurries, and interface in demanding conditions of elevated pressures, temperatures, and corrosive and abrasive materials.	Inverse frequency shift capacitance level switch for detecting interfaces, solids, liquids, toxic and aggressive chemicals in critical conditions of extreme temperature and extreme pressure.	Inverse frequency shift capacitance level transmitter for liquids and solids applications; ideal for standard industrial applications in chemical, hydrocarbon processing, food and beverage, mining, aggregates, and cement.	Inverse frequency shift capacitance level and interface transmitter for extreme and critical process conditions, such as oil and liquified natural gas (LNG), toxic and aggressive chemicals, and vapors (see page 16 for probe configurations).
Rod: 1 m (40") Cable: 25 m (82 ft)	Rod: 1 m (40")	Rod: 5.5 m (18 ft) Cable: 25 m (82 ft)	Rod: 5.5 m (18 ft) Cable: 35 m (115 ft)
• -40 to 200 °C (-40 to 392 °F) • -40 to 400 °C (-40 to 752 °F) (High temperature version)	• -50 to 200 °C (-58 to 392 °F) • -60 to 400 °C (-76 to 752 °F) (High temperature version)	-40 to 200 °C (-40 to 392 °F)	• -50 to 200 °C (-58 to 392 °F) • -200 to 200 °C (-328 to 392 °F): special order **Option** -60 to 400 °C (-76 to 752 °F)
Up to 35 bar g (511 psi g)	• Up to 150 bar g (2175 psi g) • Up to 345 bar g (5004 psi g) (High pressure version)	Up to 35 bar g (511 psi g)	Up to 150 bar g (2175 psi g) **Options** • Up to 345 bar g (5004 psi g) • Other process pressure options
• Patented Active-Shield technology • Multiple outputs • Five dip switches for special adjustments e.g. failsafe, high/low **Options** • Extensions up to 25 m (82 ft) • Thermal isolator • High temperature (HT version) • SIL-2 functional safety in accordance with IEC 61508	• Patented Active-Shield technology • Push-button calibration • Integrated local display • 2-wire loop signal • Full-function diagnostics **Options** • One-point calibration in % • High temperature (HT version) • High pressure (enamel version) • Single piece flange construction for extreme conditions • SIL-1 functional safety in accordance with IEC 61508	• Patented Active-Shield technology • Push-button calibration • Integrated local display • Highly accurate and reliable PFA-lined probes	• Patented Active-Shield technology • Push-button calibration • Integrated local display • Full-function diagnostics • Inverse frequency approach provides high resolution **Options** • High temperature (enamel version) • High pressure (enamel version) • SIL-1 functional safety in accordance with IEC 61508
Standard • One form C (SPDT) relay • Solid-state switch **Digital** • Solid-state switch	• 4 to 20/20 to 4 mA 2-wire current loop • Solid-state switch	4 to 20/20 to 4 mA 2-wire current loop	• 3.6 to 22 mA/22 to 3.6 mA 2-wire current loop • Solid-state switch
Standard • 3 LED indicators **Digital** • PROFIBUS PA • Local display • Push-button calibration • SIMATIC PDM compatible	• HART • SIMATIC PDM compatible • Local display	Local display	• HART • SIMATIC PDM • Local display
Standard: 12 to 250 V AC/DC, 0 to 60 Hz, 2 W max. **Digital**: 12 to 30 V DC	Max. 33 V DC Min. 12 V DC at 3.6 mA Min. 9.5 V DC at 22 mA	12 to 32 V DC any polarity, 2-wire current loop (9 V at 22 mA)	• 12 to 33 V DC at 3.6 mA; 9.5 to 33 V DC at 22 mA • 3.6 to 22 mA/22 to 3.6 mA (2-wire current loop)
CE, CSA, FM, ATEX, Lloyd's Register of Shipping, C-TICK, WHG, VLAREM II, SIL-2	CE, CSA, FM, ATEX, Lloyd's Register of Shipping, C-TICK, WHG, current signaling according to NAMUR NE 43, Bureau Veritas, SIL-1	CE, CSA, FM, ATEX, C-TICK, current signaling according to NAMUR NE 43, Bureau Veritas, ABS	CE, CSA, FM, ATEX, C-TICK, Lloyd's Register of Shipping, current signaling according to NAMUR NE 43, Bureau Veritas, SIL-1

Radar level measurement

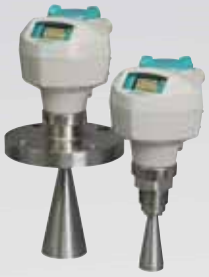
Accurate measurement even in demanding applications



Siemens radar instruments offer a wide selection for your level measurement applications. You have the choice of 2-wire, 4-wire, guided wave, pulse, or FMCW radar transmitters. Combined with our many antenna types, there is a solution for even the toughest applications.

What makes Siemens instruments unique is our built-in advanced Process Intelligence echo processing. This software enables our transmitters to work more efficiently through all phases of operation from installation to reliable measurement processing. Our instruments are easy to install; common parameters and graphical user interfaces make the instruments easy to configure and program.

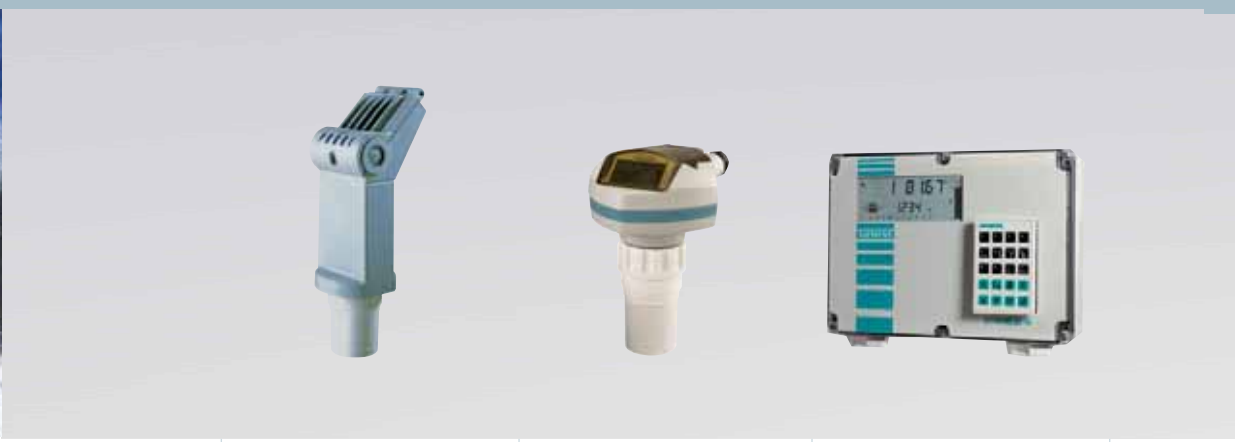
	SITRANS LG200 Guided wave radar transmitter for short to medium range level, level/interface and volume measurement of liquids and solids (see page 17 for probe configurations).	**SITRANS Probe LR** 2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage vessels with nominal pressure and temperature to a range of 20 m (66 ft).	**SITRANS LR200** 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) (see page 16 for antenna options).
Technology	Guided wave radar	Pulse radar	Pulse radar
Range	22.5 m (75 ft)	20 m (66 ft)	20 m (66 ft)
Process temperature	-196 to 427 °C (-320 to 800 °F)	-40 to 80 °C (-40 to 176 °F)	-40 to 200 °C (-40 to 392 °F)
Process pressure	Full vacuum to 431 bar g (6250 psi g), probe dependent	Up to 3 bar g (43.5 psi g)	Up to 40 bar g (580 psi g), process connection type dependent
Key features	• Coaxial, rigid, and flexible single or twin rods for many applications • Dependable performance – unaffected by change in density and dielectric properties • Low dielectric measurement – accurately measures materials with a dielectric of 1.4 and higher • Extreme conditions – measures in applications from -196 to 427 °C (-320 to 800 °F) and from full vacuum to 431 bar g (6250 psi g) • Reliable measurement – accurate to 2.5 mm (0.1") • Extended insertion length – probe lengths up to 22.5 m (75 ft) • Hazardous approvals – Intrinsically Safe, Explosion Proof, and Non-Incendive approvals • Easy setup – push button configuration or HART communication • SIL-1/SIL-2 functional safety in accordance with IEC 61508	• Process Intelligence – advanced echo processing for unparalleled performance • Auto False-Echo Suppression • Level and volume measurement • Infrared Intrinsically Safe hand-held programmer • Patented, shielded, and hermetically sealed polypropylene antenna/process connection; 100 mm (4") shield standard • Rotating head aligns with conduit for easy wiring **Option** • 250 mm (10") shield length	• Process Intelligence – advanced echo processing for unparalleled performance • Auto False-Echo Suppression • Level, space, distance, and volume measurement • Infrared Intrinsically Safe hand-held programmer • Patented, shielded, and hermetically sealed polypropylene antenna/process connection; 100 mm (4") shield standard **Options** • 250 mm (10") shield length • Process connections and antenna options • Purging (self-cleaning)
Output	4 to 20 mA/HART	4 to 20 mA/HART	• 4 to 20 mA/HART or PROFIBUS PA • NE 21, NE 43
Communications	• HART • Enhanced EDD for SIMATIC PDM for configuration and diagnostics • Enhanced EDD for AMS and 375 (HART)	• HART • EDD for SIMATIC PDM for configuration and diagnostics	• HART or PROFIBUS PA • Enhanced EDD for SIMATIC PDM for configuration and diagnostics • Enhanced EDD for AMS and 375 (HART)
Power specifications	11 to 36 V DC	24 V DC nominal, 30 V DC max. 4 to 20 mA	• Nominal 24 V DC, max. 30 V DC, 4 to 20 mA • PROFIBUS PA 15.0 mA
Approvals	$CSA_{us/c}$, CE, FM, Hazardous Approvals, ATEX, C-TICK, SIL-1, SIL-2	CE, $CSA_{US/C}$, FM, ATEX, Lloyd's Register of Shipping, ABS, Industry Canada, FCC, R&TTE, C-TICK	CE, $CSA_{US/C}$, FM, ATEX, $ANZE_x$, $IECE_x$, Lloyd's Register of Shipping, ABS Type Approval, Industry Canada, FCC, R&TTE, C-TICK



SITRANS LR250	SITRANS LR260	SITRANS LR400	SITRANS LR460
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). Ideal for small vessels and low dielectric media.	2-wire, 25 GHz pulse radar level transmitter for continuous monitoring of solids in silos to a range of 30 m (98 ft). Ideal for applications with extreme dust and high temperatures to 200 °C (392 °F).	4-wire, 24 GHz FMCW radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and high pressure, to a range of 50 m (164 ft). Ideal for low dielectric media.	4-wire, 24 GHz FMCW radar level transmitter for continuous monitoring of solids in silos to a range of 100 m (329 ft). Ideal for applications with extreme dust and high temperatures to 200 °C (392 °F).
Pulse radar	Pulse radar	FMCW radar	FMCW radar
20 m (66 ft)	30 m (98 ft)	50 m (164 ft)	100 m (329 ft)
-40 to 200 °C (-40 to 392 °F) at process connection with FKM O-ring	-40 to 200 °C (-40 to 392 °F)	-40 to 200 °C (-40 to 392 °F) **Option** Up to 250 °C (482 °F)	-40 to 200 °C (-40 to 392 °F)
Up to 40 bar g (580 psi g), process connection dependent	Up to 3 bar g (43.5 psi g), process connection dependent	Up to 40 bar g (580 psi g), process connection dependent	0.5 bar g (7.25 psi g) max.
• Easy to install – small horn and narrow beam angle allows installation practically anywhere on your vessel • Process Intelligence – advanced echo processing for unparalleled performance • Reliable and accurate – extremely high signal and low noise yields high performance • Graphical user interface (LUI) makes operation simple with plug-and-play setup using the intuitive Quick Start Wizard • LUI displays echo profiles for diagnostic support • Short blanking distance for improved minimum measuring range to 50 mm (2") from the end of the horn	• Easy to install – small horn and narrow beam angle allows installation practically anywhere on your vessel • Process Intelligence – advanced echo processing for unparalleled performance • Reliable and accurate – extremely high signal and low noise yields high performance • Graphical user interface (LUI) makes operation simple with plug-and-play setup using the intuitive Quick Start Wizard • LUI displays echo profiles for diagnostic support • Optional dust cover and air purge available	• Level and volume measurement • Infrared Intrinsically Safe hand-held programmer • Auto False-Echo Suppression • Self-calibration with internal reference • 24 GHz FMCW and high signal-to-noise ratio **Options** • High temperature extension • Purging (self-cleaning)	• Process Intelligence – advanced echo processing for unparalleled performance • High frequency radar provides excellent reflection from solids • Extremely high signal yields high performance (high signal-to-noise ratio) • Virtually unaffected by dust or temperature changes • Integrated Easy Aimer for optimizing signal on sloped surfaces • Quick Start Wizard for setup • Infrared Intrinsically Safe hand-held programmer • Optional dust cover and air purge available
• 4 to 20 mA/HART or PROFIBUS PA • NE 21, NE 43	• 4 to 20 mA/HART or PROFIBUS PA • NE 21, NE 43	• 4 to 20 mA/HART or PROFIBUS PA • One relay	• 4 to 20 mA/HART or PROFIBUS PA • One relay
• HART or PROFIBUS PA • Enhanced EDD for SIMATIC PDM for configuration and diagnostics • Enhanced EDD for AMS and 375 (HART)	• HART or PROFIBUS PA • SIMATIC PDM for configuration and diagnostics	• HART or PROFIBUS PA • SIMATIC PDM for configuration and diagnostics	• HART or PROFIBUS PA • SIMATIC PDM for configuration and diagnostics
• Nominal 24 V DC, max. 30 V DC, 4 to 20 mA • PROFIBUS PA 15.0 mA	• Nominal 24 V DC max. 30 V DC, 4 to 20 mA • PROFIBUS PA 15.0 mA	• 120 to 230 V AC, ±15%, 50/60 Hz,12 VA/6 W • 24 V DC, +25/-20%, 6 W (optional)	• 100 to 230 V AC ±15%, 50/60 Hz, 6 W (12 VA) • 24 V DC,+25/-20%, 6 W (optional)
$CSA_{us/c}$, CE, FM, ATEX, C-TICK, R&TTE, Lloyd's Register of Shipping, ABS Type Approval, Industry Canada, FCC	$CSA_{NRTL/C}$, CE, FM, ATEX, IECEx, R&TTE, Industry Canada, FCC, C-TICK	CE, $CSA_{NRTL/C}$, FM, ATEX, Lloyd's Register of Shipping, ABS Type Approval, Industry Canada, FCC, R&TTE	$CSA_{us/c}$, CE, FM, ATEX, R&TTE, Industry Canada, FCC, C-TICK

Ultrasonic level measurement

From simple level monitoring to complex control systems



Ultrasonic instruments 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. Non-contacting technology offers the advantage of low maintenance. Siemens is the world leader in ultrasonic level technology, with many models available and strong application experience to support you.

From simple integrated level measurement transmitters like The Probe to our advanced ultrasonic control systems like the SITRANS LUC500, our ultrasonic devices rely on our patented Sonic Intelligence echo processing to ensure reliable and accurate measurements. Our controllers combine with Echomax® transducers to create the most reliable and accurate ultrasonic solutions on the market.

	The Probe Short-range integrated ultrasonic level transmitter; ideal for liquids and slurries in open or closed vessels.	**SITRANS Probe LU** 2-wire, loop powered ultrasonic transmitter for level, volume, and flow monitoring of liquids in storage vessels, simple process vessels, and open channels.	**SITRANS LU** Ultrasonic long-range level controller for liquids and solids up to 60 m (200 ft). LU01: single point LU02: 2 point LU10: 10 point
Range	0.25 to 5 m (0.8 to 16.4 ft)	• 6 m model: 0.25 to 6 m (0.8 to 20 ft) • 12 m model: 0.25 to 12 m (0.8 to 39 ft)	0.3 m (1 ft) to 60 m (200 ft), transducer and material dependent
Process temperature	• -40 to 60 °C (-40 to 140 °F) • -20 to 60 °C (-4 to 140 °F) if mounted in metal threads	-40 to 85 °C (-40 to 185 °F)	Transducer dependent Max. 8 bar g (120 psi g)
Process pressure	Normal to atmospheric pressure	0.5 bar g (7.25 psi g)	Transducer dependent
Key features	• Integral temperature compensation • PVDF copolymer transducer • Easy to install, program, and maintain • Patented Sonic Intelligence echo processing **Option** • Sanitary 10 cm (4") mounting	• High signal-to-noise ratio • Patented Sonic Intelligence echo processing • Auto False-Echo Suppression • Level-to-volume or level-to-flow conversion • Infrared Intrinsically Safe (IS) handheld programmer • Choice of threaded connections • ETFE or PVDF copolymer transducer • 360° rotating head aligns with conduit for easy wiring	• High/low alarm • Multi-point measuring: 2 (LU02); 10 (LU10) • Differential or average measurement (LU02 and LU10) • Volume conversion • Priority scanning (LU10) • Programmable with handheld programmer or PC **Options LU10** • LU AO Analog Output Module • LU SAM Satellite Alarm Module
Output	• One relay, 4 to 20 mA (3-wire) • 4 to 20 mA (2-wire)	• 4 to 20 mA/HART • PROFIBUS PA • Intrinsically Safe (optional)	• 4 form C (SPDT) relays (5A at 250 V AC) (LU01, LU02) • Up to 20 relays (LU10) • 4 to 20 mA (isolated)
Communications		• HART or PROFIBUS PA • EDD for SIMATIC PDM for remote configuration and diagnostics	• Dolphin RS-232/RS-485 (LU01, LU02) • Dolphin via infrared (LU10) **Options** • SmartLinx® (see page 18) PROFIBUS DP, Allen-Bradley® I/O
Power specifications	• 3-wire version: 18 to 30 V DC, 0.2 A max. • 2-wire version: 12 to 28 V DC, 0.1 A surge	**HART:** nominal 24 V DC with max. 550 Ohm, 30 V DC maximum, 4 to 20 mA **PROFIBUS:** powered, as per IEC 61158-2; 12, 13, 15 or 20 mA	**LU01, LU02** • AC version: 100/115/200/230 V AC • DC version: 18 to 30 V DC, 25 W **LU10** • 100/115/200/230 V AC
Approvals	CE, $CSA_{NRTL/C}$, FM, C-TICK	CE, $CSA_{US/C}$, FM, C-TICK, ATEX, Lloyd's Register of Shipping, ABS, ANZEx, IECEx	CE, $CSA_{NRTL/C}$, FM, Lloyd's Register of Shipping, ATEX

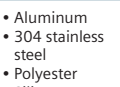
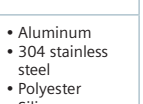
MultiRanger® 100/200 Versatile short- to medium-range ultrasonic single- and multi-vessel level controller for virtually any application in a wide variety of industries.	**HydroRanger 200** Ultrasonic level controller for up to six pumps provides control, differential control, and open channel flow monitoring.	**SITRANS LUC500** Complete ultrasonic level controller for monitoring and control of water distribution and wastewater collection systems, with energy-saving algorithms.	**OCM III** High accuracy ultrasonic flow monitor for open channels. Used with Echomax XRS-5 transducer.
0.3 to 15 m (1 to 50 ft), transducer and material dependent	0.3 to 15 m (1 to 50 ft), transducer and material dependent	0.3 to 15 m (1 to 50 ft), transducer and material dependent	0.3 to 1.2 m (1 to 4 ft), or 0.6 to 3 m (2 to 10 ft)
-20 to 50 °C (-4 to 122 °F)	-20 to 50 °C (-4 to 122 °F)	-20 to 50 °C (-4 to 122 °F)	-20 to 50 °C (-4 to 122 °F)
Transducer dependent	Transducer dependent	Transducer dependent	Normal atmospheric pressure
MultiRanger 100 • Simple pump control **MultiRanger 200** • Enhanced pump control • Differential control • Open channel flow monitor • Volume conversion • One mA input **Both MultiRanger 100/200** • Single or dual point • AC or DC • Digital input for back-up level override from a point level device (e.g. Pointek CLS200) • Two discrete inputs • Wall or panel mount	• Single or dual point • Fixed and rotating pump rosters • Ratio pump runtimes • Controls up to six pumps • Screen rake automation • Influent and effluent monitor • Open channel flow monitor • Remote collection monitor • Sampler control • Volume conversion • Scum line reduction • High level back-up alarm input • One mA input • Two discrete inputs • AC or DC • Wall or panel mount	• Fixed and rotating pump rosters • Ratio pump runtimes • Time-based control options • Screen rake automation • Influent and effluent monitor • Remote collection monitor • Sampler control • Open channel flow monitor • RTU and data logger • Volume conversion • Discrete inputs for pump inter-locks/pump faults feedback • Report by exception • Combined sewer overflow (CSO) logging **Options** • Wall, rack, or panel mount	• Influent and effluent monitor • Sampler control • Low power remote monitoring • Data logger • Remote connection via modem • Dual power input • Temperature sensor input
• One relay (MultiRanger 100 only) • Three relays • Six relays • Two 4 to 20 mA outputs (isolated)	• Six relays standard • Two 4 to 20 mA outputs (isolated) • One or three relays optional, single channel level reading only	Five relays, 5A at 250 V AC, non-inductive • Wall mount version: 4 form A (SPST) relays, 1 form C (SPDT) relay • Rack and panel mount version: 4 form A (SPST) relays, 1 form B (SPST) relay	• Three relays • 4 to 20 mA (isolated)
• RS-232 with Modbus® RTU or ASCII via connector • RS-485 with Modbus RTU or ASCII via terminal strips • Compatible with SIMATIC PDM via Modbus RTU **Options** • SmartLinx cards for PROFIBUS DP, Allen-Bradley I/O, DeviceNet	• Built-in Modbus RTU or ASCII via RS-485 • Compatible with SIMATIC PDM via Modbus RTU **Options** • Dolphin Plus® • SmartLinx cards for PROFIBUS DP, Allen-Bradley I/O, DeviceNet	Telemetry capability with Modbus RTU/ASCII via RS-232/RS-485 **Options** • Dolphin Plus • SmartLinx cards for PROFIBUS DP, Allen-Bradley I/O, DeviceNet	Via RS-232 **Options** • Flow Reporter software
• AC version: 100 to 230 V AC ±15%, 50/60 Hz, 36 VA (17 W) • DC version: 12 to 30 V DC (20 W)	• AC version: 100 to 230 V AC ±15%, 50/60 Hz, 36 VA (17 W) • DC version: 12 to 30 V DC (20 W)	• AC version: 100 to 230 V AC ±15%,50/60 Hz, 36 VA (17 W) • DC version: 12 to 30 V DC (20 W)	• 100/115/200/230 V AC, ±15%, 50/60 Hz, 20 VA max. • 9 to 30 V DC, 8 W
CE, $CSA_{NRTL/C}$, UL Listed, FM, Lloyd's Register of Shipping, ABS, C-TICK	CE, $CSA_{NRTL/C}$, UL Listed, FM, Lloyd's Register of Shipping, ABS, MCERTS, C-TICK	CE, CSA, UL Listed, FM	CE, $CSA_{NRTL/C}$, FM, MCERTS, C-TICK

Ultrasonic level measurement

From simple level monitoring to complex control systems

Siemens Echomax ultrasonic transducers provide trouble-free, reliable performance. The complete line of transducers is the logical choice for monitoring levels of liquids, slurries, and solids in a wide range of industries. They are impervious to dust, moisture, vibrations, flooding, and high temperatures. Mounting brackets are available for easy installation. The non-contacting ultrasonic technology means there is no material buildup, no corrosion, and no down-time. Siemens transducers are easy to install and are virtually maintenance-free.

Echomax transducers

	Liquids		Liquids and solids						Solids	
			Standard				High temperature		High temperature	
	XRS-5	ST-H	XPS-10 (standard and F models*)	XPS-15 (standard and F models*)	XPS-30	XPS-40	XCT-8	XCT-12	XLT-30	XLT-60
Max. range	8 m (26 ft)	10 m (33 ft)	10 m (33 ft)	15 m (50 ft)	30 m (98 ft)	40 m (130 ft)	8 m (26 ft)	12 m (40 ft)	30 m (98 ft)	60 m (200 ft)
Min. range	0.3 m (1 ft)	0.3 m (1 ft)	0.3 m (1 ft)	0.3 m (1 ft)	0.6 m (2 ft)	0.9 m (3 ft)	0.6 m (2 ft)	0.6 m (2 ft)	0.9 m (3 ft)	1.8 m (6 ft)
Max. temp.	65 °C (149 °F)	73 °C (163 °F) (CSA/FM model) 60 °C (140 °F) (ATEX model)	95 °C (203 °F)	95 °C (203 °F)	95 °C (203 °F)	95 °C (203 °F)	145 °C (293 °F) Sanitary: 125 °C (260 °F)	145 °C (293 °F)	150 °C (300 °F)	150 °C (300 °F)
Min. temp.	-20 °C (-4 °F)	-40 °C (-40 °F) (CSA/FM model) -20 °C (-5 °F) (ATEX model)	-40 °C (-40 °F)	-40 °C (-40 °F)	-40 °C (-40 °F)	-40 °C (-40 °F)	-40 °C (-40 °F)	-40 °C (-40 °F)	-40 °C (-40 °F)	-40 °C (-40 °F)
Typical applications	• Flumes • Weirs • Filterbeds	• Chemical storage • Liquid tanks	• Dusty solids • Slurries • Liquids	• Deep wet wells • Solids	• Powders • Pellets • Solids	• Powders • Pellets • Solids	• Hot acids • Slurries • Food	• Hot liquids • Slurries	• Clinker • Coal bunkers	• Clinker • Coal bunkers
Frequency	44 kHz	44 kHz	44 kHz	44 kHz	30 kHz	22 kHz	44 kHz	44 kHz	22 kHz	13 kHz
Beam angle -3 db	10°	12°	12°	6°	6°	6°	12°	6°	5°	5°
Process connection	1" NPT or R 1" BSPT, EN 10226	2" NPT or R 2" BSPT or G 2" BSPP	1" NPT or R 1" BSPT, EN 10226 F: 1" NPT	1" NPT or R 1" BSPT, EN 10226 F: 1" NPT	R 1.5" BSPT Universal thread 1.5" NPT	R 1.5" BSPT Universal thread 1.5" NPT	1" NPT or R 1" BSPT, EN 10226	1" NPT or R 1" BSPT, EN 10226	1" NPT	1" NPT
Enclosure	• PVDF copolymer and CSM face **Option** • Flange with PTFE facing	• ETFE • PVDF	• PVDF **Option** • PTFE face with CPVC flange	• PVDF **Option** • PVDF with CPVC Flange • PTFE face with CPVC flange	• PVDF **Option** • PVDF with CPVC flange • PTFE face with CPVC flange	PVDF	• PVDF **Option** • DERAKANE® flange; PTFE face with universal PVDF flange	• PVDF **Option** • DERAKANE flange; PTFE face with universal PVDF flange	• Aluminum • 304 stainless steel • Polyester • Silicone	• Aluminum • 304 stainless steel • Polyester • Silicone
										
Compatibilty with Siemens Milltronics ultrasonic controllers										
SITRANS LU	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SITRANS LUC500	✓	✓	✓	✓			✓	✓		
HydroRanger 200	✓	✓	✓	✓			✓	✓		
MultiRanger 100/200	✓	✓	✓	✓			✓	✓		
OCM III	✓									

All Siemens Milltronics transducers have one or more of the following approvals: CE, CSA, FM, ATEX, SAA, ABS, and Lloyd's Register of Shipping. *FM approved.

Remote digital displays

For level reading anywhere

SITRANS RD100 and SITRANS RD200 are remote digital displays for level, flow, pressure, temperature, weighing, and other process instrumentation.

SITRANS RD100 is NEMA 4X IP67 enclosed for indoor and outdoor applications, in hot or cold environments, and in safe or hazardous areas. It remotely displays process variables in a 4 to 20 mA loop.

SITRANS RD200 is a universal input, panel mount remote digital display. Data can be remotely collected, logged, and presented from as many as 100 displays on your local computer using the free downloadable RD Software.

	SITRANS RD100 2-wire loop-powered NEMA 4X IP67 enclosed remote digital display for process instrumentation.	**SITRANS RD200** Universal input, panel mount remote digital display for process instrumentation.
Input types	4 to 20 mA	Universal current, voltage, RTD, thermocouple
Power input	Loop powered	12 to 36 V DC, 12 to 24 V AC, 6W max.
Digits	3½ digit display	4 digit display
Key features	• 2-wire loop powered • Simple two-step configuration • Easy setup • Intrinsically Safe, non-incendive • Two modes of input allow for easy servicing, with no interruption of loop required • Factory calibrated • Large display	• Easy to read in all conditions • Accepts current, voltage, thermocouple and RTD signals • Included software supports remote monitoring, programming, data logging alarm acknowledgement • Can be used for alarm indication or process control applications • Provides power to instrument 24 V DC, 200 mA • Allows user to configure future RD200s with current setup reducing setup time, cost, and errors • Selection of optional enclosures including explosion-proof and standard panel mount
Enclosure	NEMA 4X IP67 impact resistant	NEMA 4X IP65 front panel
Display visibility	25.4 mm (1") high LED display	14 mm (0.56") high LED
Operating temperature	-40 to 85 °C (-40 to 185 °F)	0 to 65 °C (32 to 149 °F)
Accuracy	±0.1% of span ±1 count	Input type dependent
Approvals	FM, CSA hazardous approvals	CE, UL, cUL

Gravimetric level measurement

Precise level measurement independent of material, tank shape, characteristics, and temperature

Gravimetric level measurement with SIWAREX offers high accuracy of 0.1% or better for even the most difficult process application due to the separation of the sensor and the process environment. Siemens offers all components, PLC-based electronics, load cells, and required accessories to implement level measurement solutions for all industries.

	SIWAREX U For SIMATIC S7-300 and ET 200M in combination with load cells.	**SIWAREX CS** For SIMATIC ET 200S in combination with load cells.	**SIWAREX MS** For SIMATIC S7-200 in combination with load cells.
Applications	The complete hopper with load material is weighed, and then the weight of the hopper including the attachments and fittings are zeroed out. This allows the determination of the net fill weight for practically all materials.		
Measuring range	From 6 kg to 1100 tons (14 lbs to 1080 tons), dependent on number and type of load cells (for more details, see WT10 catalog)		
Process temperature	Independent of the process temperature		
Process pressure	Independent of the process pressure		
Key features	• High standard – accuracy of 0.07% • High life-span, low maintenance • Non-contacting and no material dependency • No dependency on the temperature of the material, foam, and suspended substances • No dependency on the hopper form, fittings, and agitators		
Communications	Centralized with SIMATIC CPU via system bus; decentralized via PROFIBUS DP or PROFINET		
Auxiliary power	24 V SIMATIC-system voltage		
Approvals	CE, FM, UL, cUL HazLoc, ATEX Zone 2, Zone 1 in combination with SIWAREX IS		

Hydrostatic level measurement

Level measurement with relative and differential pressure transmitters

Hydrostatic level measurement is low cost for direct mounting or mounting with remote seals on tanks and vessels. These instruments can handle extreme chemical and mechanical loads as well as electromagnetic interference. They are widely applied in chemical and petrochemical industries.

	SITRANS P MPS Hydrostatic level transmitter for direct mounting on tanks or vessels.	**SITRANS P DSIII** Hydrostatic level transmitter for mounting with remote seal on open or closed vessels with corrosive or non-corrosive liquids.	**SITRANS P300** Hydrostatic level transmitter for mounting with front flush design or remote seal on open or closed vessels with corrosive or non-corrosive liquids.
Range	From 0 to 2 mH_20 to 0 to 20 mH_20	8.3 to 30,000 mbar g (0.12 to 435 psi g)	0.01 to 400 bar g (0.15 to 5802 psi g)
Process temperature	-10 to 80 °C (14 to 176 °F)	-40 to 100 °C (-40 to 212 °F)	-40 to 100 °C (-40 to 212 °F)
Process pressure	0 to 20 bar g (0 to 290 psi g)	32 to 160 bar g (464 to 2325 psi g)	0.01 to 400 bar g (0.15 to 5802 psi g)
Key features	• Compact stainless steel enclosure and sensor • Easy installation **Options** • Intrinsically Safe (IS) • Special measuring ranges: 0 to 1 mH_20 to 0 to 200 mH_20 • Cable length up to 200 m (656 ft)	• With remote seals up to 400 °C (752 °F) • Self-diagnostic elements for parameterization **Options** • Intrinsically Safe • Explosion proof • Flame proof • Corrosion-resistant diaphragm and process connections • Range of different process connections	• With remote seals up to 400 °C (752 °F) • With front flush design up to 200 °C (392 °F) • Self-diagnostic elements for parameterization **Options** • Intrinsically Safe • Corrosion-resistant diaphragm and process connections • Range of different process connections
Output	4 to 20 mA	4 to 20 mA	4 to 20 mA
Communications		• HART • PROFIBUS PA • Foundation Fieldbus	• HART • PROFIBUS PA • Foundation Fieldbus
Power specifications	• Standard: 10 to 36 V DC • Intrinsically Safe: 10 to 30 V DC	• Standard: 10.5 to 45 V DC • Intrinsically Safe: 10.5 to 30 V DC	• Standard: 10.5 to 45 V DC • Intrinsically Safe: 10.5 to 30 V DC
Approvals	CE, ATEX	CE, ATEX, FM/CSA	CE, ATEX, $_cFM_{US}$

Antennas and probes for any application

Options for SITRANS LR200 and SITRANS LC500

SITRANS LR200 radar antenna configurations[1]						
Antenna version 	Flat-faced flange with rod and integral process seal 	Shielded rod eliminates nozzle interference 	Sanitary rod (one-piece construction) for food and pharmaceutical applications 	Horn 80, 100, 150, 200 mm sizes available (80 and 100 mm for stilling well only) 	Waveguide for low dielectric products 	Sliding waveguide antenna, typically for digester applications that include an isolation valve between the instrument and the vessel 
Process connection types	Nominal pipe sizes 50, 80, 100, 150 mm (2, 3, 4, 6")	• 2" threaded NPT, BSPT, G • Flat-faced flange nominal pipe sizes 80, 100 mm (3, 4")	Sanitary 50, 80, 100 mm (2, 3, 4") process connection	Flat-faced flanges ANSI, DIN, JIS	Flat-faced flanges ANSI, DIN, JIS	Flat-faced flanges ANSI, DIN, JIS
Wetted parts[†]	PTFE	• 316 stainless steel • PTFE • FKM O-ring	• UHMW-PE or • PTFE	• 316 stainless steel • PTFE • FKM O-ring	• 316 stainless steel • PTFE • FKM O-ring	• 316 stainless steel • PTFE • FKM O-ring
Insertion length (max.)	41 cm (16.3")	Variable	41 cm (16.3")	Variable with extension	Variable up to 3 m (9.8 ft) max.	1 m (3.28 ft)
Extensions/options	50 or 100 mm (2 or 4") PTFE or UHMW-PE	100, 150, 200 or 250 mm (4, 6, 8 or 10") standard shield length, or longer by request	N/A	• Sliding wave guide for digester applications* • Purging	Two sections (max.) can be connected together (6 m, 20 ft)	1 m (3.28 ft) integrated

[†] Alternative materials are available upon request by special order; consult your local Siemens representative.
* Maximum pressure 0.5 bar g (7.25 psi g) at 60 °C (140 °F).

SITRANS LC500 capacitance probe configurations[2]			
Probe version	Standard rod	Extended cable with rod sensor	Single piece flange
SITRANS LC500 			
Application	General level, interface or detection applications	General interface or detection applications	Applications that combine high temperatures, pressures, and corrosive chemicals
Process connection types	• Threaded NPT, R (BSPT), JIS-T, JIS-P, G (BSPP) • Flange ASME, EN 1092-1 • Others by special request	• Threaded NPT, R (BSPT), JIS-T, JIS-P, G (BSP) • Flange ANSI, DIN, API • Others by special request	• Sanitary thread • Flange ASME, EN 1092-1 • Others by special request
Process seal	Single gland seal	Single gland seal	Single gland seal
Process connection materials	• Stainless steel 316L • Others by special request	Stainless steel 316L	Stainless steel 316L
Wetted parts	PFA standard Options: PTFE and enamel	PFA standard	PFA standard Options: PTFE and enamel
Rod length (max.)	5.5 m (18 ft)	5.5 m (18 ft)	5.5 m (18 ft)
Cable length (max.)	35 m (115 ft)	35 m (115 ft)	N/A

[1]See page 8 for SITRANS LR200 transmitter details. [2]See page 7 for SITRANS LC500 transmitter details.

Guided wave radar level measurement

Probes for SITRANS LG200

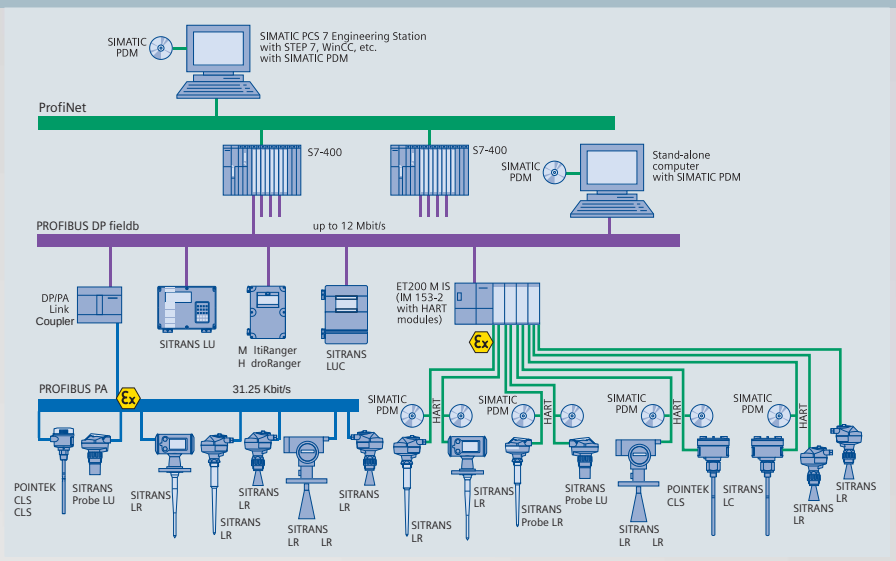
SITRANS LG200 probe configurations[1]					
Probe version		Application	Process connection types	Wetted parts	Insertion length (max.)
Coaxial probes					
	**General purpose**	Liquids with dielectric as low as 1.4	Threaded: ¾" NPT, G 1", 2" NPT Flanged: 1 to 4" (DN 25 to 100)	316L SS, TFE spacers, O-ring	60 to 610 cm (24 to 240")
	**High pressure/ aggressive liquids**	431 bar g (6250 psi g) ammonia chlorine	Threaded: ¾" NPT, G 1", 2" NPT Flanged: 1 to 4" (DN 25 to 100)	316L SS, TFE spacers, Borosilicate	60 to 610 cm (24 to 240")
	**High temperature, high pressure/ aggressive liquids**	427 °C at 133 bar g (800 °F at 2000 psi g) ammonia chlorine	Threaded: ¾" NPT, G 1", 2" NPT Flanged: 1 to 4" (DN 25 to 100)	316L SS, Alumina spacers (optional PEEK or TFE), Borosilicate	60 to 610 cm (24 to 240")
	**Steam**	• Saturated steam environments • Hot water boilers	Threaded: ¾" NPT, G 1" Flanged: 1 to 4" (DN 25 to 100)	316L SS, PEEK spacers, Aegis PF128 O-ring	60 to 455 cm (24 to 180")
	**Interface**	Measures both upper liquid level and interface level	Threaded: ¾" NPT, G 1", 2" NPT Flanged: 1 to 4" (DN 25 to 100)	316L SS, TFE spacers, O-ring	60 to 610 cm (24 to 240")
	**Overfill/torque tube/displacer replacer**	Measures 100% full point of a vessel	Threaded: ¾" NPT, G 1", 2" NPT Flanged: 1 to 4" (DN 25 to 100)	316L SS, TFE spacers, O-ring	60 to 610 cm (24 to 240")
Single rod probes					
	**Rigid**	Liquids and slurries with dielectric >10 (>1.9 if close to wall or in pipe)	Threaded: 2" NPT, G 2" Flanged: 2 to 4" (DN 50 to 100)	316L SS, PTFE, O-ring	60 to 610 cm (24 to 240")
	**Flexible for liquids**	Applications with coating and buildup, ranges to 22.5 m (75 ft), dielectric ≥ 4	Threaded: 2" NPT, G 2" Flanged: 2 to 4" (DN 50 to 100)	316L SS, TFE, O-ring	1 to 22.5 meters (3 to 75 ft)
	**PFA insulated rod**	High viscosity liquids, slurries, adhesives, paint	Threaded: 2" NPT, G 2" Flanged: 2 to 4" (DN 50 to 100)	316L SS, PFA, TFE, O-ring	60 to 610 cm (24 to 240")
	**Sanitary**	Food and beverages, pharmaceuticals, semiconductors	Flanged: 19 to 100 mm (¾ to 4") Tri-Clover-style 16 amp fitting	316L SS, TFE, 0.4 µm Ra finish	60 to 610 cm (24 to 240")
	**PFA insulated/ PFA faced flange**	Aggressive/ corrosive media	Flanged: 2 to 4" (DN 50 to 100)	PFA, no O-ring	60 to 610 cm (24 to 240")
	**High temperature, high pressure**	Viscous materials or materials that coat/buildup; high pressure/temperature	Threaded: G 2", 2" NPT Flanged: 2 to 4" (DN 50 to 100)	316L SS, TFE, O-ring	60 to 610 cm (24 to 240")
	**Flexible for solids**	Bulk granular solids range to 22.5 m (75 ft), dielectric ≥ 4	Threaded: 2" NPT, G 2" Flanged: 2 to 4" (DN 50 to 100)	316L SS, TFE, O-ring	1 to 22.5 meters (3 to 75 ft)
Twin rod probes					
	**Rigid twin rod**	For applications where dielectric ≥ 1.9, oils, etc.	Threaded: 2" NPT, G 2" Flanged: 2 to 4" (DN 50 to 100)	316L SS, TFE spacers, O-ring	60 to 610 cm (24 to 240")
	**Flexible twin rod, liquids**	Most liquid media up to 22.5 m (75 ft), dielectric ≥ 1.9	Threaded: 2" NPT, G 2" Flanged: 2 to 4" (DN 50 to 100)	316L SS, FEP webbing, O-ring	1 to 22.5 meters (3 to 75 ft)
	**Flexible twin rod, solids**	Bulk solids, grains, powders, dielectric ≥ 1.9; up to 22.5 m (75 ft)	Threaded: 2" NPT, G 2" Flanged: 2 to 4" (DN 50 to 100)	316L SS, FEP webbing, O-ring	1 to 22.5 meters (3 to 75 ft)

[1]See page 8 for SITRANS LG200 transmitter details.

Communications

Totally Integrated Automation

With Totally Integrated Automation (TIA), Siemens provides a comprehensive, integrated product and system spectrum for the efficient automation of the entire production process. TIA enables realization of perfectly tailored automation solutions to meet all individual production requirements. Thanks to the uniquely integrated qualities of TIA, companies are able to optimize their production processes, accelerate time to market, and reduce production costs – while maintaining a high level of investment security and minimizing overall project complexity.



PROFIBUS

Siemens offers a range of instruments that connect to a PROFIBUS network. PROFIBUS is the fieldbus standard for complete production plants in all process sectors, and helps manufacturers achieve operational excellence and cost savings throughout the complete service life. It is the network solution with the most advantages for Totally Integrated Automation (TIA) providing digital communication between the automation system and field instrumentation on a single serial bus cable. Many Siemens level instruments have a PROFIBUS option and support PROFIBUS PA or PROFIBUS DP.

HART

HART is a serial transfer protocol used to transfer additional parameter data such as measurement range and configuration to the connected device through a 4 to 20 mA power loop. SIMATIC PDM can use this protocol to communicate configuration data to an instrument. Siemens offers HART as an option on many of its level instruments.

SIMATIC PDM software

SIMATIC PDM (Process Device Manager) is a manufacturer-independent software tool for the operation, configuration, parameterization, maintenance, and diagnosis of intelligent field instruments. Based on the EDD standard, it can be used independently of a specific automation system via a PC or programming device or as an integral part of the SIMATIC PCS 7 process automation system. Core functions include:

- Setup and modification of parameters
- Comparison
- Plausibility checks
- Data management
- Commissioning functions

SIMATIC PDM offers communications via HART protocol, PROFIBUS DP, PROFIBUS PA, or other protocols.

Siemens has written a number of Enhanced EDDs for SIMATIC PDM. These EDDs include additional functions such as Quick Start Wizards and the saving of echo profiles. You will see a standard look and feel for all Siemens Process instruments.

See www.siemens.com/simatic for up-to-date product list.

Model 375 HART field communicator and Emerson AMS

The handheld HART 375 field communicator and Emerson AMS software are EDD-based configuration and diagnostic tools for HART and Foundation Fieldbus devices. They both support the HART Communication Foundation (HCF) Library of EDDs. All Siemens HART devices have EDDs in the HCF library. Enhanced EDDs are included on some products providing additional functions such as Quick Start Wizards.

Dolphin Plus configuration software

Dolphin Plus is instrument configuration software for:

- SITRANS LU
- SITRANS LUC500

It helps you configure, monitor, tune, and diagnose these instruments either remotely from your desktop PC or connected directly in the field using a laptop.

PROFIBUS DP, Modbus RTU, Allen-Bradley Remote I/O and DeviceNet via SmartLinx

SmartLinx provides direct digital connection to commonly used industrial communication buses with true plug-and-play compatibility. Cards are available for PROFIBUS DP, Modbus RTU, Allen-Bradley Remote I/O, and DeviceNet. SmartLinx modules are fast and easy to install, and can be added at any time.

For use with SITRANS LU, MultiRanger 100/200, HydroRanger 200, and SITRANS LUC500.

Training

Maximize your skills with factory certified training

Siemens offers world-class, hands-on product training at our state-of-the-art training facility in Peterborough, Ontario, Canada.

From general introduction courses in level and weighing technologies to focused advanced radar and ultrasonic courses, the center offers training opportunities for everyone.

For current information and schedules, visit our website at:

www.siemens.com/instrumentation/training/canada

or contact us by phone at 705-740-7650.

Videos

Get factual information fast

Siemens offers several instructional and promotional videos featuring our products. View these on YouTube at:

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