

Level measurement guide

for complete level solutions

Brochure • March 2011



Process Instrumentation

www.siemens.com/level

SIEMENS



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 is defined by its innovative and advanced approach to measurement.

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

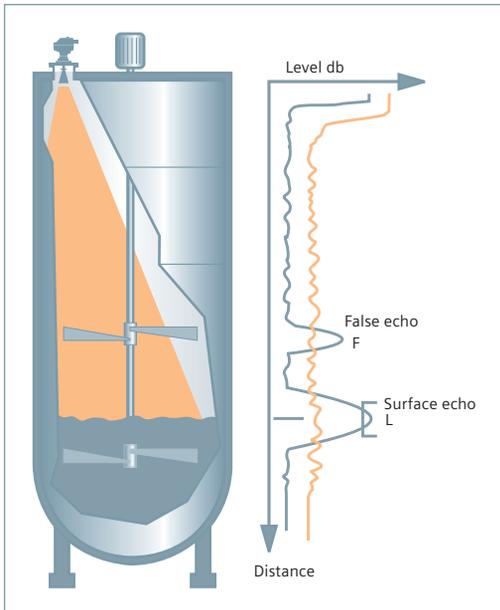
Process Intelligence – Advanced echo processing technology for radar instruments facilitating quick installation, programming, and operation. The signal processing provides exceptional reliability and the ability to automatically ignore obstructions.

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

Siemens rotating and vibratory point level switches are simple, reliable, and cost-effective ready to go solutions for practically all solids and liquids applications.

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 and beverage, mining, cement, aggregates, and more.

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



Process Intelligence uses a dynamic threshold and Area (A), Largest (L), and First (F) algorithms to select the true surface echo when false echos are present.

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Level measurement selector

Continuous level

Conditions	Ultrasonic	Radar	Guided wave radar	Capacitance	Static weighing	Hydrostatic pressure	
Measurement							
Level	●	●	●	●	●	●	
Interface (liquid/liquid)			●	●		●	
Interface (liquid/solid)	●			●		●	
Volume	●	●	●	●	●	●	
Mass					●		
Flow (open channel)	●	●				●	
Level Application							
Changing density	●	●	●	●			
Changing dielectric*	●	●	●	●	●	●	
Dielectric > 1.4	●	●	●	●	●	●	
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")	●	●	●	●	●		
Solids > 25 mm (1")	●	●			●		
High angle of repose	●	●	●	●	●		

* Dielectric (dk) properties are the material's ability to reflect microwave energy: the higher the value, the better the reflective properties.

** Check chemical compatibility.

Radar for solids



SITRANS LR560

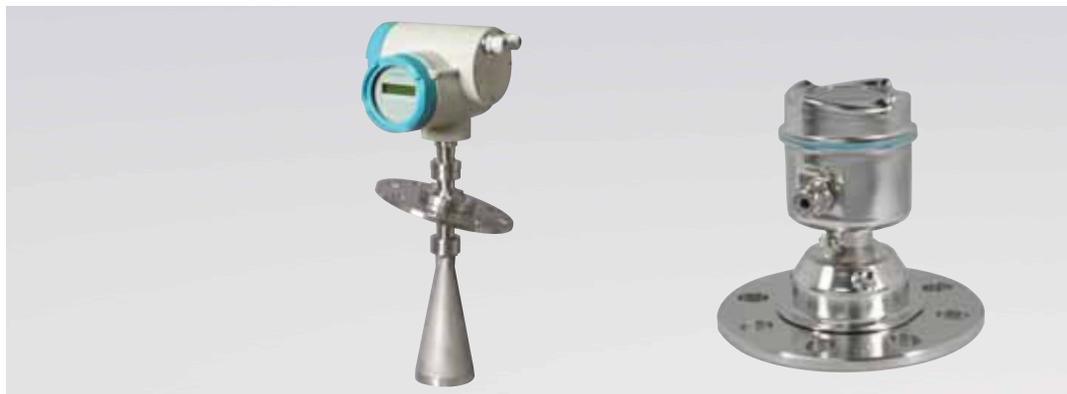


SITRANS LR560 and SITRANS LR460: your answer to all solids level measurement

SITRANS LR560 is the easiest and most reliable radar transmitter on the market. With a high frequency of 78 GHz, 4° narrow beam, and short wavelength, it performs reliably on solids material from practically any installation location.

Extreme dust? No problem. Siemens pioneered radar technology for solids level measurement. The 2-wire, loop powered, FMCW SITRANS LR560 is the state-of-the-art radar transmitter for continuous solids level measurement. Operating at 78 GHz, it features a unique lens antenna that is highly resistant to buildup, making it maintenance free. The 4° narrow beam means SITRANS LR560 can be installed practically anywhere on your silo. You don't need to worry how close you are to the sides and its small size fits most nozzles. 78 GHz creates a short wavelength that yields extremely good signal reflections from almost any solids material, even on a steep slope. With the local interface push buttons or infrared handheld programmer, the graphical Quick Start Wizard guides you through a simple setup and within a few minutes the transmitter is up and running. No other radar level transmitter for solids is this easy, cost-effective, and maintenance-free.

For extremely low dielectric, low density powders, SITRANS LR460 is the preferred solution. Featuring a horn antenna with an 8° beam, the 4-wire FMCW SITRANS LR460 has proven itself in thousands of applications.



	SITRANS LR460 4-wire, 24 GHz FMCW radar level transmitter for continuous monitoring of solids, including low $dK < 2$.	SITRANS LR560 2-wire, 78 GHz FMCW radar level transmitter for continuous monitoring of solids and with material $dK > 2$.
Range	100 m (328 ft)	100 m (328 ft)
Process temperature	-40 to 200 °C (-40 to 392 °F)	-40 to 200 °C (-40 to 392 °F)
Process pressure	0.5 bar g (7.25 psi g) max.	Up to 3 bar g (43.5 psi g)
Key features	<ul style="list-style-type: none"> • Process Intelligence – advanced echo processing for unparalleled performance • Intrinsically Safe infrared handheld programmer • 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 Options <ul style="list-style-type: none"> • PTFE antenna cover • Purging (self-cleaning) for buildup protection 	<ul style="list-style-type: none"> • Process Intelligence – advanced echo processing for unparalleled performance • 78 GHz high frequency yields 4° beam and exceptional reflection from sloped surfaces • Lens antenna for superb dust protection • Push buttons or optional Intrinsically Safe infrared handheld programmer • Virtually unaffected by dust or temperature changes • Graphical Quick Start Wizard for easy setup • Air purge connection included Options <ul style="list-style-type: none"> • Easy Aimer for optimizing readings in the silo cone area
Communications	<ul style="list-style-type: none"> • HART or PROFIBUS PA • Enhanced EDD for SIMATIC PDM for configuration and diagnostics • Supports FDT such as PACTware or Fieldcare via SITRANS DTM • Supports 375/475 handheld 	<ul style="list-style-type: none"> • HART, PROFIBUS PA, or FOUNDATION Fieldbus • Enhanced EDD for SIMATIC PDM, Emerson AMS, SITRANS DTM (for PACTware), 375/475 handheld, for configuration and diagnostics
Power specifications	<ul style="list-style-type: none"> • AC version: 100 to 230 V AC $\pm 15\%$, 50/60 Hz, (6 W) • DC version: 24 V DC, +25/-20%, (6 W) • PROFIBUS PA 10.5 mA 	<ul style="list-style-type: none"> • Nominal 24 V DC, max. 30 V DC, 4 to 20 mA • PROFIBUS PA and FOUNDATION Fieldbus versions: 13.5 mA
Approvals	CSA _{US/IC} , CE, FM, ATEX, IECEx, R&TTE, Industry Canada, FCC, C-TICK, INMETRO	CSA _{US/IC} , CE, FM, ATEX, IECEx, R&TTE, Industry Canada, FCC, C-TICK, INMETRO, NEPSI

Radar for liquid and slurries



Reliable and accurate liquid level measurement

Siemens large selection of radar transmitters for liquid level measurement offers the right solution for your application. Siemens radar transmitters handle applications ranging from simple storage vessels to complex demanding process vessels.

SITRANS LR250 is the first choice for liquid level measurement in storage and process vessels to 20 meters (66 ft). Its high frequency and small antenna makes it easy to use and install. It offers reliable level measurement in liquids with low dielectric constants like hydrocarbons. For applications up to 50 meters (164 ft), SITRANS LR400 offers high performance even on low dielectric media.

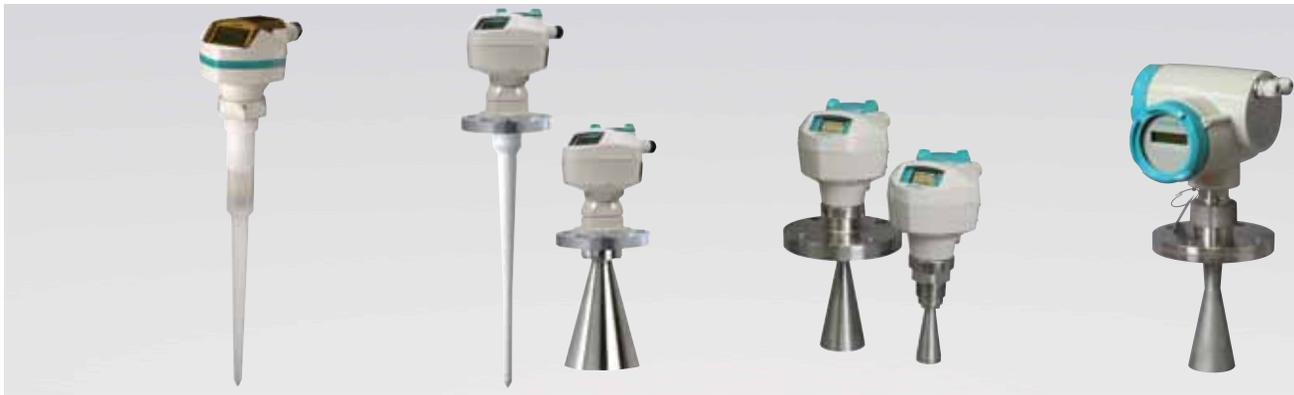
For process vessels which may include turbulence, buildup, or foam, SITRANS LR200 is the best choice. Its low frequency better suits this environment, and functions reliably in applications up to 20 meters (66 ft). Agitation and interference in the vessel is managed with Process Intelligence.

For low-cost level measurement, SITRANS Probe LR offers a small process connection and operates at a low frequency. It can be used on liquids and slurries up to 20 meters (66 ft). Simple configuration and programming makes Probe LR a cost-effective solution.

SITRANS LR200 radar antenna configurations for any application					
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) 	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")	<ul style="list-style-type: none"> 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 ASME, DIN, JIS	Flat-faced flanges ASME, DIN, JIS
Wetted parts[†]	PTFE	<ul style="list-style-type: none"> 316 stainless steel PTFE FKM O-ring 	<ul style="list-style-type: none"> UHMW-PE PTFE 	<ul style="list-style-type: none"> 316 stainless steel PTFE FKM O-ring 	<ul style="list-style-type: none"> 316 stainless steel PTFE FKM O-ring
Insertion length (max.)	41 cm (16.3")	Variable	41 cm (16.3")	Variable with extension	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	<ul style="list-style-type: none"> Purging 	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 Probe LR 2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids in storage vessels.	SITRANS LR200 2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids. Ideally suited for complex process vessels. (See page 8 for antenna options.)	SITRANS LR250 2-wire, 25 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage/process vessels.	SITRANS LR400 4-wire, 24 GHz FMCW radar level transmitter for continuous monitoring of liquids including extremely low dk < 2.0.
Range	20 m (66 ft)	20 m (66 ft)	20 m (66 ft)	50 m (164 ft)
Process temperature	-40 to 80 °C (-40 to 176 °F)	-40 to 200 °C (-40 to 392 °F)	-40 to 200 °C (-40 to 392 °F) at process connection with FKM O-ring	-40 to 200 °C (-40 to 392 °F) Option Up to 250 °C (482 °F)
Process pressure	Up to 3 bar g (43.5 psi g)	Up to 40 bar g (580 psi g), process connection dependent	Up to 40 bar g (580 psi g), process connection dependent	Up to 40 bar g (580 psi g), process connection dependent
Key features	<ul style="list-style-type: none"> Process Intelligence – advanced echo processing for unparalleled performance Intrinsically Safe infrared 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 Options <ul style="list-style-type: none"> 250 mm (10") shield length 	<ul style="list-style-type: none"> Process Intelligence – advanced echo processing for unparalleled performance Intrinsically Safe infrared hand-held programmer Graphical user interface (LUI) Quick Start Wizard and display diagnostics Options <ul style="list-style-type: none"> Multiple antenna designs for application flexibility 250 mm (10") shield length Purging (self-cleaning) for buildup protection 	<ul style="list-style-type: none"> Process Intelligence – advanced echo processing for unparalleled performance Intrinsically Safe infrared hand-held programmer Graphical user interface (LUI) Quick Start Wizard and display diagnostics Reliable and accurate – high signal-to-noise ratio Easy to install – small horn and narrow beam angle allows installation practically anywhere on your vessel Short blanking distance: up to 50 mm (2") from the end of the horn 	<ul style="list-style-type: none"> High signal-to-noise ratio Intrinsically Safe infrared hand-held programmer Operates on low dk media Options <ul style="list-style-type: none"> High temperature operation with extension > 200 °C (392 °F) Purging (self-cleaning) for buildup protection
Output	4 to 20 mA/HART	<ul style="list-style-type: none"> 4 to 20 mA/HART or PROFIBUS PA NE 21, NE 43 	<ul style="list-style-type: none"> 4 to 20 mA/HART or PROFIBUS PA NE 21, NE 43 	<ul style="list-style-type: none"> 4 to 20 mA/HART or PROFIBUS PA One relay
Communications	<ul style="list-style-type: none"> HART EDD for SIMATIC PDM for configuration and diagnostics 	<ul style="list-style-type: none"> HART or PROFIBUS PA Enhanced EDD for SIMATIC PDM, Emerson AMS, SITRANS DTM (for PACTware), 375/475 handheld for configuration and diagnostics 	<ul style="list-style-type: none"> HART, PROFIBUS PA, or FOUNDATION Fieldbus Enhanced EDD for SIMATIC PDM, Emerson AMS, SITRANS DTM (for PACTware), 375/475 handheld for configuration and diagnostics 	<ul style="list-style-type: none"> HART or PROFIBUS PA SIMATIC PDM for configuration and diagnostics
Power specifications	<ul style="list-style-type: none"> Nominal 24 V DC, max. 30 V DC, 4 to 20 mA 	<ul style="list-style-type: none"> Nominal 24 V DC, max. 30 V DC, 4 to 20 mA PROFIBUS PA 15.0 mA 	<ul style="list-style-type: none"> Nominal 24 V DC, max. 30 V DC, 4 to 20 mA PROFIBUS PA 15.0 mA FOUNDATION Fieldbus 20 mA 	<ul style="list-style-type: none"> AC version: 120 to 230 V AC, ±15%, 50/60 Hz, (6 W) DC version: 24 V DC, +25/-20%, 6 W PROFIBUS PA 10.5 mA
Approvals	CE, CSA _{USIC} , FM, ATEX, IECEx, Lloyd's Register of Shipping, ABS Type Approval, Industry Canada, FCC, R&TTE, C-TICK, INMETRO	CE, CSA _{USIC} , FM, ATEX, IECEx, Lloyd's Register of Shipping, ABS Type Approval, Industry Canada, FCC, R&TTE, C-TICK, INMETRO, NEPSI	CSA _{USIC} , CE, FM, ATEX, IECEx, C-TICK, R&TTE, Lloyd's Register of Shipping, ABS Type Approval, Bureau Veritas, Industry Canada, FCC, INMETRO, NEPSI	CE, CSA _{NRTLIC} , FM, ATEX, Lloyd's Register of Shipping, ABS Type Approval, Industry Canada, FCC, R&TTE, C-TICK, INMETRO

Guided wave radar



Guided wave radar for level measurement and interface applications

SITRANS LG200 is Siemens 2-wire guided wave radar transmitter for short- to medium-range level, level/interface, and volume measurement of liquids and slurries. Its many antenna configurations make it possible to measure numerous complex applications, even ammonia, chlorine, high temperature/pressure, or cryogenics.

	SITRANS LG200 2-wire, guided wave radar transmitter for short- to medium-range level, level/interface, and volume measurement of liquids and solids.
Range	22.5 m (75 ft)
Process temperature	-196 to 427 °C (-320 to 800 °F)
Process pressure	Full vacuum to 431 bar g (6250 psi g), probe dependent
Key features	<ul style="list-style-type: none"> • Unaffected by change in density and dielectric properties of 1.4 and higher • Accurate to 2.5 mm (0.1") • Extended insertion length – probe lengths up to 22.5 m (75 ft) • Push button configuration or HART communication • SIL suitable <p>Probe options</p> <ul style="list-style-type: none"> • Coaxial probes for steam, ammonia, overfill, interface, and high pressure/high temperature • Single rod probes (rigid including sanitary or cable) • Twin rod (rigid or cable)
Output	4 to 20 mA/HART
Communications	<ul style="list-style-type: none"> • HART • Enhanced EDD for SIMATIC PDM and 375/475 handheld for configuration and diagnostics
Power specifications	11 to 36 V DC
Approvals	CSAus/c, CE, FM, Hazardous Approvals, ATEX, C-TICK, SIL-1, SIL-2, Lloyd's Steam Approval



SITRANS LG200

SITRANS LG200 probes

SITRANS LG200 probe configurations					
Probe version		Application	Process connection types	Wetted parts	Insertion length (max.)
Coaxial probes					
	General purpose	Liquids with dk 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 seal	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 seal	60 to 610 cm (24 to 240")
	Steam	<ul style="list-style-type: none"> Saturated steam environments Hot water boilers 343 °C (650 °F) 	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 dk >10*	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), dk ≥ 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 with dk >10*	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 with dk >10*	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 with dk >10*	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 with dk >10*	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), dk ≥ 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 dk ≥ 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), dk ≥ 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, dk ≥ 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)

* dk >1.9 if close to vessel wall or in still pipe

Ultrasonic



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 SITRANS Probe LU to advanced ultrasonic control systems like SITRANS LUC500, our ultrasonic instruments rely on Siemens 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.

	<p>The Probe Short-range integrated ultrasonic level transmitter; ideal for liquids and slurries in open or closed vessels.</p>	
Range	0.25 to 5 m (0.8 to 16.4 ft)	
Process temperature	<ul style="list-style-type: none"> -40 to 60 °C (-40 to 140 °F) -20 to 60 °C (-4 to 140 °F) if mounted in metal threads 	
Process pressure	Vented to atmosphere	
Key features	<ul style="list-style-type: none"> Integral temperature compensation PVDF copolymer transducer Easy to install, program, and maintain Patented Sonic Intelligence echo processing <p>Option</p> <ul style="list-style-type: none"> Sanitary 10 cm (4") mounting 	
Output	<ul style="list-style-type: none"> 1 relay, 4 to 20 mA (3-wire) 4 to 20 mA (2-wire) 	
Communications	N/A	
Power specifications	<ul style="list-style-type: none"> 3-wire version: 18 to 30 V DC, 0.2 A max. 2-wire version: 12 to 28 V DC, 0.1 A surge 	
Approvals	CE, CSA ^{NRTL} , FM, C-TICK, INMETRO	





	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 measuring point LU02: two measuring points LU10: ten measuring points	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.
	<ul style="list-style-type: none"> 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	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
	-40 to 85 °C (-40 to 185 °F)	<ul style="list-style-type: none"> Transducer dependent -20 to 50 °C (-4 to 122 °F) (controller ambient) 	<ul style="list-style-type: none"> Transducer dependent -20 to 50 °C (-4 to 122 °F) (controller ambient) 	<ul style="list-style-type: none"> Transducer dependent -20 to 50 °C (-4 to 122 °F) (controller ambient)
	Atmospheric	Transducer dependent	Transducer dependent	Transducer dependent
	<ul style="list-style-type: none"> High signal-to-noise ratio Patented Sonic Intelligence echo processing Auto False-Echo Suppression Level-to-volume or level-to-flow conversion Intrinsically Safe infrared handheld programmer Choice of threaded connections ETFE or PVDF copolymer transducer 360° rotating head aligns with conduit for easy wiring 	<ul style="list-style-type: none"> 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 Option LU10 LU AO Analog Output Module	MultiRanger 100 <ul style="list-style-type: none"> Simple pump control MultiRanger 200 <ul style="list-style-type: none"> Enhanced pump control Differential control Open channel flow monitor Volume conversion One mA input MultiRanger 100 and 200 <ul style="list-style-type: none"> Single or dual point measuring 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 	<ul style="list-style-type: none"> Single or dual point measuring 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
	<ul style="list-style-type: none"> 4 to 20 mA/HART PROFIBUS PA Intrinsically Safe (optional) 	<ul style="list-style-type: none"> Four form C (SPDT) relays (5A at 250 V AC) (LU01, LU02) 4 to 20 mA (isolated) 	<ul style="list-style-type: none"> One relay (MultiRanger 100 only) Three relays Six relays Two 4 to 20 mA outputs (isolated) 	<ul style="list-style-type: none"> Six relays standard Two 4 to 20 mA outputs (isolated) One or three relays optional, single channel level reading only
	<ul style="list-style-type: none"> HART or PROFIBUS PA EDD for SIMATIC PDM for remote configuration and diagnostics HART version supports FDT such as PACTware or Fieldcare via SITRANS DTM 	<ul style="list-style-type: none"> Dolphin RS-232/RS-485 (LU01, LU02) Dolphin via infrared (LU10) Options <ul style="list-style-type: none"> SmartLinx (see page 26) PROFIBUS DP, Allen-Bradley® I/O 	<ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> SmartLinx cards for PROFIBUS DP, Allen-Bradley I/O, DeviceNet 	<ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> SmartLinx cards for PROFIBUS DP, Allen-Bradley I/O, DeviceNet
	<ul style="list-style-type: none"> Nominal 24 V DC, max. 30 V DC, 4 to 20 mA PROFIBUS PA user selectable 12, 13, 15 or 20 mA 	LU01, LU02 <ul style="list-style-type: none"> AC version: 100/115/200/230 V AC DC version: 18 to 30 V DC, (25 W) LU10 <ul style="list-style-type: none"> 100/115/200/230 V AC 	<ul style="list-style-type: none"> AC version: 100 to 230 V AC ±15%, 50/60 Hz, 36 VA (17 W) DC version: 12 to 30 V DC (20 W) 	<ul style="list-style-type: none"> AC version: 100 to 230 V AC ±15%, 50/60 Hz, 36 VA (17 W) DC version: 12 to 30 V DC (20 W)
	CE, CSA _{USIC} , FM, C-TICK, ATEX, Lloyd's Register of Shipping, ABS, ANZEx, IECEx, INMETRO	CE, CSA _{NRTLIC} , FM, Lloyd's Register of Shipping, ATEX	CE, CSA _{NRTLIC} , UL Listed, FM, Lloyd's Register of Shipping, ABS, C-TICK	CE, CSA _{NRTLIC} , UL Listed, FM, Lloyd's Register of Shipping, ABS, MCERTS, C-TICK

Ultrasonic



All-in-one reliable controller – full duplex pump station control is just part of a normal day's work for SITRANS LUC500. Sonic Intelligence echo processing is a standard feature paired with the powerful Siemens Echomax XRS-5 or XPS-15 transducers. The input and output configuration is user selectable. Standard pump routines, pump exercising, scum ring reduction, submergence detection, and CSO monitoring for compliance and energy-saving pump routines are standard features of the SITRANS LUC500 controller.

	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.
Range	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)
Ambient temperature	-20 to 50 °C (-4 to 122 °F)	-20 to 50 °C (-4 to 122 °F)
Process pressure	Transducer dependent	Atmospheric pressure
Key features	<ul style="list-style-type: none"> • 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 interlocks/ pump faults feedback • Report by exception • Combined sewer overflow (CSO) logging Option <ul style="list-style-type: none"> • Wall, rack, or panel mount 	<ul style="list-style-type: none"> • Influent and effluent monitor • Sampler control • Low power remote monitoring • Data logger • Remote connection via modem • Dual power input • Temperature sensor input
Output	Five relays, 5A at 250 V AC, non-inductive <ul style="list-style-type: none"> • Wall mount version: four form A (SPST) relays, one form C (SPDT) relay • Rack and panel mount version: four form A (SPST) relays, one form B (SPST) relay 	<ul style="list-style-type: none"> • Three relays • 4 to 20 mA (isolated)
Communications	Modbus RTU/ASCII via RS-232/RS-485 Options <ul style="list-style-type: none"> • Dolphin Plus • SmartLinX cards for PROFIBUS DP, Allen-Bradley I/O, DeviceNet 	OCM protocol via RS-232 Option <ul style="list-style-type: none"> • Flow Reporter software
Power specifications	<ul style="list-style-type: none"> • AC version: 100 to 230 V AC ±15%, 50/60 Hz, 36 VA (17 W) • DC version: 12 to 30 V DC (20 W) 	<ul style="list-style-type: none"> • Universal power supply • 100/115/200/230 V AC, ±15%, 50/60 Hz, 20 VA max. • 9 to 30 V DC, (8 W)
Approvals	CE, CSA, UL Listed, FM	CE, CSA _{NRTLIC} , FM, MCERTS, C-TICK



SITRANS LUC500

Transducer Selection

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 transducers are non-contacting with an active face to ensure no material buildup and reduce downtime. The PVDF enclosure provides excellent corrosion resistance. 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 (-4 °F) (ATEX model)	-40 °C (-40 °F) F: -20 °C (-4 °F)	-40 °C (-40 °F) F: -20 °C (-4 °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	<ul style="list-style-type: none"> Flumes Weirs Filterbeds 	<ul style="list-style-type: none"> Chemical storage Liquid tanks 	<ul style="list-style-type: none"> Dusty solids Slurries Liquids 	<ul style="list-style-type: none"> Deep wet wells Solids 	<ul style="list-style-type: none"> Powders Pellets Solids Liquids 	<ul style="list-style-type: none"> Powders Pellets Solids Liquids 	<ul style="list-style-type: none"> Hot acids Slurries Food 	<ul style="list-style-type: none"> Hot liquids Slurries 	<ul style="list-style-type: none"> Clinker Coal bunkers 	<ul style="list-style-type: none"> 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	1" NPT with 2" NPT or R 2" BSPT or G 2" BSPP	1" NPT or R 1" BSPT F: 1" NPT	1" NPT or R 1" BSPT 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	1" NPT or R 1" BSPT	1" NPT	1" NPT
Enclosure	<ul style="list-style-type: none"> PVDF copolymer and CSM face Option <ul style="list-style-type: none"> Flange with PTFE facing 	<ul style="list-style-type: none"> ETFE PVDF 	<ul style="list-style-type: none"> PVDF Option PTFE face with CPVC flange 	<ul style="list-style-type: none"> PVDF Option PVDF with CPVC Flange PTFE face with CPVC flange Foam face 	<ul style="list-style-type: none"> PVDF Option PVDF with CPVC flange PTFE face with CPVC flange Foam face 	<ul style="list-style-type: none"> PVDF Option Foam face 	<ul style="list-style-type: none"> PVDF Option DERAKANE® flange; PTFE face with universal PVDF flange 	<ul style="list-style-type: none"> PVDF Option DERAKANE flange; PTFE face with universal PVDF flange 	<ul style="list-style-type: none"> Aluminum 304 stainless steel Polyester Silicone 	<ul style="list-style-type: none"> Aluminum 304 stainless steel Polyester Silicone
Compatibility 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.

Inverse frequency shift capacitance



Tried and tested for a wide range of applications, including interface

Siemens inverse frequency shift capacitance continuous level transmitters are for liquids, solids, and interface applications. They are ideal for standard and industrial applications in chemical, hydrocarbon processing, food and beverage.

The patented Active-Shield technology protects measurements from the effects of moisture, vapors, foam, temperature or pressure variations, and material buildup. They are cost-effective, reliable, low maintenance, and easy to install.

SITRANS LC500 capacitance probe configurations			
Probe version	Standard rod	Extended cable with rod sensor	Single piece flange
 <p>SITRANS LC500</p>			
Application	General level, interface, or detection applications	Interface detection applications (example: water bottom)	Applications that combine higher temperatures, pressures, and corrosive chemicals
Process connection types	<ul style="list-style-type: none"> Threaded NPT, R (BSPT), JIS-T, JIS-P, G (BSPP) Flange ASME, EN 1092-1 Others by special request 	<ul style="list-style-type: none"> Threaded NPT, R (BSPT), JIS-T, JIS-P, G (BSP) Flange ASME, EN1092-1 Others by special request 	<ul style="list-style-type: none"> Flange ASME, EN 1092-1 Others by special request
Process connection materials	<ul style="list-style-type: none"> Stainless steel 316L Others by special request 	Stainless steel 316L	<ul style="list-style-type: none"> Stainless steel 316L Others by special request
Wetted parts	PFA standard	PFA standard	PFA standard
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



	SITRANS LC300 Inverse frequency shift capacitance level transmitter for liquids and solids applications; ideal for standard industrial applications in chemical, hydrocarbon processing, food and beverage.	SITRANS LC500 Inverse frequency shift capacitance level and interface transmitter for extreme and critical process conditions, such as oil and liquified natural gas (LNG), aggressive chemicals, and vapors.
Range	Rod: 0.3 to 5.5 m (1 to 18 ft) Cable: 1 to 25 m (3 to 82 ft)	Rod: 0.3 to 5.5 m (1 to 18 ft) Cable: 1 to 35 m (3 to 115 ft)
Process temperature	-40 to 200 °C (-40 to 392 °F)	<ul style="list-style-type: none"> -50 to 200 °C (-58 to 392 °F) -200 to 200 °C (-328 to 392 °F): special order
Process pressure	Up to 35 bar g (511 psi g)	Up to 150 bar g (2175 psi g)
Key features	<ul style="list-style-type: none"> Patented Active-Shield technology Push-button calibration Integrated local display Inverse frequency approach provides high resolution 	<ul style="list-style-type: none"> Patented Active-Shield technology Push-button calibration Integrated local display Full-function diagnostics Inverse frequency approach provides high resolution
Output	4 to 20/20 to 4 mA 2-wire current loop	<ul style="list-style-type: none"> 3.6 to 22 mA/22 to 3.6 mA 2-wire current loop Solid-state switch
Communications	N/A	HART
Power specifications	Nominal 24 V DC, max. 30 V DC, 4 to 20 mA	Nominal 24 V DC, max. 33 V DC, 4 to 20 mA
Approvals	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



SITRANS LC500

Point level



Simply reliable cost-effective level switches

Siemens point level switches use ultrasonic, rotating, vibrating, and inverse frequency shift capacitance technologies. The broad selection of switches provides a cost-effective solution 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 to connect to any alarm or control system.

Siemens rotating or vibrating point level switches specialize in low bulk density applications; and the standard aluminum enclosures and stainless steel process connections provide exceptional resistance to mechanical forces.

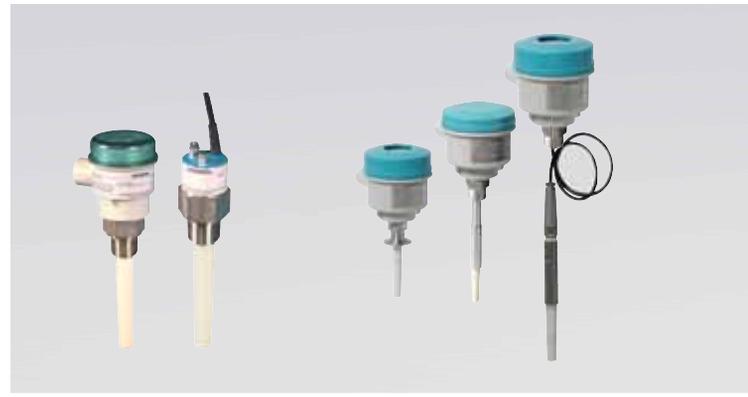


	SITRANS LVS100 Vibrating point level switch for high or low level detection of dry powder, fine grain, and granular bulk solids with densities starting at 60 g/l (3.7 lb/ft ³).	
Range	170 mm to 2 m (6.7" to 6.5 ft)	
Process temperature	-40 to 150 °C (-40 to 302 °F)	
Process pressure	Up to 10 bar g (145 psi g)	
Key features	<ul style="list-style-type: none"> • High or low level alarm • Compact design • Top, side, angle mount • Rotatable enclosure • Extended model up to 2 m (6.5 ft) • Replaceable electronics 	
Output	SPDT relay (fail safe: high or low)	
Power specifications	<ul style="list-style-type: none"> • 19 to 230 V AC, +10%, 50/60 Hz, 8 VA • 19 to 50 V DC, +10%, 2 W 	
Approvals	CE, CSA, FM, ATEX, C-TICK	



SITRANS LVS200 Vibrating point level switch for dry powder, fine grain, and granular bulk solids with densities as low as 5 g/l (0.3 lb/ft ³).	SITRANS LVL100 Compact vibrating level switch for use in liquid and slurry applications such as overflow, high, low, and demand applications, as well as pump protection. It is ideal for use in confined spaces.	SITRANS LVL200 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.	SITRANS LPS200 Rotary paddle switch for point level detection of powder and granular solids with bulk densities as low as 15 g/l (0.94 lb/ft ³).
<ul style="list-style-type: none"> • Rigid extension: 165 mm to 4 m (6.5" to 13 ft) • Cable extension: 700 mm to 20 m (27.5" to 65 ft) 	40 mm (1.5") insertion	<ul style="list-style-type: none"> • 40 mm to 4 m (1.5" to 13 ft) Options <ul style="list-style-type: none"> • Longer option available 	100 mm to 10 m (4" to 30 ft)
-40 to 150 °C (-40 to 302 °F)	<ul style="list-style-type: none"> • 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) 	<ul style="list-style-type: none"> • Standard: -50 to 150 °C (-58 to 302 °F) • High temperature: -50 to 250 °C (-58 to 482 °F) 	<ul style="list-style-type: none"> • Standard: -25 to 80 °C (-13 to 176 °F) • High temperature: -25 to 600 °C (-13 to 1112 °F)
Up to 10 bar g (145 psi g)	-1 to 64 bar g (-14.5 to 928 psi g)	-1 to 64 bar g (-14.5 to 928 psi g)	<ul style="list-style-type: none"> • Up to 0.5 bar g (7.25 psi g) • Optional up to 10 bar g (145 psi g)
<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 installation and wiring • Unique friction clutch mechanism to prevent impact damage from falling process materials
<ul style="list-style-type: none"> • SPDT relay (fail safe: high or low) • DPDT relay (fail safe: high or low) • 3-wire PNP • 8 to 16 mA or 4 to 20 mA • 2-wire without contact 	<ul style="list-style-type: none"> • Contactless electronic switch • Transistor output PNP 	<ul style="list-style-type: none"> • Relay output (DPDT), two floating SPDTs • Contactless electronic switch • 2-wire Namur signal output 	<ul style="list-style-type: none"> • Microswitch SPDT 5 A at 250 V AC, non-inductive • Microswitch SPDT contact 4 A at 30 V DC, non-inductive
<ul style="list-style-type: none"> • 19 to 230 V AC, +10%, 50/60 Hz, 8 VA • 19 to 55 V DC, +10%, 1.5 W 	<ul style="list-style-type: none"> • 20 to 253 V AC, 50/60 Hz • 20 to 253 V DC 	<ul style="list-style-type: none"> • 20 to 253 V AC, 50/60 Hz • 20 to 72 V DC 	<ul style="list-style-type: none"> • Optional jumper selectable • 115 V AC, ±15%, 50/60 Hz, 4 VA • 230 V AC, ±15%, 50 Hz, 6 VA or 24 V AC or 48 V AC or 24 V DC ±15%, 2.5 W
CE, CSA, FM, ATEX, C-TICK	CE, Overfill protection (WHG), Shipping approvals, 3A, FDA, EHEDG	CE, Overfill protection (WHG), FM, Shipping approvals, ATEX, IECEx, SIL-2, FDA, EHEDG, 3A, CSA, INMETRO, VLAREM II	CSA, ATEX, FM, CE, C-TICK

Point level



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, Siemens instruments provide excellent resolution while consistently outperforming conventional devices.

The Pointek ULS200 is an ultrasonic non-contacting switch with two points for level detection of bulk solids, liquids, and slurries in a wide variety of industries; ideal for sticky materials.

Tilt switches provide point level detection with switch isolators or when used separately. They offer a cost-effective solution for point level detection, plugged chute detection, belt tracking, and feed loss detection on conveyor belts. They also provide simple high and low alarms for both dry bulk solids and liquids.

	<p>Pointek CLS100 Compact 2 or 4-wire inverse frequency shift capacitance switch for level detection in constricted spaces, interfaces, solids, liquids, slurries, and foam.</p>	<p>Pointek CLS200 Inverse frequency shift capacitance switch with a high level of chemical resistance; ideal for level detection of interfaces, solids, liquids, slurries, foam, and for simple pump control.</p>	
Range	100 mm (4") insertion	Rod: 100 mm to 5.5 m (4" to 18 ft) Cable: 1 to 30 m (3 to 98 ft)	
Process temperature	<ul style="list-style-type: none"> -30 to 100 °C (-22 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)	<ul style="list-style-type: none"> Up to 25 bar g (365 psi g) Up to 10 bar g (145 psi g) (cable version) 	
Key features	<ul style="list-style-type: none"> Inverse frequency technology Sensitivity adjustment Level detection independent of tank wall/pipe Suitable for hazardous areas <p>Options</p> <ul style="list-style-type: none"> Intrinsically Safe Dust-ignition proof General purpose and hazardous approvals SensGuard for abrasive applications PPS or PVDF probes IP68 (IP65 cable version) 	<ul style="list-style-type: none"> Inverse frequency technology Level detection independent of tank wall/pipe Suitable for hazardous areas Multiple outputs Fully adjustable hysteresis <p>Options</p> <ul style="list-style-type: none"> Rigid, cable, and sanitary SensGuard for abrasive applications Thermal isolator General purpose and hazardous approvals 	
Output	<ul style="list-style-type: none"> 4/20 mA or 20/4 mA 2-wire current loop Solid-state or relay switch Relay output (fully synthetic version) 	<p>Standard</p> <ul style="list-style-type: none"> One form C (SPDT) relay Solid-state switch <p>Digital</p> <ul style="list-style-type: none"> Solid-state switch 	
Communications	N/A	<p>Digital</p> <ul style="list-style-type: none"> PROFIBUS PA SIMATIC PDM compatible 	
Power specifications	12 to 33 V DC	<ul style="list-style-type: none"> Standard: 12 to 250 V AC/DC, 0 to 60 Hz, 2 W max. Digital: 12 to 30 V DC PROFIBUS PA 12.5 mA 	
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	



<p>Pointek CLS300 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.</p>	<p>Pointek CLS500 Inverse frequency shift capacitance level switch for detecting interfaces, solids, liquids, toxic and aggressive chemicals in critical conditions of extreme temperature and extreme pressure.</p>	<p>Pointek ULS200 Ultrasonic non-contacting switch with two switch points for level detection of bulk solids, liquids, and slurries in a wide variety of industries; ideal for sticky materials.</p>	<p>Milltronics Tilt Switch Probe Electro-mechanical tilt switch for point level detection, plug-chute detection, and feed loss detection on conveyor belts.</p>
<p>Rod: 350 mm to 1 m (14 to 40") Cable: 1 to 25 m (3 to 82 ft)</p>	<p>Rod: 200 mm to 1 m (8 to 40")</p>	<ul style="list-style-type: none"> Liquids: 0.25 m to 5 m (0.8 to 16 ft) Solids: 0.25 m to 3 m (0.8 to 10 ft) 	<ul style="list-style-type: none"> 180 mm (7") Optional extensions
<ul style="list-style-type: none"> -40 to 200 °C (-40 to 392 °F) -40 to 400 °C (-40 to 752 °F) high temperature version 	<ul style="list-style-type: none"> -50 to 200 °C (-58 to 392 °F) -60 to 400 °C (-76 to 752 °F) high temperature version 	<ul style="list-style-type: none"> -40 to 60 °C (-40 to 140 °F) -20 to 60 °C (-5 to 140 °F) if mounted in metal threads 	<ul style="list-style-type: none"> -40 to 90 °C (-40 to 194 °F) -40 to 150 °C (-40 to 302 °F)
<p>Up to 35 bar g (511 psi g)</p>	<p>Up to 150 bar g (2175 psi g)</p>	<p>Atmospheric</p>	<p>Atmospheric</p>
<ul style="list-style-type: none"> Patented Active-Shield technology Multiple outputs Five dip switches for special adjustments e.g. fail safe, high/low <p>Options</p> <ul style="list-style-type: none"> Extensions up to 25 m (82 ft) Thermal isolator High temperature (HT version) 	<ul style="list-style-type: none"> Patented Active-Shield technology Push-button calibration Integrated local display 2-wire loop signal Full-function diagnostics <p>Options</p> <ul style="list-style-type: none"> One point calibration in percent High temperature (HT version) Single piece flange construction for extreme conditions 	<ul style="list-style-type: none"> 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 <p>Options</p> <ul style="list-style-type: none"> Flange adapter Sanitary mounting 	<ul style="list-style-type: none"> 17° switch angle Easy installation and operation Low cost Encapsulated electronics <p>Options</p> <ul style="list-style-type: none"> Extensions: stainless steel wear, cross paddle, flat paddle, or float
<p>Standard</p> <ul style="list-style-type: none"> One form C (SPDT) relay Solid-state switch <p>Digital</p> <ul style="list-style-type: none"> Solid-state switch 	<ul style="list-style-type: none"> 4 to 20/20 to 4 mA 2-wire current loop Solid-state switch 	<ul style="list-style-type: none"> AC version: two form C (SPDT) relays, (5 A at 250 V AC) DC version: two form C (SPDT) relays, (5 A at 48 V DC) or transistor (two switches, 100 mA at 48 V DC) 	<ul style="list-style-type: none"> 2 A at 24 V DC Single normally closed contact
<p>Digital</p> <ul style="list-style-type: none"> PROFIBUS PA SIMATIC PDM compatible 	<p>HART</p>	<p>N/A</p>	<p>N/A</p>
<ul style="list-style-type: none"> Standard: 12 to 250 V AC/DC, 0 to 60 Hz, 2 W max. Digital: 12 to 30 V DC PROFIBUS PA 12.5 mA 	<p>Nominal 24 V DC, max. 30 V DC, 4 to 20 mA</p>	<ul style="list-style-type: none"> AC version: 100 to 230 V AC, ±15%, 50/60 Hz, 12 VA/5 W max. DC version: 18 to 30 V DC, (3 W) 	<p>Nominal 24 V DC, max. 30 V DC</p>
<p>CE, CSA, FM, ATEX, Lloyd's Register of Shipping, C-TICK, WHG, VLAREM II</p>	<p>CE, CSA, FM, ATEX, Lloyd's Register of Shipping, C-TICK, WHG, current signaling according to NAMUR NE 43, Bureau Veritas</p>	<p>CE, CSA^{NRTL/C}, FM, ATEX, C-TICK, INMETRO</p>	<p>CE, C-TICK</p>

Gravimetric



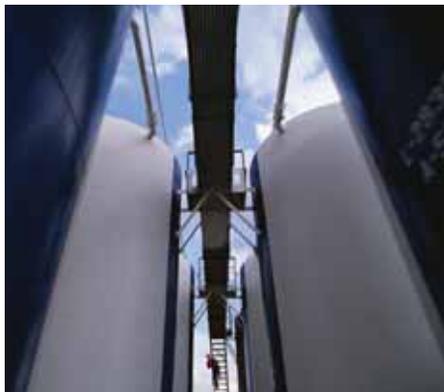
Precise level measurement independent of material, tank shape characteristics, and temperature

Gravimetric level measurement with SIWAREX offers high accuracy of 0.07% 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 (13 lbs to 1212 tonnes), dependent on number and type of load cells (for more details, see WT10 catalogue)		
Process temperature	Independent of the process temperature		
Process pressure	Independent of the process pressure		
Key features	<ul style="list-style-type: none"> • 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	PROFIBUS DP, PROFINET		
Power specifications	Nominal 24 V DC		
Approvals	CE, FM, UL, „UL _{cs} “ HazLoc, ATEX Zone 2, Zone 1 in combination with SIWAREX IS		



Hydrostatic



Level measurement with relative and differential pressure transmitters

Hydrostatic level measurement is a low cost option 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 ₂ O to 0 to 20 mH ₂ O	10 to 30,000 mbar g (0.15 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	<ul style="list-style-type: none"> • Compact stainless steel enclosure and sensor • Easy installation <p>Options</p> <ul style="list-style-type: none"> • Intrinsically Safe (IS) • Special measuring ranges: 0 to 1 mH₂O to 0 to 200 mH₂O • Cable length up to 200 m (656 ft) 	<ul style="list-style-type: none"> • With remote seals up to 400 °C (752 °F) • Self-diagnostic elements for parameterization <p>Options</p> <ul style="list-style-type: none"> • Intrinsically Safe • Explosion proof • Flame proof • Corrosion-resistant diaphragm and process connections • Range of different process connections 	<ul style="list-style-type: none"> • With remote seals up to 400 °C (752 °F) • With front flush design up to 200 °C (392 °F) • Self-diagnostic elements for parameterization <p>Options</p> <ul style="list-style-type: none"> • 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	N/A	<ul style="list-style-type: none"> • HART • PROFIBUS PA • FOUNDATION Fieldbus 	<ul style="list-style-type: none"> • HART • PROFIBUS PA • FOUNDATION Fieldbus
Power specifications	10 to 36 V DC	<ul style="list-style-type: none"> • 10.5 to 45 V DC • PROFIBUS PA and FOUNDATION Fieldbus 12.5 mA 	<ul style="list-style-type: none"> • 10.5 to 45 V DC • PROFIBUS PA and FOUNDATION Fieldbus 12.5 mA
Approvals	CE, ATEX	CE, ATEX, FM, CSA	CE, ATEX, cFM _{US}



Remote digital displays



Process monitoring anywhere

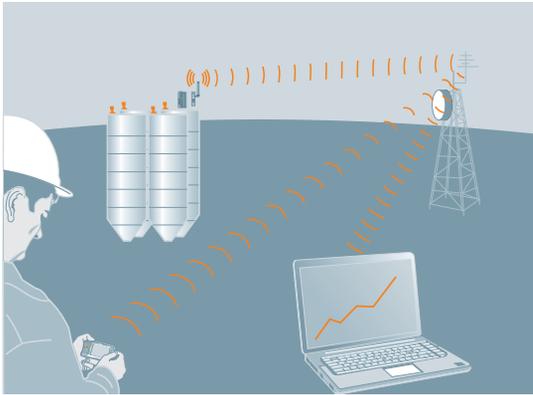
SITRANS RD100 and SITRANS RD200 are remote digital displays for level, flow, pressure, temperature, weighing, and other process instruments.

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 to your local computer using the free downloadable RD Software.

	SITRANS RD100 2-wire loop powered 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 specifications	Nominal 24 V DC max. 30 V DC, 4 to 20 mA	<ul style="list-style-type: none"> Option 1: 85 to 265 V AC, 50/60 Hz; 90 to 265 V DC, 20 W max. Option 2: 12 to 36 V DC, 12 to 24 V AC, 6W max.
Digits	3½ digit display	4 digit display
Key features	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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	14 mm (0.56") high LED
Operating temperature	-40 to 85 °C (-40 to 185 °F)	0 to 65 °C (32 to 149 °F)
Approvals	FM, CSA hazardous approvals	CE, UL, cUL

SITRANS RD500



SITRANS RD500

Remote monitoring of instrumentation anytime, anywhere via the web, including alarm event handling and data capture

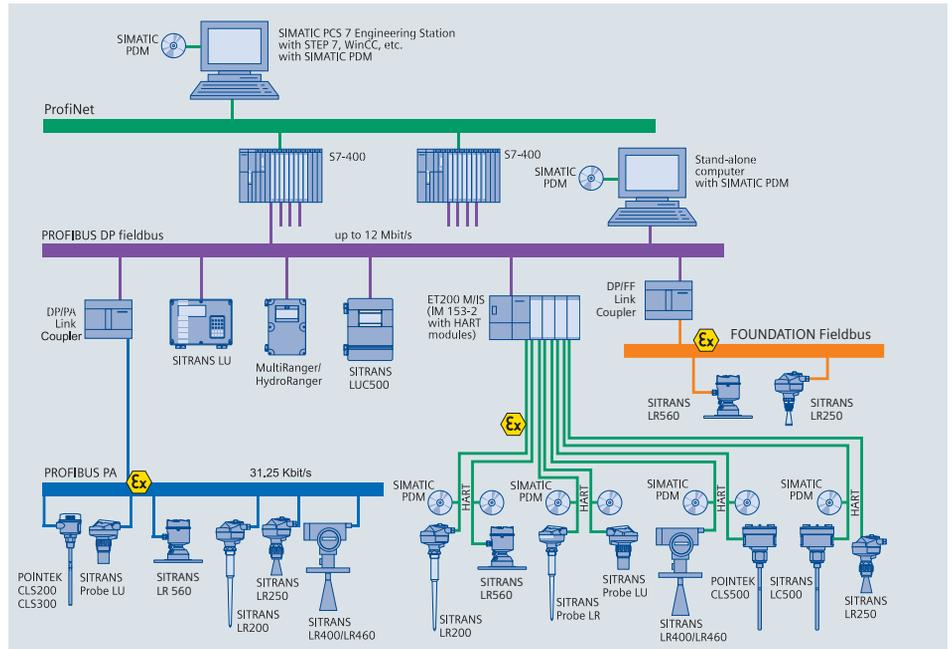
SITRANS RD500 is a remote data manager providing remote monitoring through data logging, web access, and alarming for instrumentation. It offers integrated web and ftp server, email and sms for alarming, and up to two gigabytes of memory for data logging from instrumentation. It enables remote monitoring of inventory levels, process and environmental applications, and provides web access to most types of field instrumentation, including flow, level, pressure, temperature, and weighing.

	SITRANS RD500 Remote data manager for monitoring and data logging, web access, and alarming
Number of I/O	<ul style="list-style-type: none"> • 247 serial Modbus devices • 128 conventional I/O RTD/TC 4 to 20 mA/0 to 10 V/digital (optional 16 modules)
Input types	0 to 10 V, 0 (4) to 20 mA, RTD, TC, digital and Modbus (RS-485, RS-232)
Communication	<ul style="list-style-type: none"> • Ethernet Option • GSM, GPRS, PSTN
Memory	<ul style="list-style-type: none"> • On-board user memory: 4 MB of non-volatile Flash memory • On-board SDRAM: 2 MB • Memory card: Compact Flash Type II slot for Type I and Type II cards; 2 GB max.
Rated operating conditions	<ul style="list-style-type: none"> • Storage temperature: -30 to 70 °C (-22 to 158 °F) • Operating temperature: 0 to 50 °C (32 to 122 °F) • Humidity: 80% max relative humidity, non-condensing, from 0 to 50 °C (32 to 122 °F)
Enclosure	High impact plastic and stainless steel; installation category I; Pollution degree 2 IP20
Mounting	Snaps onto standard DIN style top hat (T) profile mounting rails according to EN50022 -35 x 7.5 and -35 x 15
Power specifications	<ul style="list-style-type: none"> • 24 V DC ±10% • 400 mA min. (1 module) • 3.5 Amps max. (16 modules) • Class 2 or SELV-rated power supply
Safety certificates and approvals	<ul style="list-style-type: none"> • UL Listed to U.S. and Canadian safety standards UL508 and CSA C22.2 No. 14-M05 (File No. E302106) • IEC 61010-1, EN 61010-1: Safety requirements for electrical equipment for measurement, control, and laboratory use, Part1 • C-TICK

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.

FOUNDATION Fieldbus

FOUNDATION Fieldbus (FF) is designed for the process industry. The instrumentation on this bus can be Intrinsically Safe, and can be powered, configured, and monitored over the bus.

FOUNDATION Fieldbus is similar to PROFIBUS PA, Siemens preferred network connection. Siemens now offers instrumentation with FF and implements FF systems.

Model 475/375 HART field communicator and Emerson AMS

The handheld HART 475/375 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.

FDT Software SITRANS DTM

Field Device Tool (FDT) is a standard for configuration software that uses alternative technology to EDD based software such as PDM. We support this technology via the use of SITRANS DTM.

To configure a field instrument, the FDT frame application (such as FIELDcare, or PACTware, or PRM) requires that a DTM is written for that instrument. SITRANS DTM is an Electronic Device Description Language (EDDL) interpreter that takes an Electronic Device Description (EDD) written for an instrument and creates a virtual DTM for that instrument.

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.

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.

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.





PI Training

Maximize your skills with factory certified training

Industry Sector SC PI2 provides a full schedule of Process Instrumentation training opportunities for Siemens employees, channel partners, and customers. The PI T courses are designed for new sales and service employees to learn the product lines, the technologies, and the applications. The courses are also prerequisites for the advanced technology courses which provide in-depth application training. Designed for hands-on learning, all courses are led by field-tested instructors who combine extensive application and instrumentation knowledge with seasoned training experience. Our PI Training Center is specifically designed to optimize your classroom time. It is fully equipped with application simulation stations, a full range of PI instruments, and complete industrial communication networks.

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Get more information

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