SIEMENS

Ultrasonic level

Solutions for a world of applications

Process Instrumentation

siemens.com/ultrasonic

Since the early 1970s...

Siemens has been your partner in ultrasonic level measurement. This experience matters – take a look at the million plus Siemens ultrasonic level devices installed around the world.

Whether it's water/wastewater monitoring and pumping, inventory management, truck load-outs, or anything in between, Siemens ultrasonic level measurement is the answer.

After installing Siemens ultrasonic level measurement instruments, you immediately see the benefits: a cost-effective, easy-to-configure, low maintenance solution that suits your needs for years to come.

Siemens ultrasonics

... is a non-contacting technology requiring little to no maintenance compared to other devices.

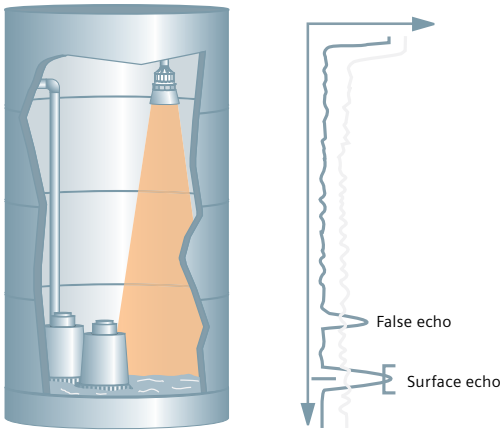
... remains a cost-effective solution for short- to long-range applications of liquids, slurries, and solids.

... features Siemens' patented Sonic Intelligence echo processing, delivering accurate measurement you can depend on.

... offers transducers with active faces to reduce material buildup, making them an ideal fit for a wide range of industries.

... senses flooding or overfill conditions with proven submergence detection.

... comes backed by our strong application experience and sales support, giving you the assistance you need when and where you need it.



Sonic Intelligence differentiates false echoes caused by obstructions from true material level echoes.

Sonic Intelligence is our 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.

SITRANS LUT400

Prepare yourself. With world-leading accuracy, unparalleled ease of use, setup in under a minute, and the customer-driven features you asked for, the SITRANS LUT400 series ultrasonic controllers have arrived. Making your work simpler and providing the reliability you need to ensure processes are running smoothly.

Welcome to the evolution of ultrasonics

The new benchmark in ultrasonic level measurement accuracy: the SITRANS LUT400 series ultrasonic controllers.

These compact, single point controllers excel at continuous level monitoring and control in liquids, solids, or slurry applications in a wide range of industries. With world-leading accuracy of 1 mm (0.04"), the SITRANS LUT400 series ensures that measurements are consistently precise.

Three models make up the series:

- SITRANS LUT420 Level and Volume Controller
- SITRANS LUT430 Level, Pump, and Flow Controller
- SITRANS LUT440 High Accuracy Open Channel Monitor (OCM), which also provides a full suite of advanced level, volume, and pump controls

These controllers are flexible solutions for an array of applications, including level measurement or pump control in water/wastewater treatment facilities, inventory management in industrial storage vessels, and open channel monitoring.

Operations are more cost-effective: inventory monitoring is always precise, processes can be better controlled, and expensive spill cleanups can be avoided.

A reliable ultrasonics level controller reduces the need to send operators to the application for maintenance. By keeping workers out of hazardous situations altogether, you immediately reduce the chance of accidents and the consequences to your company.

SITRANS LUT400 series:

- Sonic Intelligence continuously evaluates and adjusts for noise level and changing process conditions.
- Programmable in under a minute with graphical Quick Start Wizards on the intuitive local user interface navigation with local four-button programming and menu-driven parameters.
- Features HART® Communications and supports remote configuration and diagnostics with SIMATIC PDM (Process Device Manager), Emerson AMS™, FC375/475, or FDTs (such as PACTware™) using Siemens SITRANS DTM.
- Compatible with the full line of Siemens Echomax transducers, with an operating range of 0.3 to 60 meters (1 to 200 ft), depending on transducer.
- Three relays combined with a suite of pump, alarm, and other control features.

Meet the ultrasonics family

The Siemens ultrasonic instrumentation family has a long history together. We're a hardworking group, and we aim to please. **Reliable?** You can count on it. **Intelligent** and **Durable?** We have both brains and brawn. Together we set the standard for accuracy and performance with our innovative and advanced approach to level measurement.

Solutions for more than a million industrial process applications: **Come meet the family.**

	SITRANS LUT400 series	MultiRanger 100/200	HydroRanger 200
Order No.	7ML5050	7ML5033	7ML5034
	SITRANS LUT400 series controllers are compact, single point, long range ultrasonic controllers for continuous level or volume measurement of liquids, slurries, and solids, and high accuracy monitoring of open channel flow.	MultiRanger is a versatile short- to medium-range ultrasonic single and multi-vessel level monitor/controller for virtually any application in a wide range of industries.	HydroRanger 200 is an ultrasonic level controller for up to six pumps and provides control, differential control, and open channel flow monitoring.
Range	0.3 to 60 m (1 to 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
Accuracy	Standard accuracy: ±1 mm (0.04") plus 0.17% of distance. High accuracy configuration (SITRANS LUT440): ±1 mm (0.04"), within 3 m (10 ft) range*	6 mm (0.24") or 0.25% of maximum range (whichever is greater)	6 mm (0.24") or 0.25% of maximum range (whichever is greater)
Key features	• Available in three models: SITRANS LUT420 Level and Volume Controller SITRANS LUT430 Level, Volume, Pump, and Flow Controller SITRANS LUT440 High Accuracy Open Channel Monitor (OCM) which also provides a full suite of advanced level, volume, and pump controls • Advanced pump, alarm, and flow control features with three relays • Real time clock with daylight savings time and energy-saving algorithms • Integrated datalogger • Patented digital receiver for enhanced performance and reliability • Compatible with all Echomax transducers • Digital input for back-up level override from point level devices	• MultiRanger 100 for simple level measurement or pump control • MultiRanger 200 for differential level, open channel measurement, and advanced pump control and alarming • Simple setup and programming with infrared handheld programmer or via SIMATIC PDM • Digital communications with built-in Modbus® RTU via RS-485 • Digital input for back-up level override from point level devices	• Monitors water and wastewater of any consistency up to 15 m (50 ft) in depth • Single point monitoring with all models, optional dual-point monitoring and gate control with six-relay model • Simple setup and programming with infrared handheld programmer or via SIMATIC PDM • Auto False-Echo Suppression to avoid false echoes from fixed obstructions • Digital communications with built-in Modbus RTU via RS-485 • Digital input for back-up level override from point level devices • Open channel flow
Communications or outputs	• HART, USB • EDDs for SIMATIC PDM, AMS Device Manager, and Field Communicator 375, plus SITRANS DTM for FDTs • Integrated web browser for local programming from an intuitive web-based interface	• RS-485 with Modbus RTU or ASCII • Compatible with SIMATIC PDM via Modbus RTU **Options** SmartLinx cards for PROFIBUS™ DP, Allen-Bradley® Remote I/O, DeviceNet™	• RS-485 with Modbus RTU or ASCII • Compatible with SIMATIC PDM via Modbus RTU **Options** SmartLinx cards for PROFIBUS DP, Allen-Bradley Remote I/O, DeviceNet
Approvals	CE, CSA$_{US/C}$, UL Listed, FM, C-TICK, ATEX 3D, IECEx	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

* After calibration, under reference conditions – see user manual for details. Standard accuracy applies to all models excluding the SITRANS LUT440 in high accuracy mode.

SITRANS LU series	SITRANS Probe LU	The Probe	Pointek ULS200
7ML5007/7ML5004	7ML5221	7ML1201	7ML1510
SITRANS LU series are long-range non-contacting ultrasonic controllers giving true level control in your vessels.	SITRANS Probe LU is a 2-wire loop-powered level measurement transmitter – ideal for measuring your storage vessels, filter beds, and open channel flow in the water and wastewater, food, and chemical industries.	The Probe is a short-range integrated ultrasonic level transmitter – ideal for liquids and slurries in your open or closed vessels.	Pointek ULS200 is a non-contacting point level switch with two switch points for level detection of your bulk solids, liquids, and slurries in a variety of industries; it is ideal for sticky materials.
0.3 m to 60 m (1 to 200 ft), transducer and material dependent	• 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)	0.25 to 5 m (0.8 to 16 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)
0.25% or 6 mm (0.24") (whichever is greater)	6 mm (0.24") or 0.15% of span (whichever is greater)	0.25% of full scale	Repeatability: 0.25% of full range
• Available in three models: SITRANS LU01 for one point SITRANS LU02 for two points SITRANS LU10 for 10-point monitoring • Sonic Intelligence echo processing software measures distance, level, or volume • Simple setup and programming with infrared handheld programmer • Connect to a DCS or PLC using Siemens SmartLinx interface modules • Compatible with all Echomax transducers • AC or DC version for SITRANS LU01 and LU02, AC version for SITRANS LU10	• Superior functionality and plug-and-play performance • Programming via PC software or infrared handheld programmer • Sonic Intelligence guarantees the most reliable performance available • 10° beam angle – stronger pulse and sensitivity in a compact beam • IP68 rated • Level, volume, and flow measurement • -40 to 85 °C (-40 to 185 °F) • PVDF or ETFE transducer for chemical compatibility	• Sonic Intelligence provides highly reliable echo processing • Easy to install and maintain • Easy two-button programming • PVDF transducer • -40 to 60 °C (-40 to 140 °F) • -20 to 60 °C (-4 to 140 °F) if mounted in metal threads • IP65 rated • 12° beam angle	• Two switch outputs for high-high, high, low, and low-low level alarms or pump up/pump down control • Easy, two-button programming • Integral temperature compensation • Threaded and sanitary fitting clamp process connections • -40 to 60 °C (-40 to 140 °F) • -20 to 60 °C (-5 to 140 °F) if mounted in metal threads • 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) • PVDF transducer
• Dolphin RS-232/RS-485 (LU01, LU02) • Dolphin via infrared (LU10) **Options** • SmartLinx cards for PROFIBUS DP, Allen-Bradley I/O	• HART or PROFIBUS PA • EDD for SIMATIC PDM for remote configuration and diagnostics • FDT such as PACTware or Fieldcare via SITRANS DTM (HART version only)	4 to 20 mA output optional alarm relay	Two form C relays or two transistor switches
CE, CSA$_{NRTL/C}$, FM, Lloyd's Register of Shipping, ATEX	CE, CSA$_{US/C}$, FM, C-TICK, ATEX, Lloyd's Register of Shipping, ABS, ANZEx, IECEx, INMETRO	CE, CSA$_{NRTL/C}$, FM, C-TICK, INMETRO	CE, CSA$_{NRTL/C}$, FM, ATEX, C-TICK, INMETRO

Echomax transducers

Siemens Echomax ultrasonic level transducers provide trouble-free, reliable performance. Our non-contacting transducers are impervious to dust, moisture, vibrations, flooding, and high temperatures. With the ability to detect submergence – when paired with a submergence shield – and an active face to reduce material buildup, these transducers are a perfect fit for a range of industrial applications. Siemens transducers are easy to install and require little to no maintenance.

With every transducer from Siemens, you get:

- Sonic Intelligence (when paired with a Siemens controller) – our field-proven echo processing algorithms guarantee the most reliable performance possible.
- Unmatched beam angle – stronger pulse and sensitivity in a compact beam make our ultrasonics transducers the most powerful in the industry.
- Ease of installation – Siemens' wide range of mounting brackets and accessories provide the right installation package for any application.
- Sales and support in your neighborhood – our extensive global coverage means conveniently located sales and support.

	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
	Liquids		Liquids/Solids						Solids	
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 (196 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)	CSA/FM model: 73 °C (163 °F) ATEX model: 60 °C (140 °F)	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)	CSA/FM model: -40 °C (-40 °F) ATEX model: -20 °C (-5 °F)	-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	• 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 -3db	10°	12°	12°	6°	6°	6°	12°	6°	5°	5°
Process connection	1" NPT or R 1" BSPT, EN 10226	1" NPT with 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 NPT Universal thread	R 1.5" BSPT NPT Universal thread	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 • IP68 rated **Options** • CPVC Flange • PTFE face with CPVC flange • Submergence detection with hood	• ETFE • PVDF • IP68 rated	• PVDF • IP68 rated **Options** • PVDF with CPVC Flange • PTFE face with CPVC flange • Submergence detection with hood	• PVDF • IP68 rated **Options** • PVDF with CPVC Flange • PTFE face with CPVC flange • Submergence detection with hood	• PVDF • IP68 rated **Options** • PVDF with CPVC flange • PTFE face with CPVC flange	• PVDF • IP68 rated	• PVDF • IP68 rated **Option** • 4" sanitary connection	• PVDF • IP68 rated	• Aluminum • 304 stainless steel • Polyester • Silicone • IP68 rated	• Aluminum • 304 stainless steel • Polyester • Silicone • IP68 rated
SITRANS LUT400 series	●	●	●	●	●	●	●	●	●	●
MultiRanger 100/200	●	●	●	●			●	●		
Hydro-Ranger 200	●	●	●	●			●	●		
SITRANS LU	●	●	●	●	●	●	●	●	●	●

All Siemens transducers have one or more of the following approvals: CE, CSA, ATEX, SAA, ABS, and Lloyd's Register of Shipping.
*FM Class 1 Div 1 approved.

Accessories

Siemens has a large number of accessories for level measurement: temperature sensors, aiming devices, and mounting brackets, just to name a few.

Temperature sensors

Accurate and rapid temperature compensation is essential in applications where temperature variations of the sound medium are expected.

The TS-3 temperature sensor provides an input signal for temperature compensation of Siemens ultrasonic level controllers.

Suited for cases where a fast reaction to temperature variations is required (open channel monitoring), where a flanged ultrasonic transducer is used, or where high temperatures are encountered.

Easy Aimers

Easy Aimers are perfect for aiming ultrasonic transducers on bulk solids applications. Siemens Easy Aimers are available in a stainless steel version (EA 304) or a cast aluminum version (EA 2).

Sunshields

For outdoor mounting locations, Siemens sunshields provide that extra bit of protection. As shelter from direct sun, snow, and rain, the sunshields are available for all Siemens ultrasonic controllers.

Mounting brackets

Siemens mounting brackets permit simple, fast installation of ultrasonic transducers. These tough, high-quality mounting brackets are constructed of 304 (1.4301) stainless steel and are suitable for use indoors and outdoors. They adjust to fit almost any application, saving you the time and expense of building custom brackets.

Communications

Pairing intelligent ultrasonic field devices with SIMATIC NET architecture is a perfect mix. This combination gives you considerable cost savings through reduced installation efforts, predictive maintenance, and intelligent diagnostics. Siemens offers a wide range of Industrial Communication components specifically designed for reliable use in your industry.

Communication flexibility

Siemens provides communication flexibility. Siemens Totally Integrated Automation (TIA) approach offers ease of connection to a DCS system such as SIMATIC PCS 7 using industrial standards such as HART and PROFIBUS.

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 independent 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.

Remote digital displays

Siemens remote displays, SITRANS RD100 and SITRANS RD200, provide the flexibility of having a display where it is needed – in the field, in a panel, or in the control room.

Remote monitoring

SITRANS RD500 allows remote monitoring of Siemens ultrasonics using standard communication options such as Ethernet and cellular GPRS modem. This is the ideal complement to any remote monitoring application, allowing direct access to level readings via any computer (such as smart phones, laptops, or any device supporting a web browser, email, or sms).

In addition to remote monitoring and reporting, SITRANS RD500 also provides these remote features:

- configuration
- viewing of transmitter data
- datalogging
- event alarming
- reporting and messaging

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.

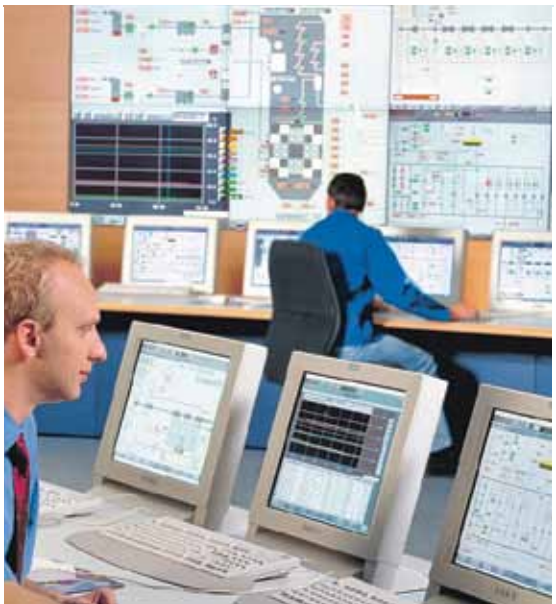
Model 375 HART field communicator and Emerson AMS

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.

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, MultiRanger100/200, and HydroRanger 200.



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