LEVEL MEASUREMENT GUIDE

Embrace the proven, **welcome the new**

usa.siemens.com/level

SIEMENS

CONNECT. CONTROL. SAVE

The front lines **of digitalization**

Enormous potential benefits await your operations with Industry 4.0. With unparalleled control and access, you now have complete knowledge of what's happening in your plant at all times.

But even in the age of digital, you still need accurate, reliable, and rugged process instrumentation. Because if field instruments can't supply the right data, even the most sophisticated digitalization plans will fail.

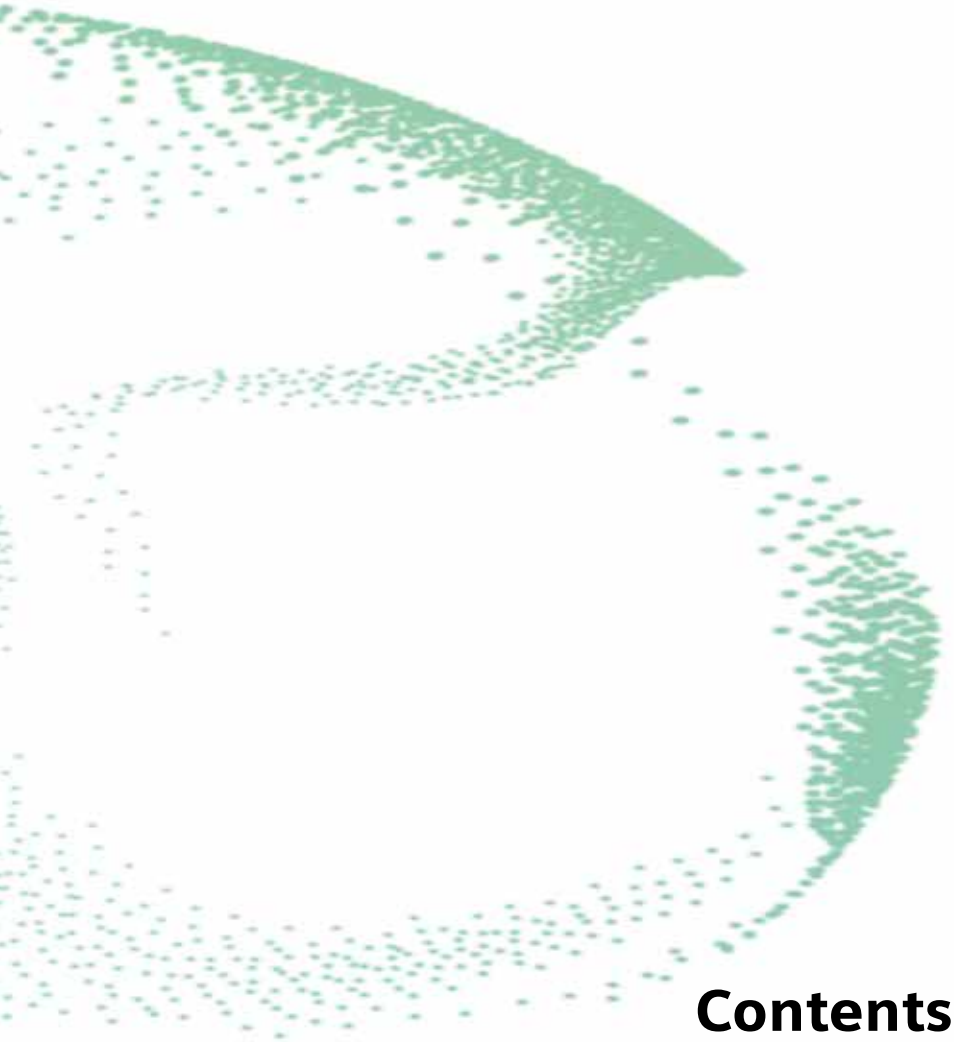
Intelligent level monitoring brings intelligent operations:

Connect devices to Siemens MindSphere Cloud for Industry and use SITRANS IQ apps to see your plant open up before you.

Commission, monitor, and diagnose operations with the touch of your smartphone through the SITRANS mobile IQ app.

Save operators' time and eliminate inefficiencies through optimized processes, delivering cost savings directly to your bottom line.

With the knowledge that no single technology can address the needs of all industrial applications, Siemens provides a complete range of level measurement devices. All backed by our global support network, providing experienced sales and technical assistance when and where you need it.



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Because no single technology measures level in all applications, **Siemens offers selection**.

Start with the right product, finish with low cost of ownership and increased safety.

Non-contacting technology — Ultrasonic Radar

1

Always consider non-contacting technology first. SITRANS LU and SITRANS LR ultrasonic and radar technologies measure most level applications.

- **Minimal maintenance**
- **No wear and tear**
- **Easiest to commission and install**

Contacting technology — Pressure Guided wave radar Capacitance Weighing

2

For high accuracy dosing/batching use SIWAREX (weighing). SITRANS LG (guided wave radar), SITRANS P (pressure), and SITRANS LC (capacitance) are the answer for the following:

- **Small process connections**
- **Interface detection**
- **Extreme pressure and temperature applications**

Safety and assurance

For point level detection, safety of personnel, back-up control, and to avoid costly shutdowns, install point level devices like Pointek CLS, SITRANS LCS050, SITRANS LVL, SITRANS LVS or SITRANS LPS.

Control

Pre-programmable control features, datalogging, extra inputs/outputs, full communication. For applications when you want more than strictly level measurements.

SITRANS LUT400

MULTIRANGER

SITRANS LT500 HYDRORANGER / MULTIRANGER

Technology selector | Controllers | Ultrasonics | Radar | Continuous contact | Point level | Hydrostatic | Level by weight | Remote monitoring and displays | Digitalization | Support

Level technology **selector**

- preferred
- condition dependent

Conditions	Continuous level						Point level			
	Ultrasonic	Radar	Guided wave radar	RF Capacitance	Gravimetric	Hydrostatic pressure	Vibration	Capacitance	Paddle	Ultrasonic
Measurement										
Level	preferred	preferred	preferred	preferred	condition dependent	preferred	condition dependent	preferred	preferred	preferred
Interface (liquid/liquid)			preferred	condition dependent		condition dependent		preferred		
Interface (liquid/solid)	condition dependent			condition dependent			condition dependent			
Volume	preferred	preferred	preferred	condition dependent	condition dependent	preferred				
Mass					preferred	condition dependent				
Flow (open channel)	preferred	condition dependent								
Level Application										
Changing density	preferred	preferred	preferred	preferred			preferred	preferred	preferred	preferred
Changing dielectric	preferred	preferred	preferred		preferred	preferred	condition dependent	preferred	preferred	preferred
Aggressive chemicals*	preferred	preferred	preferred	preferred	preferred	preferred	preferred	preferred	preferred	preferred
Pressure/vacuum		preferred	preferred	preferred	preferred	preferred	preferred	preferred	preferred	
High temperature		preferred	preferred	preferred	preferred	preferred	preferred	preferred	preferred	
Cryogenic			preferred	preferred	preferred			preferred		
Turbulence	preferred	preferred	condition dependent	condition dependent	preferred	preferred	condition dependent	condition dependent		preferred
Steam		condition dependent	preferred	condition dependent	preferred	preferred	preferred	condition dependent	condition dependent	
Hydrocarbon vapors/ solvents		preferred	preferred	preferred	preferred	preferred	preferred	condition dependent		
Foam	condition dependent	condition dependent	condition dependent	condition dependent	preferred	preferred	condition dependent	condition dependent		condition dependent
Buildup	condition dependent	condition dependent	condition dependent	condition dependent	preferred	condition dependent	condition dependent	condition dependent	preferred	condition dependent
High viscosity	preferred	preferred	condition dependent	condition dependent	preferred	condition dependent	condition dependent	condition dependent	condition dependent	preferred
Dust	condition dependent	preferred	preferred	preferred	preferred		preferred	preferred	preferred	condition dependent
Solids powders	condition dependent	preferred	condition dependent	condition dependent	preferred		preferred	condition dependent	preferred	condition dependent
Solids granules/pellets < 25 mm (1")	preferred	preferred	condition dependent	condition dependent	preferred		preferred	condition dependent	preferred	preferred
Solids > 25 mm (1")	preferred	preferred			preferred		condition dependent	condition dependent	preferred	preferred

* Check chemical compatibility.

LEVEL MEASUREMENT

Because no single technology measures level in all applications, **Siemens offers selection**

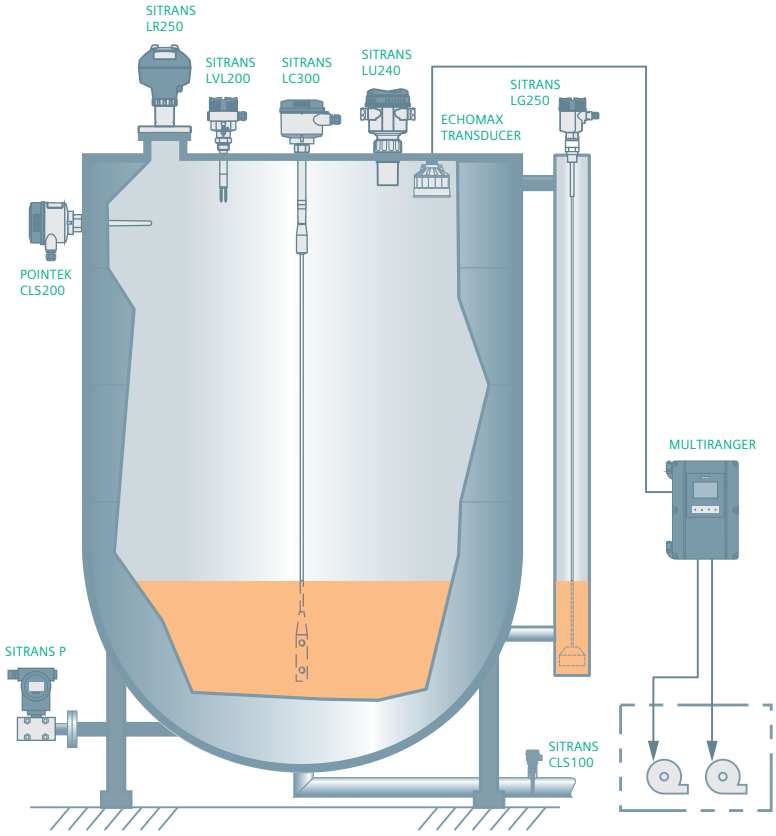
Monitoring water levels in open channels. Tracking the amount of grain in a silo. Measuring oil in a tank. Simply put, level measurement tells you how much material is at a given location.

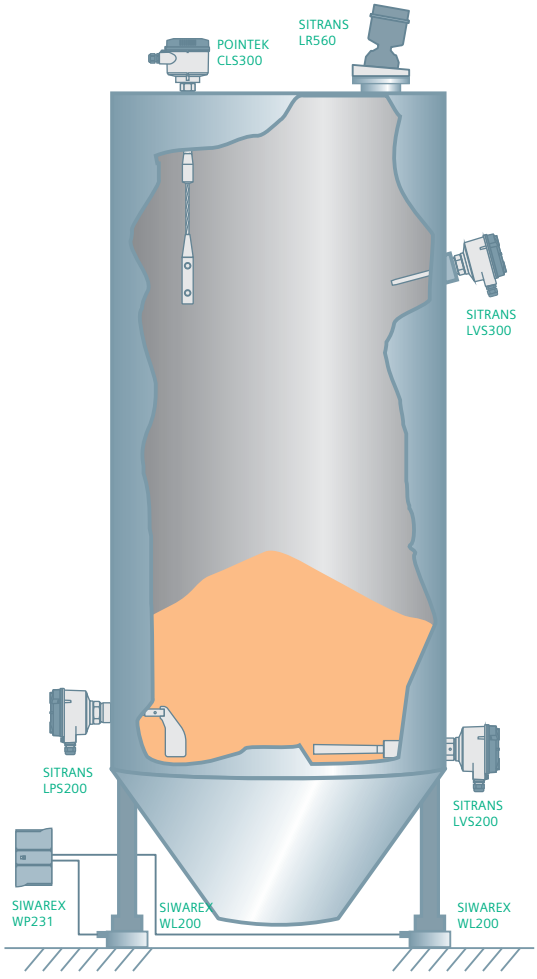
The right instrument for your application

Siemens level measurement instruments let you get on with your day. Easy 4-button programming and graphical Quick Start Wizards deliver headache-free installation and setup. Advanced processing means that operators aren't spending valuable time repeatedly troubleshooting devices—instead they can be confident that these instruments are delivering reliable, accurate results.

Complementing our level technology is Siemens' complete suite of process instruments, gas analytics, automation, and drives for industries around the globe:

- Flow
- Weighing
- Pressure
- Temperature
- Positioning
- Power supplies
- Process protection
- Process controllers
- Remote displays
- Process recorders
- Gas analytics
- Gear reducers
- Motors
- Control systems
- Industrial communication
- PLCs
- HMIs
- Drives
- Motion control


SITRANS
LR250
SITRANS
LVL200
SITRANS
LC300
SITRANS
LU240
SITRANS
LG250
ECHOMAX
TRANSDUCER
POINTEK
CLS200
MULTIRANGER
SITRANS P
SITRANS
CLS100


POINTEK
CLS300
SITRANS
LR560
SITRANS
LVS300
SITRANS
LPS200
SITRANS
LVS200
SIWAREX
WP231
SIWAREX
WL200
SIWAREX
WL200

LEVEL CONTROLLERS

Ultimate control for your application

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

Need high-accuracy open channel monitoring? How about flexible control with multiple relays and ultrasonic level? Or perhaps you need a reliable controller for long-range, high-frequency radar?

Siemens level controller portfolio answers all these questions—and more.

The new SITRANS LT500 HydroRanger / MultiRanger level, flow, and pump controllers for radar transmitters—or any two-wire 4-20 mA devices—offers everything from basic level control to complex pumping routines. Easily retrofit older equipment with SITRANS LT500 HydroRanger / MultiRanger and see how improved system control delivers savings directly to your company's bottom line.

siemens.com/controllers

	SITRANS LUT400	**MultiRanger200 / HydroRanger200**	**SITRANS LT500 HydroRanger / MultiRanger**
	High accuracy and data logging	Differential measurement and six control relays	First choice for radar sensor measurement at 80 GHz
Technology	Ultrasonic	Ultrasonic	Ultrasonic, radar, 4-20 mA
Order No.	7ML5050	7ML5033 / 7ML5034	7ML60
	SITRANS LUT400 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/HydroRanger are versatile short- to medium-range ultrasonic single and multi-vessel level monitor/ controllers for virtually any application in a wide range of industries.	SITRANS LT500 HydroRanger / MultiRanger is a controller for level, volume, volume flow, and pump applications for radar and ultrasonic transmitters – or any other 2-wire 4 to 20 mA devices.
Range	0.3 to 30 m (1 to 98 ft), sensor dependent	0.3 to 15 m (1 to 49 ft), sensor dependent	Sensor dependent
Key features	• Digital receiver for high performance and reliability in noisy applications • Intuitive ease of use • Advanced pump, alarm, and flow control features with three relays • Integrated datalogger • Real-time clock with daylight saving time and energy-saving algorithms	• Range of models for simple level measurement or pump control to more complex for differential level, open channel measurement, advanced pump control, alarming, and gate control • Auto False-Echo Suppression to avoid false echoes from fixed obstructions • Intuitive ease of use • Six relays	• Single- and dual-point measurements • Quick Start Wizards with 6 different display views and optional view information • Compatible with SITRANS LR110/120, SITRANS Probe LU240 and generic mA inputs • Six fully programmable relays rated at 5A for pump control and alarming • Datalogging, parameter backup and copy configuration on micro memory card
Communications or outputs	• HART • USB: Integrated web browser for local programming	• RS-485 with Modbus RTU or ASCII • SmartLinx cards for PROFINET, Modbus TCP/IP, Ethernet/IP, PROFIBUS DP, DeviceNet	HART, Modbus RTU, PROFIBUS DP or PROFIBUS PA options
Data logging	•		•
Communication options		•	•
High-accuracy flow	•		
Dual point pump control		•	•

ULTRASONICS

Active face technology keeps transmitters **free of material buildup**

Siemens non-contacting ultrasonic sensors and transmitters have active face technology which reduces material buildup and provides trouble-free, reliable performance. Both our transmitters and transducers (when combined with a Siemens controller) feature Process Intelligence, our field-proven echo processing algorithms, to guarantee the most reliable performance possible.

SITRANS Probe LU240 transmitters are a great solution, where value and performance meet. These cost-effective, compact intelligent level transmitters give you the level, volume, and flow measurement you need with field-proven echo processing. For ultrasonic non-contacting point level detection, Pointek ULS200 is a reliable transmitter.

Siemens Echomax ultrasonic level transducers are impervious to buildup, moisture, vibrations, and flooding. With the ability to detect submergence – when paired with a submergence shield – these transducers are a perfect fit for a range of industrial applications. Siemens transducers are easy to install and require little to no maintenance. The unmatched beam angle – stronger pulse and sensitivity in a compact beam – make our transducers the most powerful in the industry.

siemens.com/ultrasonics

	SITRANS Probe LU240	Echomax transducers	Pointek ULS200
	2-wire transmitter with HART 7 communications	Full range of options for all application needs	Point level detection
Order No.	7ML511	7ML1106, 7ML1100, 7ML1115, 7ML1118, 7ML1171 and 7ML1123	7ML1510
	SITRANS Probe LU240 is a cost-effective, compact, intelligent level solution for liquid chemical inventory, monitoring small process vessels, and level monitoring measurement in the environmental industry.	• Echomax XRS-5: for flumes and weirs • Echomax ST-H: installation flexibility • Echomax XPS-10/15: liquids, solids and slurries • Echomax XPS-30: deep wells and solids	Ultrasonic non-contacting switch with two switch points for level detection of bulk solids, liquids, and slurries; ideal for sticky materials.
Range	0.2 to 12 m (0.8 to 39 ft)	0.3 to 30 m (1 to 98 ft), model dependent	• Liquids: 0.25 to 5 m (0.8 to 16 ft) • Solids: 0.25 to 3 m (0.8 to 10 ft)
Process temperature	-40 to 80 °C (-40 to 176 °F)	-40 to 95 °C (-40 to 203 °F), model dependent	• -40 to 60 °C (-40 to 140 °F) • -20 to 60 °C (-5 to 140 °F) if mounted in metal threads
Process pressure	0.5 bar	8 bar, model dependent	Atmospheric
Key features	• IP68 fully potted option with its fully encapsulated PVDF sensor is resistant to corrosion, chemicals and extreme shock • Battery and solar-powered friendly, with low start-up current and 10.5-volt operation • Reduced blanking distance • 4-button user interface or remote configuration • Compatible with SITRANS LT500 HydroRanger / MultiRanger controller	• IP68 fully potted option with its fully encapsulated PVDF sensor is resistant to corrosion, chemicals and extreme shock • PVDF, ETFE or PVDF copolymer and CSM face • Submergence detection with shield available • Compatible with SITRANS LUT400 and MultiRanger/HydroRanger controller	• Easy two button programming • Two switch outputs for alarms • Flange adapter • Sanitary mounting
Communications or outputs	HART 7	Controller dependent	2 SPDT Form C contacts, rated 5 A at 250 V AC or 30 V DC, transistor
Local HMI	•		•
Continuous measurement	•	•	
Alarming and control			•
Extreme shock and vibration		•	

RADAR FOR LIQUIDS AND SLURRIES

Wide range of process connections and antennas for most materials

Liquid level measurement challenges are no match for Siemens' complete range of radar transmitters. Whether it's turbulent process vessels, hazardous chemicals, or slurries with a tendency to build up, our portfolio has the solution.

siemens.com/radar

Take the 80 GHz SITRANS LR100 series: these transmitters operate far above most application requirements, easily handling whatever liquid or slurry you've got. Zero blanking distance allows you to measure right up to the sensor, avoiding costly overfilling.

SITRANS LR250 is an excellent choice for liquid level measurement in storage and process vessels to 20 meters (66 ft). With its range of antennas, this transmitter can handle whatever you need it to. Its class-leading range of process connections mean that hygienic applications are no problem for this instrument.

And for monitoring the level of sea or river water, SITRANS LR560 can effectively provide accurate measurements with its long range and narrow beam.

	SITRANS LR100 series	**SITRANS LR250**	**SITRANS LR560**
	Universal applications with Bluetooth connectivity	Process conditions in oil and gas, chemical, or hygienic industries	Sea and river level measurement
Order No.	7ML530, 531, 532, 533, 534	7ML5431 PLA, 7ML5431 horn, 7ML5432, 7ML5433	7ML5440
	80 GHz compact radar transmitters with Bluetooth wireless technology.	2-wire, 25 GHz pulse radar level transmitter.	2-wire, 78 GHz FMCW radar level transmitter for continuous monitoring of solids or liquids.
Versions	**SITRANS LR100** for basic measurement **SITRANS LR110** with communication and hazardous approvals options **SITRANS LR120** with communication and optional submergence shield for flooding protection **SITRANS LR140** for basic measurement **SITRANS LR150** versatile version with communication and hazardous approval options and optional HMI	**SITRANS LR250** PLA for process industries **SITRANS LR250** FEA for extreme corrosive chemicals and high temperature **SITRANS LR250** horn ideal for oil and gas, highest temperature rating **SITRANS LR250** HEA hygienic antenna and variety of process connections	n/a
Range	**SITRANS LR100** to 8 m (26 ft) **SITRANS LR110** to 15 m (49 ft) **SITRANS LR120** to 30 m (98 ft) **SITRANS LR140** to 8 m (26 ft) **SITRANS LR150** to 15 m (49 ft)	up to 20 m (66 ft)	40 m (131 ft) 100 m (328 ft)
Process temperature	-40 to 80 °C (-40 to 176 °F)	-40 to 200 °C (-40 to 392 °F), process connection dependent	• -40 to 100 °C (-40 to 212 °F) • -40 to 200 °C (-40 to 392 °F)
Process pressure	-1 to 3 bar	up to 40 bar g (580 psi g), process connection dependent	up to 3 bar g (43.5 psi g) option
Key features	• Narrow beam for flexible installations in existing vessel openings – or non-intrusively through plastic vessels • Accuracy: 2 mm (0.08") • Optional submergence shield • Gas & dust Ex approval	• Process Intelligence – advanced echo processing for reliable performance • Graphical HMI • Quick Start Wizard and display diagnostics • 3-A, EHEDG • Antennas for aggressive conditions (acids, alkalis, and other corrosive chemicals) • SIL 2 for functional safety	• Process Intelligence – advanced echo processing for reliable performance • Graphical Quick Start Wizard for easy and fast setup • Stainless steel enclosure for near-shore corrosion resistance • Narrow 4-degree beam yields reliable measurement when installed close to wall
Communications or outputs	• HART, Modbus RTU • Bluetooth 4.2 or higher	HART or PROFIBUS PA	HART, PROFIBUS PA
Extreme temperature/ pressure		•	
Extreme corrosion resistance		•	
Long range			•
SITRANS LT500 HydroRanger / MultiRanger programmable	•		
Bluetooth connectivity	•		

RADAR FOR SOLIDS

Narrow beam and high frequency for reliable measurement of solids.

Strong signals over long distances, reliable measurements unaffected by temperature change, and clear echo profiles in dusty environments—Siemens high-frequency 80 GHz radar means application troubles are a thing of the past.

SITRANS LR560 is the easiest-to-use solids radar-transmitter on the market. With a suite of enhanced features including: 100 m range, high temperature capability, durable metal enclosure, purging, flanging and aiming options, and process connections to meet your basic to most challenging process needs.

SITRANS LR100 series transmitters meet the needs of general solids applications. Featuring a compact size, shorter ranges, and Bluetooth and SITRANS mobile IQ for easy installation and configuration.

siemens.com/radar

	SITRANS LR560	SITRANS LR110/120
	First choice	Basic applications
Order No.	7ML5440	7ML531, 7ML532
	2-wire, 78 GHz FMCW radar level transmitter for continuous monitoring of solids.	80 GHz compact radar transmitters with Bluetooth wireless technology.
Range	• 40 m (131 ft) • 100 m (328 ft)	**SITRANS LR110** to 15 m (49 ft) **SITRANS LR120** to 30 m (98 ft)
Process temperature	• -40 to 100 °C (-40 to 212 °F) • -40 to 200 °C (-40 to 392 °F)	-40 to 80 °C (-40 to 176 °F)
Process pressure	up to 3 bar g (43.5 psi g) option	-1 to 3 bar
Key features	• Process Intelligence – advanced echo processing for reliable performance • Graphical Quick Start Wizard for easy and fast setup • Push buttons or optional Intrinsically Safe infrared handheld programmer • Narrow 4-degree beam yields reliable measurement when installed close to wall • Dust Ex approval	• Narrow beam for flexible installations • Process connections: Thread 1" • Accuracy: 2 mm (0.08") • Beam angle: 4° (SITRANS LR120), 8° (SITRANS LR110) • Gas and dust Ex approval
Communications or outputs	HART, PROFIBUS PA	• HART, Modbus RTU • Bluetooth 4.2 or higher
Purging in challenging conditions	•	
Standard process flange connections	•	
Local HMI	•	
Intrinsically safe approval		•
Bluetooth connectivity		•

CONTINUOUS CONTACT LEVEL

Simple installation for interface or level monitoring that works

SITRANS LG guided wave radar transmitter is the solution for your easiest level or interface application to your most demanding—and everything in between. With simple, reliable installation and little to no configuration, you'll be operational in minutes, saving you time and money.

Extreme process conditions don't stand a chance, and these transmitters feature SIL options for applications requiring functional safety. Advanced diagnostics including trending, profiles, and event logging give you the data you need at every step of your process. Rapid response times and superior echo processing deliver accurate and reliable readings over the full application range, even in small containers and in low dielectric constant material. And with field-replaceable and adjustable probes, if your process changes, your measurement device can too.

SITRANS LC300 is ideal for a range of liquids, solids, and interface applications in the chemical, hydrocarbon processing, and food and beverage industries. Capacitance instruments use active-shield technology to ensure true and accurate level readings are recorded from the material surface.

siemens.com/sitransLG

	SITRANS LG	SITRANS LC300
	Liquids, solids, hygienic and extreme conditions	General liquids or solids
Order No.	7ML5880, 7ML5881, 7ML5882, 7ML5883	7ML5670-3
	Guided wave radar transmitters for level, level/interface, and volume measurement of liquids and solids.	Inverse frequency shift capacitance continuous level transmitter for liquids, solids and Interface detection for harsh conditions including buildup.
Versions	**SITRANS LG240** for hygienic applications **SITRANS LG250** highly flexible solution for liquid level and interface applications **SITRANS LG260** for solids applications **SITRANS LG270** for extreme conditions including high temperature and high pressure applications	n/a
Range	• Insertion length 300 mm (11.8 inches) to 75 m (246 ft) • Probe types include: cable, rod, and coaxial versions	• Rod: max. length 5.5 m (18 ft) • Cable: max. length 25 m (82 ft)
Process temperature	-196 to 450 °C (-321 to 842 °F)	-40 to 200 °C (-40 to 392 °F)
Process pressure	-1 to 400 bar / -100 to 4000 kPa	-1 to 35 bar (-14.6 to 500 psig)
Key features	• Ability to measure interface and level at the same time, digital and 2 current options available • Advanced diagnostics including trending, event logging, multiple profile logging • Self monitoring to ensure reliable operation to international NE 107 standards • Automatic false echo suppression to ensure ongoing reliable measurements even with buildup • Quick response with high accuracy • Software and display Wizards for ease of installation • Functional Safety suitable (SIL 2/ redundant 3) • Field replaceable and adjustable probes • Remote display or remote electronics • Accuracy up to ±2 mm (0.08") • Strong construction with dual seal to ensure its integrity in tough applications including options for aggressives such as ammonia • Real-time measurements for applications in steam boilers • Safety rated for 72 hours of unattended operation	• Active-Shield technology • Push-button calibration • Integrated local display • Inverse frequency approach provides high resolution • Accuracy: < 0.5% of actual measurement value
Communications or outputs	• HART, PROFIBUS PA, Modbus RTU, and Foundation Fieldbus	4 to 20 mA
High pressure/ temperature	•	
Interface with emulsion		•
Clean interface	•	
Bottom mount		•
Short range		•

POINT LEVEL

A switch for every application with options for **remote testing and extreme temperatures.**

With options as simple or sophisticated as you need them to be, Siemens point level devices are your answer.

siemens.com/pointlevel

Whether you're looking for backup, high- or low-level detection, interface, or dry run protection – these switches will reduce your maintenance, downtime, and equipment replacement costs.

Remote testing? Not a problem. A range of Siemens point level instruments now feature convenient remote testing via single or two-channel remote test signal conditioners or your control system.

Product buildup? Rotary point level devices specialize in low bulk density applications, ensuring accurate readings even in dusty, turbulent, and vaporous environments. And because even a small level change creates a large and detectable change in frequency, Siemens capacitance switches provide excellent resolution while consistently demonstrating immunity to buildup.

Need functional safety in your application? Siemens offers the world's first rotary paddle switch with SIL options in addition to a series of SIL instruments in all our point level lines.

Whatever your requirement, Siemens has a switch solution.

	SITRANS LVS100/200/300	**SITRANS LVL100/200**	**SITRANS LPS200**	**Pointek CLS100/200/300 and SITRANS LCS050**
	Dry powder solids	Non-sticky liquids and slurries	Extreme temperatures and buildup	Solids, liquids and interface point level detection
Order No.	7ML5735, 7ML5731-4, 7ML5736-8	7ML5745, 7ML5746, 7ML5747, 7ML5748	7ML5725-8, 7ML5730	7ML5501, 7ML5610, 7ML5630-3, 7ML5640-3, 7ML5650-2, 7ML5660-2, 7ML5772
	Vibrating point level switches for dry powder, fine grain, and granular bulk solids with densities from 5 to 30 g/l (0.3 to 1.9 lb/ft³).	Compact vibrating point level switch for liquid and slurry and pump protection. Ideal for use in confined spaces.	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).	RF capacitance switch for level detection in interfaces, solids, liquids, slurries, and foam and demanding conditions.
Versions	**SITRANS LVS100** for dry powder **SITRANS LVS200** for dry powder with very low density **SITRANS LVS300** for bulk solids and aggressive applications	**SITRANS LVL100** compact **SITRANS LVL200** for applications with higher pressure/temperature Ex approvals	**Standard** for side or top mount **Cable** extended top mount **Shaft protection** for side mounting with buildup **Angled shaft** for aggressive side mount applications	**SITRANS LCS050** ultra-compact **Pointek CLS100** compact **Pointek CLS200** standard **Pointek CLS300** for harsh demanding applications
Range	Insertion length: 170 mm to 20 m (6.7" to 65 ft)	Insertion length: 40 mm to 4000 mm (1.5" to 13 ft)	Insertion length: 100 mm to 10 m (4" to 30 ft)	Compact version starts at 12 mm (0.47") Rod: 50 mm to 5.5 m (14" to 18 ft) Cable: 1 to 30 m (3 to 98 ft)
Process temperature	-40 to 150 °C (-40 to 302 °F)	-196 to 450 °C (-321 to 842 °F)	-25 to 600 °C (-13 to 1112 °F)	-40 to 400 °C (-40 to 752 °F) high temperature version
Process pressure	Up to 10 bar g (145 psi g) Pressure to 30 bar options available	-1 to 160 bar/-100 to 16000 kPa (-14.5 to 2320 psi g)	Up to 0.5 bar g (7.25 psi g) Optional up to 10 bar g (145 psi g)	Up to 35 bar g (511 psi g)
Key features	• High, low and demand level detection • Replaceable electronics • Interface model for solids in liquids • Best-in-industry lowest density measurement • Unaffected by external vibrations • Remote buildup monitoring • Customer supplied pipe extensions for flexible installations	• Test function including remote options • Fault monitoring for corrosion, loss of vibration, or line break to the piezo drive • Compact design for tight spaces • ½" process connections • SIL 2 and hygienic options • Options for extreme pressures and temperatures	• Optional hinged vane • 5 seal ingress protection • Motor switches off during alarm for long service life • Friction clutch design prevents impact damage • Rotation failure monitoring • SIL 2 options	• Inverse frequency provides high resolution • Adjustable sensitivity to handle buildup or non contact material detection • SensGuard for abrasives • PPS or PVDF probe options • Display with local button configuration • Active-shield for increased sensitivity and buildup protection • SIL 2 options
Comms.	N/A	N/A	N/A	PROFIBUS PA, IO-Link
Buildup			•	•
Interface	•			•
Granular size > 20 mm	•		•	•
Very low bulk density	•			
Remote testing		•		•

HYDROSTATIC

Level measurement in **chemical and petrochemical industries**

Hydrostatic level measurement with Siemens gauge, absolute, and differential pressure transmitters 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.

siemens.com/hydrostatic

SITRANS LH100

SITRANS LH300

SITRANS P320/420

	SITRANS LH100	SITRANS LH300	SITRANS P320/420	SITRANS P500
	Submersible sensor	Submersible sensor	Advanced	Premium
Order No.	7MF1570	7MF1575	7MF036	7MF56x
	Hydrostatic level transmitter for direct mounting in tanks and vessels.	Hydrostatic level transmitter for direct mounting in tanks and vessels	Hydrostatic level transmitter for mounting with remote seal on open or closed vessels with corrosive or non-corrosive liquids.	Hydrostatic level transmitter for mounting with remote seal on open or closed vessels with corrosive or non-corrosive liquids.
Range	3 m to 20 m H_2O (9 ft to 60 ft H_2O)	1 m to 40 m H_2O (3 ft to 120 ft H_2O)	50m (167ft) H_2O	60m (210ft) H_2O)
Process temperature	-10 to 80 °C (14 to 176 °F)	-10 to +80 °C (14 to 176 °F)	-40 to 100 °C (-40 to 212 °F)	-40 to 125 °C (-40 to 257 °F)
Process pressure	N/A	N/A	depending on process connection	depending on process connection
Key features	• Applicable to harsh environmental conditions due to the piezoresistive ceramic sensor • Compact stainless steel enclosure and sensor • Easy installation • Intrinsically Safe • Special measuring ranges: 0 to 3 mH_20 to 0 to 30 mH_20 • Cable length up to 100 m (328 ft)	• Compact stainless steel transmitter with Al2O3 ceramics sensor • Sensor purity 99.6% • Easy installation • Special measuring ranges: • 0 to1 mH_20 to 0 to160 mH_20 • Cable length up to 1000 m (3300 ft)	• With remote seals up to 400 °C (752 °F) • Self-diagnostic elements for parameterization • Intrinsically Safe • Explosion proof and flame proof • SIL 2/3 approved • Corrosion-resistant diaphragm and process connections • Range of different process connections	• With remote seals up to 400 °C (752 °F) • Diagnostics for customized configuration • Outstanding accuracy and excellent long-term stability • Short response times • Intrinsically Safe • Explosion proof and flame proof • Corrosion-resistant diaphragm and process connections • SIL 2 approved • Range of different process connections
Communications or outputs	N/A	4 to 20 mA	HART	HART
Local display			•	•
SIL			•	•
Ceramic membrane		•		

LEVEL BY WEIGHT

Gravimetric technology provides **non-intrusive mass measurement**

With SIWAREX electronics and load cells, not only are you choosing the highest quality in construction, long-lasting performance, and easy integration into your weighing systems, you are also opening the doors to Siemens' comprehensive spectrum of instrumentation.

Automate all of your scales with SIWAREX weighing modules. Part of Siemens Totally Integrated Automation (TIA), SIWAREX modules can be integrated into SIMATIC and expanded as required to meet your individual requirements.

siemens.com/weighingmodules

SIWAREX WT231 SIWAREX WP231

	SIWAREX WT231	SIWAREX WP231	SIWAREX WP321	SIWAREX U
	Standalone	S7-1200 integrated	ET 200SP integrated	S7-300 integrated
Order No.	7MH4965-2AA01	7MH4960-2AA01	7MH4138-6AA00-0BA0	7MH4950-1AA01 (one channel) 7MH4950-2AA01 (two channel)
Typical applications	Fast basic weighing and force measuring tasks like platform, silo or hopper scales, built-in a rugged stand-alone solution.	Fast basic weighing and force measuring tasks like platform, silo or hopper scales, seamless integration into SIMATIC S7-1200 environment.	Fast and accurate weight measurement applications.	Basic weighing and force measuring tasks, one or two channel modules available.
Automation system integration	• RS485 (Modbus RTU) • 0/4-20mA • Four digital outputs • Four digital inputs	• SIMATIC S7-1200 (directly via SIMATIC bus) • Operator panel • Automation systems from other manufacturers, via Ethernet (Modbus TCP/IP) or RS-485 (Modbus RTU)	• SIMATIC S7-400 • SIMATIC S7-300 • SIMATIC S7-1200 • SIMATIC S7-1500 via SIMATIC ET 200SP distributed IO	• SIMATIC S7-300 (directly or via SIMATIC ET 200M) • SIMATIC S7-400 (H) • SIMATIC PCS 7 (H) (via SIMATIC ET 200M)
Accuracy	0.05%			
SIMATIC PCS7 integration	–	–	Via SIMATIC PCS7 add-on software package including faceplate and function block	

LEVEL BY WEIGHT

Diverse types and graded load classes offer a solution for a range of applications

SIWAREX load cells have high precision and repeatability of weighing and batching processes. They are designed for a range of applications, especially when accuracy is a must. With Siemens, you can source both your load cells and electronics. Choose from our extensive, performance-graded line of weighing systems – with everything you need for the whole range of tasks in your industry.

SIWAREX load cells are ideal in almost any industrial sector – food-processing, steel-making, chemical and pharmaceutical, to name a few. With the diverse construction types and comprehensive, graded load classes ranging from 300 grams to 500 tons (6.6 pounds to 551 short tons), you are sure to find the right load cell for your application.

siemens.com/loadcells

SIWAREX WL260

SIWAREX WL230

SIWAREX WL270

SIWAREX WL230

SIWAREX WL250

	SIWAREX WL230	SIWAREX WL230	SIWAREX WL250	SIWAREX WL260	SIWAREX WL270	SIWAREX WL270 K	SIWAREX WL280 RN	SIWAREX WL290
Type	Shear beam	Bending beam	S-Type	Single point	Compression	Compression	Ring-torsion	Double shear beam
Order No.	7MH5107, 21	7MH5106	7MH5105	7MH5118	7MH5108, 10	7MH5114	7MH5113	7MH5122
Typical applications	Container, overhead rail conveyor, and platform scales	Small scale containers and platform scales	Tank weighing, hybrid scales, or suspended container weighing	Small to medium platform scales and weighing machines, conveyor small scales	Containers, hoppers, and vehicle scales	Vehicle scales, overhead rail scales, container weighers	Container, conveyor, platform and roller table scales	Platform scales, hoppers and vehicle scales
Nominal load (Emax)	0.1 to 5 t (0.55 to 5.5 short tons)	10 to 500 kg (22 to 1102 lbs)	50 kg to 10 t (110 lbs to 11 short tons)	10 to 500 kg (22 to 1102 lbs)	10 to 100 t (11 to 220 short tons)	2.8 to 500 t (3 to 551 short tons)	60 kg to 60 t (132 lbs to 66 short tons)	2.3 to 113 t (2 to 111 tn. L)
Accuracy class and max. scale intervals	C3, C4, C5 3,000...5,000	C3 to OIML R60; 3,000 intervals	C3 to OIML R60; 3,000 intervals	C3 to OIML R60; 3,000 intervals	C3 to OIML R60; 3,000 intervals	0.1%	C3 to OIML R60; 3,000 intervals	C3 to OIML R60
Degree of protection	IP68/67	IP68	IP67	IP68/IP69K	IP68	IP68	IP66/IP68	IP67

For comprehensive monitoring of the weighing process down to each single load cell, we offer our digital junction box SIWAREX DB

REMOTE MONITORING AND DISPLAYS

Share critical information and provide control where it is needed

Ideal for remote monitoring applications including inventory levels, regulatory monitoring, remote maintenance alarming, or process and environmental monitoring, SITRANS RTU3000C family remote data manager helps you stay connected and informed.

SITRANS RD100, SITRANS RD150, SITRANS RD200, and SITRANS RD300 remote displays bring you the flexibility of seeing instrumentation readings in a convenient location for your operators.

Our family of displays offer options for integrated pump control, totalizing, dual input, remote communication and monitoring via HART or Modbus and remote configuration of connected sensors. Siemens' selection of displays gives you an inexpensive view into your processes.

And the compact SIMATIC RTU3000C remote terminal units are energy-self-sufficient, low-power devices with flexible power supplies. Easily configured, they operate reliably even under harsh conditions and in areas prone to flooding.

siemens.com/SupplementaryComponents

	SITRANS RD100	SITRANS RD150	SITRANS RD200	SITRANS RD300	SIMATIC RTU3000C family
	Loop powered	Loop with HART	Universal	Full featured	Remote sites
Order No.	7ML5741	7ML5742	7ML5740	7ML5744	6NH3112-4BB00-0XX0
	2-wire loop-powered enclosed remote digital display for process instrumentation.	2-wire 4 to 20 mA loop remote display with HART suitable for monitoring connected sensors' primary HART variables.	Universal input, panel mount, remote digital display for process instrumentation.	Dual-line, panel mount, remote digital display for process instrumentation.	Compact remote monitoring and control unit. Battery, solar or mains supply. Sensor inputs. Internal web-page for configuration and monitoring. Integrated modem.
Input types	4 to 20 mA	4 to 20 mA and HART	Universal current, voltage, RTD, thermocouple	4 to 20 mA, 0 to 10 V DC	• 8 DI • 4 4-20mA • HART/Modbus expansion available
Digits	3.5 digit display	5 digits	4 digit display	Dual-line 6 digit display	Internal web page
Key features	• 2-wire loop-powered • Two-step configuration • Intrinsically Safe, non-incendive • Serviceability without loop interruption • Factory calibrated	• Remote display with sensor configuration via HART • Monitor extended data via HART • Flexible field and panel mount options • Menu driven backlit display • Plastic, aluminum and stainless housing options	• Easy to read in all conditions • Temperature and process meter • Software supports monitoring and configuration • Alarm indication and process control • Provides power to instrument • Modbus RTU output	• Easy to read, dual-line display • 32-point linearization and square root function • Nine digit totalizer • Flexible outputs with up to eight relays and eight digital I/O for process control alarming • Modbus RTU output • Multi-pump alternation control • Software supports monitoring and configuration	• Battery or solar-operated • 10.8V to 28.8V DC • LTE-M/NB-IoT • Internal GPS • Text message, email and datalogging • FTP client • Ethernet port • 4 Digital outputs • Local control functions • IP20 rating
Operating temperature	-40 to 85 °C (-40 to 185 °F)	• Without display and adjustment module -40 to 80 °C (-40 to 176 °F) • With display and adjustment module -20 to 70 °C (-4 to 158 °F)	-40 to 65 °C (-40 to 149 °F)	-40 to 65 °C (-40 to 149 °F)	Vertical: -40 to 60 °C (-40 to 140 °F) Horizontal: -40 to 70 °C (-4 to 158 °F)
HART		•			optional
Modbus			•	•	optional
Pump control			•	•	•
Loop powered	•	•			
Graphic display		•			web page
Remote comms.					•

GO THE DISTANCE WITH DIGITALIZATION

Introduce easy-to-use apps into your operations and **harness new opportunities**

Put your plant's data to work and see your operations open up before you with intuitive digital solutions from Siemens.

Combined with our digitalization-ready instruments, apps like SITRANS mobile IQ and SITRANS SAM IQ bring usable device data directly to operators' smartphones or tablets, giving your staff the ability to examine trends, analyze performance, and even commission devices.

SITRANS Library provides visualized device functions to help in both the engineering phase and with process control. The measurement range on the transmitter and in the control system can be synchronized with one click, ensuring consistency between the field device and DCS system, higher reliability, and transparency.

With the ability to connect your products, instruments, systems, and machines, only a complete automation and instrumentation supplier like Siemens puts the information your operators need directly in their hands. With new customer-driven apps coming to market from our world-class R&D teams, the possibilities truly are endless.

SITRANS SAM IQ – Smart Asset Management
Insight into your field devices' health status, detailed trending of process values, and access to device-specific diagnostic data: SITRANS SAM IQ delivers smart asset management directly in the app.

SITRANS mobile IQ
The SITRANS mobile IQ app gives you easy access to field instrumentation from your smartphone or tablet. Via a Bluetooth connection, supported field devices
in the environment can be easily and quickly commissioned, parameterized and monitored.

PIA Life Cycle Portal
This portal helps you select, size and configure your ideal piece of instrumentation. The portal interfaces with COMOS and exports to Siemens Industry Mall (mall.industry.siemens.com). You are able to track the lifecycle of your instrument, see warranty and extended exchange option information as well additional information such as factory certificates (e.g., for calibration or validation).

COMOS
COMOS is the engineering tool from Siemens for the entire lifecycle of your plant. With the direct integration of our PIA Lifecycle Portal, we guarantee the seamless integration of our field devices in the engineering environment. We can offer field devices best suited to your processes, properties, and measuring requirements.

SIMATIC Process Device Management (PDM)
Simatic Process Device Manager (PDM) is one of the most widely used tools for access of a device's parameters, diagnostic and maintenance information.

More than 4,500 devices from more than 200 different manufacturers can be commissioned, parametrized, or serviced using a single program with a uniform user interface.

SITRANS Library
- Easy use of device-specific functions and data from devices of the SITRANS and SIPART product families, such as dosing or totalizer functions in solutions with SIMATIC PCS 7
- Library with device-specific function blocks, block symbols, and faceplates
- Fully compatible with SIMATIC PCS 7 Standard Advanced Process Library (APL) through the entire lifecycle, from engineering to running of the plant

Sales and **support**

Custom engineering
Siemens provides custom-engineered products to solve your special application needs. From material compatibility challenges to unique size requirements, Siemens custom engineering team can help.

Service around the world
Plants must function reliably at all times. Efficient and effective process instrumentation and analytics are an indispensable requirement to this end. You also need to be certain of fast and competent service from your supplier. Siemens is a global company that reacts locally. Whether you require consulting, quick delivery, or installation of new devices, the Siemens network of specialists is available to you around the world, wherever your location.

Service around the clock
Our online support system offers rapid, comprehensive assistance regardless of time or location. From product support to service information, Siemens Industry online support is your first choice – around the clock, 365 days a year.

siemens.com/service&support

Maximize your skills with **factory-certified training**

Siemens provides a full schedule of Process Instrumentation training opportunities for Siemens employees, channel partners, and customers.

PI training
The PI Introductory Training courses are designed for new sales and service employees to learn the product lines, the technologies, and the applications. These 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.

For current information and schedules, visit our website at:

siemens.com/pi-training

TOTALLY INTEGRATED AUTOMATION.

End-to-end integration from controller level to field level

With Totally Integrated Automation (TIA), Siemens is the only provider of an end-to-end integrated portfolio of products and systems for the automation of the entire production workflow. From the goods receiving area to the finished goods warehouse.

Totally Integrated Automation reduces the complexity of the automation solution and enables what really counts: the practical combination of optimally coordinated individual components without interface problems.

Totally Integrated Automation integrates not only the production process but all parts of the company from the field level to the management level. The result: a perfectly coordinated overall concept that delivers higher productivity.

Communication flexibility

Siemens TIA approach offers ease of connection to a DCS system such as SIMATIC PCS 7 using industrial standards. Siemens provides communication flexibility, supporting:

SIMATIC PDM

PROFIBUS

HART

FOUNDATION Fieldbus

Model 375/475 HART field communicator and Emerson AMS

SmartLinx (cards are available for PROFIBUS DP, Modbus RTU, and DeviceNet)

FDT Software via SITRANS DTM

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