

SIEMENS

Ingenuity for life



Process Instrumentation

Your solution is here: radar level measurement

Advanced technology. Local support
globally. Simple to totally integrated.
Welcome to your future.



usa.siemens.com/radar

Siemens radar level measurement

- Innovative product and design
- Industry-leading technology
- Easy to use, configure, and install

What do you want from your process instrumentation?

High performance

Unaffected by temperature, pressure, vapor, or extreme dust, radar technology can measure applications up to 100 meters (328 ft). Radar technology offers answers to these challenging conditions that other technologies can't handle. Plus, custom configurations are available upon request, ensuring Siemens has the answers for your unique application needs.

Quality

Siemens level measurement instruments come with extensive field experience. Our signal processing technology for level instruments is based on the experience of over a million instruments worldwide. Siemens global support network provides experienced technical help when and where you need it.

Trust

Industry leaders recognize the quality and durability of Siemens transmitters. Be it a large tank farm or a single vessel, Siemens transmitters can stand alone or be integrated in a network. Choose localized control or sophisticated data management and diagnostics.

Cost savings

Managing raw materials and finished products is essential for keeping processes efficient and optimizing inventory ordering and shipments. By knowing where materials are located, companies can use these resources more effectively, decreasing human intervention and increasing efficiency. As well, checking bin levels on a regular basis requires substantial labor costs.

Safety

Eliminate the need for constant human measurement from the top of vessels by providing accurate level indication to operators on the ground. With reliable radar level transmitters, you keep workers out of hazardous situations altogether. Plus, many of our transmitters feature SIL 2 for your applications requiring functional safety.



Mining



Accurate inventory monitoring of dusty solids? SITRANS LR560's narrow, high-frequency beam makes level measurement easy in dusty environments.

Petrochemical



Vapors, steam, high temperatures and pressure? These conditions are no match for SITRANS LR and SITRANS LG. Plastic pellets or powders? You want SITRANS LR560.

Cement



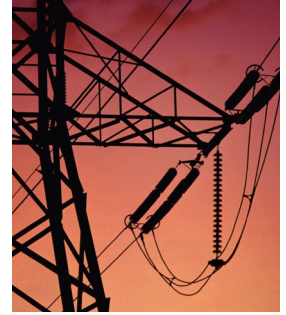
Long ranges, high temperatures, lots of dust? SITRANS LR560 or SITRANS LR460 mean zero maintenance plus efficient, reliable process control.

Steel



Extreme temperatures and dust? SITRANS LR560 and SITRANS LR460 are unaffected by these conditions, even on molten metals. Plus, their air purge feature keeps antennas cool.

Power generation



Critical level measurement applications such as raw coal, pulverized coal, fly ash, and boiler feed water? Your answer is SITRANS LR and SITRANS LG transmitters.

Pulp and paper



Rugged liquid and slurry applications? You want SITRANS LR250 or SITRANS LR200. And for solids? High performance, high-frequency radar with SITRANS LR560.

Chemicals



High temperatures, corrosive or abrasive chemicals, high pressure, varying dielectric properties? SITRANS LR250's encapsulated antenna or SITRANS LG meet these tough conditions.

Pharmaceutical



Extreme accuracy and hygienic environments? SITRANS LG guided wave radar or SITRANS LR250's new encapsulated antenna give you all this and more.

Water/wastewater



Material buildup or condensation challenges? Choose SITRANS Probe LR or SITRANS LR200 for reliable monitoring. Or how about SITRANS LR560 for monitoring solids such as lime?

Food and beverage



Sanitary applications, long-range dusty grain silos, small or large vessels? SITRANS LG or SITRANS LR250 perform with high accuracy, and SITRANS LR560 is your first choice for extreme dust.



When you partner with Siemens, you get:

- **Reliable and accurate measurement** – advanced Process Intelligence echo processing automatically ignores obstructions via Auto-False-Echo Suppression
- **Configuration simplicity** – within minutes the Quick Start Wizards guide you through configuration with infrared handheld programmer or local display buttons
- **Application versatility** – easy-to-install radar level measurement with flanged, threaded, and sanitary process connections for every application



Radar for solids

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

For extremely low dielectric, low density powders, the 25 GHz SITRANS LR460 is the preferred solution. Featuring a horn antenna with an 8-degree beam, the 4-wire FMCW SITRANS LR460 has proven itself in thousands of applications globally.

Siemens solids radar transmitters easily tackle very dusty environments and are not affected by extreme process temperatures.

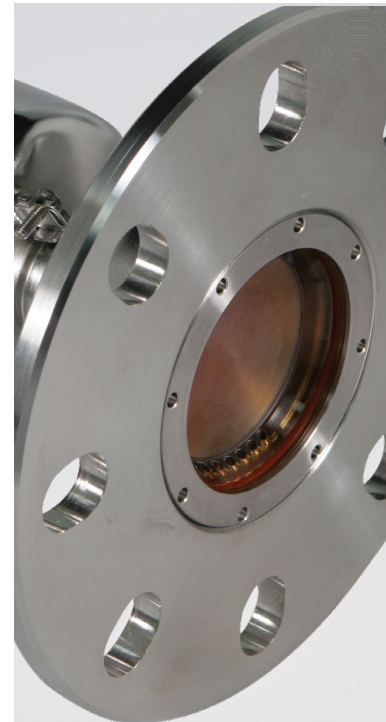




	SITRANS LR560	SITRANS LR460	SITRANS LR260
Order No.	7ML5440	7ML5426	7ML5427
	2-wire, 78 GHz FMCW radar level transmitter for continuous monitoring of solids.	4-wire, 25 GHz FMCW radar level transmitter for continuous monitoring of solids. Ideal for materials with extremely low dielectric properties.	2-wire, 25 GHz pulse radar level transmitter for continuous monitoring of solids. Ideal for applications requiring quick update rates.
Range	<ul style="list-style-type: none"> • 40 m (131 ft) Option • 100 m (328 ft) 	100 m (328 ft)	30 m (98 ft)
Process temperature	<ul style="list-style-type: none"> • -40 to 100 °C (-40 to 212 °F) Option • -40 to 200 °C (-40 to 392 °F) 	-40 to 200 °C (-40 to 392 °F)	-40 to 200 °C (-40 to 392 °F)
Process pressure	Up to 3 bar g (43.5 psi g) option	0.5 bar g (7.25 psi g) max.	Up to 3 bar g (43.5 psi g), process connection dependent
Key features	<ul style="list-style-type: none"> • Graphical Quick Start Wizard for easy and fast setup • Push buttons or optional Intrinsically Safe infrared handheld programmer • Air purge connection included <p>Option</p> <ul style="list-style-type: none"> • Aimer flange for optimizing readings in the silo cone area 	<ul style="list-style-type: none"> • Intrinsically Safe infrared handheld programmer • Extremely high signal yields high performance (high signal-to-noise ratio) • Quick Start Wizard for setup <p>Options</p> <ul style="list-style-type: none"> • PTFE antenna cover • Air purge connection 	<ul style="list-style-type: none"> • Reliable and accurate – high signal and low noise yields high performance • Graphical HMI makes operation simple with plug-and-play setup using the intuitive Quick Start Wizard <p>Options</p> <ul style="list-style-type: none"> • Optional dust cover and air purge available
Communications and configurations	<ul style="list-style-type: none"> • HART, PROFIBUS PA, or FOUNDATION Fieldbus • Enhanced EDD for SIMATIC PDM, Emerson AMS Device Manager, SITRANS DTM (for PACTware), 375/475 handheld, for configuration and diagnostics 	<ul style="list-style-type: none"> • HART or PROFIBUS PA • Enhanced EDD for SIMATIC PDM for configuration and diagnostics 	<ul style="list-style-type: none"> • HART or PROFIBUS PA • SIMATIC PDM for configuration and diagnostics

SITRANS LR560

- 78 GHz radar transmitter allows for measurement through intense dust
- An exceptionally narrow 4° beam angle can cope with complicated silo geometry
- Sealed lens cavity is highly resistant to dust buildup
- Easy to install and configure with Quick Start Wizard
- Small size fits most silo nozzles
- Two measurement ranges: 40 m (131 ft) and 100 m (328 ft)



Radar for liquids and slurries

SITRANS LR250 is your first choice for liquid level measurement in storage and process vessels up to 20 meters (66 ft). With its range of antennas, this transmitter can handle whatever you need it to. Its new flanged encapsulated antenna means corrosive or aggressive materials are no challenge for this transmitter.

For process vessels which may include turbulence, buildup, or foam, choose SITRANS LR200. Its low frequency better suits this environment and functions reliably in applications up to 20 meters (66 ft).

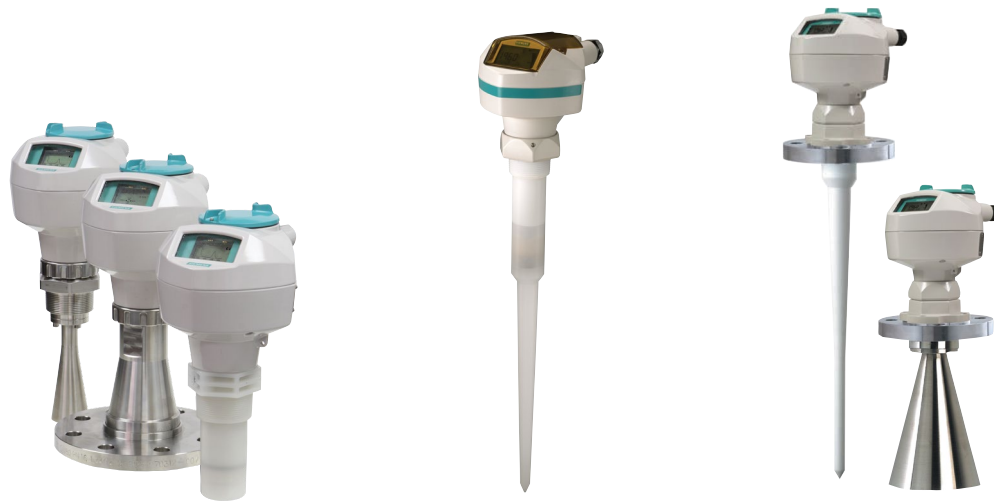
And for low-cost level measurement, SITRANS Probe LR offers a small process connection and operates at a low frequency.



SITRANS LR250 family features

- **Application flexibility** – from sanitary processes to harsh environments, choose from horn, PVDF, or encapsulated antenna designs
- **Easy to install** – small antennas and narrow beams allow installation practically anywhere on your vessel
- **Quick to configure** – Quick Start Wizard for simple setup
- **Process Intelligence** – advanced echo processing for unparalleled performance
- **Reliable and accurate** – extremely high signal and low noise yields high performance, even with low dielectric media. Plus SIL 2 for applications requiring functional safety.





	SITRANS LR250	SITRANS Probe LR	SITRANS LR200
Order No.	7ML5431, 7ML5432	7ML5430	7ML542x
	2-wire, 25 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage/process vessels.	2-wire, 6 GHz pulse radar level transmitter for basic continuous monitoring of liquids in storage vessels.	2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids. Ideally suited for complex, turbulent process vessels.
Range	20 m (66 ft)	20 m (66 ft)	20 m (66 ft)
Process temperature	-40 to 200 °C (-40 to 392 °F), process connection dependent	-40 to 80 °C (-40 to 176 °F)	-40 to 200 °C (-40 to 392 °F), process connection dependent
Process pressure	Up to 40 bar g (580 psi g), process connection dependent	Up to 3 bar g (43.5 psi g)	Up to 40 bar g (580 psi g), process connection dependent
Key features	<ul style="list-style-type: none"> • Narrow beam for easy setup and high performance • Process Intelligence – advanced echo processing for unparalleled performance • Graphical HMI • Quick Start Wizard and display diagnostics • Antennas with FDA-approved materials for sanitary environments • Antennas for aggressive conditions (acids, alkalis, and other corrosive chemicals) • SIL 2 for functional safety 	<ul style="list-style-type: none"> • Process Intelligence echo processing • Hermetically sealed shielded polypropylene rod antenna with threaded process connection 	<ul style="list-style-type: none"> • Process Intelligence – advanced echo processing for reliable performance • Graphical HMI • Quick Start Wizard and display diagnostics • Multiple antenna designs for application flexibility • Purging (self-cleaning) for buildup protection
Communications and configurations	<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 • 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

SITRANS LG – simple and reliable

The SITRANS LG just works. Simple, reliable installation, little to no configuration. Extreme process conditions don't stand a chance. Perfect for the easiest applications to the most demanding. Hygienic. Liquids. Solids. Slurries. Inventory. Process control. Aggressive materials. The possibilities are endless.

Measuring interface or level? We can do that. SITRANS LG does what you need it to do. Four models make up the series – your experts for a world of applications.

Quick and easy setup with local four-button programming and menu-driven preset parameters gets you operational in minutes, saving you time and money.

Advanced echo processing gives you unrestricted measurement down the length of the entire probe, so you'll always have accurate readings even in small containers.

And due to advanced signal profile processing, SITRANS LG continues to measure even with loss of echo in low dielectric materials.

Oh, and did we mention the optional removable display? Backlit, easy to read, and with mounting capabilities for your convenience.

Hygienic – SITRANS LG240

- Food & beverage
- Pharmaceutical
- Corrosive

Liquids – SITRANS LG250

- Raw material
- Storage
- Processing
- Interface

Solids – SITRANS LG260

- Powders
- Granules

Extreme conditions – SITRANS LG270

- High or low pressure
- High or low temperature
- Aggressive materials (i.e. ammonia)
- Steam



The SITRANS LG advantage

- Versatile and reliable level measurement even with aggressive vapors, high temperatures and pressure, dust, steam, or material buildup
- Typically no setup at site is required – the unit comes pre-configured to fit your application needs
- Measures level, interface, or both – in a wide range of applications from material storage to bypass pipes
- Rod and cable lengths are easily changed or shortened for specific applications types (non-coated version)
- Advanced diagnostics available for high degree of safety
- Low maintenance with modular design and field replaceable probes for large or small vessels





	SITRANS LG240	SITRANS LG250	SITRANS LG260	SITRANS LG270
	Hygienic	Liquids	Bulk solids	Extreme conditions
Order No.	7ML5880	7ML5881	7ML5882	7ML5883
Range	<ul style="list-style-type: none"> Cable version: 4 mm (0.16") to max. length 32 m (105 ft) Rod version: 8 mm (0.31") to max. length 4 m (13 ft) 	<ul style="list-style-type: none"> Exchangeable cable version: 2 mm (0.08"), 4 mm (0.16") max. length 75 m (246 ft) Exchangeable rod version: 8 mm (0.31") max. length 6 m (19.7 ft) Coaxial version: 21.3 mm (0.84"), 42 mm (1.62") max. length 6 m (19.7 ft) 	<ul style="list-style-type: none"> Exchangeable cable version: 4 mm (0.16"), 6 mm (0.24"), 11 mm (0.43") max. length 60 m (196.8 ft) Exchangeable rod version: 16 mm (0.63") max. length 6 m (19.7 ft) 	<ul style="list-style-type: none"> Exchangeable cable version: 2 mm (0.08"), 4 mm (0.16") max. length 60 m (196.8 ft) Exchangeable rod version: 16 mm (0.63") max. length 6 m (19.7 ft) Coaxial version: 42 mm (1.62") max. length 6 m (19.7 ft)
Accuracy	±2 mm (0.08")			
Key features	<ul style="list-style-type: none"> High-grade stainless steel rod for hygienic, food and beverage, and pharmaceutical Suitable for foam, aggressive vapors, or material buildup Ideal for measurement in small vessels Stainless steel housing rated IP 69K for high-pressure/temperature cleaning Autoclave version for quick and easy removal of instrument housing PFA coated sensor SIL 2 for functional safety 	<ul style="list-style-type: none"> Reliable and accurate in all liquids – raw materials, storage, and processing Suitable for foam, buildup, and steam Easy switch from interface to level measurement Extended insertion length – probe lengths up to 75 m (246 ft) Extended diagnostics Second barrier for aggressive materials, including ammonia SIL 2 for functional safety 	<ul style="list-style-type: none"> Reliable and accurate measurement in powders, granules, and extreme dust such as plastic applications Continuous probe condition monitoring ensures operational safety and application reliability SIL 2 for functional safety 	<ul style="list-style-type: none"> Extreme conditions with high or low pressures or temperatures Strong construction with dual seal to ensure its integrity in tough applications Auto correction for applications in steam boilers Second barrier for aggressive materials, including ammonia SIL 2 for functional safety
Communications or outputs	4 to 20 mA/HART	4 to 20 mA/HART	4 to 20 mA/HART	4 to 20 mA/HART

Conditions	SITRANS LR560	SITRANS LR460	SITRANS LR250	SITRANS Probe LR	SITRANS LR200	SITRANS LG
Solids						
Abrasive materials	☐	☐				
Non-abrasive	☐	☐				☐
Material buildup	☐	☐				☐
Extreme dust	☐	☐				☐
Steep angle of repose	☐	☐				☐
Dielectric properties* < 2.0	☐	☐				☐
Range > 10 m (33 ft)	☐	☐				☐
Range > 50 m (164 ft)	☐	☐				
Liquids						
Process vessels			☐	☐	☐	☐
Storage vessels			☐	☐	☐	☐
Slurries			☐	☐	☐	☐
Agitated			☐	☐	☐	
Foam			☐	☐	☐	☐
Vacuum or nominal pressure			☐	☐	☐	☐
Pressure > 40 bar g						☐
Temperature > 200 °C (392 °F)						☐
Viscosity > 10,000 cP (molasses)			☐	☐	☐	☐
Material buildup			☐	☐	☐	☐
Dielectric properties ≤ 1.5			☐	☐	☐	☐
Ammonia (NH ₃)						☐
High pressure steam						☐
By-pass pipe			☐		☐	☐
Interface (liquid/liquid)						☐
Nozzles < 39 mm (1.5") diameter						☐
Center mounting location			☐			☐

☐ preferred
☐ condition-dependent

* Dielectric properties are the material's ability to reflect microwave energy; the higher the value, the better the reflective properties.



Communications

Pairing intelligent radar 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 (Quick Start Wizard)
- Comparison
- Plausibility checks
- Data management
- Commissioning functions

SIMATIC PDM offers communications via HART protocol, PROFIBUS DP, PROFIBUS PA, or other protocols. Operation via AMS and FDT (such as PACTware and Fieldcare) via SITRANS DTM are also available.

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 radar 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.

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.



Siemens Industry, Inc.

Process Industries and Drives
100 Technology Drive
Alpharetta, GA 30005

1-800-365-8766

Subject to change without prior notice

Order No.: PIBR-5MG03-0819

All rights reserved

Printed in USA

© 2019 Siemens Industry, Inc

More information:

info.us@siemens.com

Follow us on:

www.facebook.com/siemensii

<https://twitter.com/siemensii>

www.youtube.com/siemens

<https://blogs.siemens.com/measuringsuccess>

The technical data presented in this document is based on an actual case or on as-designed parameters, and therefore should not be relied upon for any specific application and does not constitute a performance guarantee for any projects. Actual results are dependent on variable conditions. Accordingly, Siemens does not make representations, warranties, or assurances as to the accuracy, currency or completeness of the content contained herein. If requested, we will provide specific technical data or specifications with respect to any customer's particular applications. Our company is constantly involved in engineering and development. For that reason, we reserve the right to modify, at any time, the technology and product specifications contained herein.