



Instruments • Valves • Controls

Lesman Level Products Guide

Vol LEV16

Find the right fit for your level application. Look inside for level technologies that work in liquids, solids, slurries, interfaces, vapors, or foam.

LEVEL WITH US

to Effectively Minimize Process Upsets

Level Technologies for Every Application

Continuous Level Monitoring

- Bubbler Systems
- Capacitance
- Guided Wave Radar
- Hydrostatic Pressure
- Load Cells (Level by Weight)
- Magnetic Floats
- Nuclear
- Radar
- Submersible
- Ultrasonic

Point Level Detection

- Capacitance
- Ultrasonic
- Rotary Paddle
- Vibratory Fork
- Float Switches

Learn more on page 2.



**LESMAN
UNIVERSITY**

Learning Level

Free level technology webinars.
Lecture and hands-on sessions
taught by our factory-trained
product specialists.

Visit www.lesman.com/train/

LEVEL DETECTED

**Our radar brings your best level detection
and monitoring systems into view!**

25 GHz pulse radar for liquids
and slurries in general service
and process applications



Loop-powered guided
wave radar for liquids
and solids in tanks from
0.14 inches to 164 feet



Encapsulated 25 GHz pulse
radar for liquids and slurries in
harsh environments, corrosive
media, or hygienic applications



78 GHz FMWC radar for
bulk solids — unaffected
by dust, vapor, pressure,
or temperature



See our radar level offering on pages 4-19.

Need help? Call Lesman inside sales at 800-953-7626.

What's the Right Level Technology for Your Application?

Need help figuring out which level measurement instrumentation to use in your process? Start with the reference charts below.

Find your media type, process conditions, and tank design to help narrow down your choices. Depending on your application, there may be more than one technology for you.

| Key |
|-----------------------------|
| ▲ Excellent: Recommended |
| ● Good: Works in most cases |
| ◆ Fair: Others work better |
| ▼ Poor: Do not use |

| Continuous Level Technologies | Armored Site Gauge | Bubbler | Capacitance | Guided Wave Radar | Hydrostatic Pressure | Load Cells | Magnetic Site Gauge | Nuclear | Radar | Servo Gauges | Ultrasonic |
|--|--------------------|---------|-------------|-------------------|----------------------|------------|---------------------|---------|-------|--------------|------------|
| Liquids — Clean | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| Liquids — Coating | ▼ | ▼ | ● | ▼ | ◆ | ▲ | ◆ | ▲ | ▲ | ▼ | ▲ |
| Liquids — Shifting Specific Gravity | ▲ | ▼ | ▲ | ▼ | ▼ | ▼ | ● | ▲ | ▲ | ▲ | ▲ |
| Slurries | ● | ▼ | ● | ▼ | ● | ▲ | ◆ | ▲ | ▲ | ◆ | ▲ |
| Liquid/Liquid Interfaces | ● | ▼ | ▲ | ▲ | ▼ | ▼ | ▲ | ● | ▼ | ▲ | ● |
| Liquid/Solid Interfaces | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ● | ▼ | ▼ | ▲ |
| Solids — Low Dust | ▼ | ▼ | ◆ | ▼ | ▼ | ◆ | ▼ | ▲ | ◆ | ▼ | ▲ |
| Solids — High Dust | ▼ | ▼ | ◆ | ▼ | ▼ | ◆ | ▼ | ▲ | ▲ | ▼ | ▼ |
| Dielectric <2 | ▲ | ● | ▼ | ● | ◆ | ▲ | ▲ | ● | ● | ▲ | ▲ |
| Shifting Dielectric | ▲ | ● | ▼ | ● | ▲ | ▲ | ● | ● | ▼ | ▲ | ▲ |
| Process Environment | | | | | | | | | | | |
| Process Temperature >350° F | ▲ | ● | ● | ▼ | ● | ▲ | ▲ | ▲ | ▲ | ● | ▼ |
| Process Pressure >50 PSI | ▲ | ▼ | ● | ▲ | ● | ▲ | ▲ | ▲ | ▲ | ▲ | ▼ |
| Vacuum Pressure | ▲ | ▼ | ● | ▲ | ● | ▲ | ▲ | ▲ | ▲ | ● | ▼ |
| Vapors Present | ▲ | ● | ● | ● | ● | ● | ▲ | ▲ | ▲ | ▲ | ▼ |
| Foam Present | ● | ◆ | ▼ | ▲ | ● | ◆ | ● | ● | ▼ | ◆ | ▼ |
| Turbulence Present | ▲ | ◆ | ▼ | ◆ | ● | ▲ | ▲ | ▲ | ● | ● | ● |
| Tank Design and Structural Properties | | | | | | | | | | | |
| Agitators | — | ◆ | ▼ | ◆ | ● | ▲ | — | ● | ● | ▼ | ● |
| Obstructions | — | ◆ | ● | ◆ | ● | ▲ | — | ● | ● | ◆ | ● |

| Point Level Technologies | Capacitance | Floats | Rotary Paddle | Ultrasonic | Vibratory Fork |
|--|-------------|--------|---------------|------------|----------------|
| Liquids — Clean | ▲ | ● | ▼ | ▲ | ▼ |
| Liquids — Coating | ● | ▼ | ▼ | ▲ | ▼ |
| Slurries | ● | ▼ | ▼ | ▲ | ▼ |
| Liquid/Liquid Interfaces | ▲ | ▼ | ▼ | ▼ | ▼ |
| Liquid/Solid Interfaces | ▼ | ▼ | ▼ | ▼ | ▼ |
| Solids — Low Dust | ● | ▼ | ● | ● | ● |
| Solids — High Dust | ● | ▼ | ● | ▼ | ● |
| Process Environment | | | | | |
| Process Temperature >350° F | ▼ | ▼ | ▼ | ▼ | ▼ |
| Process Pressure >50PSI | ● | ● | ▼ | ▼ | ▼ |
| Vacuum | ● | ● | ▼ | ▼ | ▼ |
| Vapors | ● | ● | ▼ | ▼ | ▼ |
| Foam | ◆ | ◆ | ▼ | ▼ | ▼ |
| Turbulence | ● | ▼ | ▼ | ● | ● |
| Tank Design and Structural Properties | | | | | |
| Agitators | ● | ▼ | ▼ | ● | ● |
| Obstructions | ● | ● | ● | ● | ● |

| Key |
|-----------------------------|
| ▲ Excellent: Recommended |
| ● Good: Works in most cases |
| ◆ Fair: Others work better |
| ▼ Poor: Do not use |

Due to manufacturer agreements, not all products are available in all geographic areas and markets. Prices in this catalog are current at the publication date, and are subject to change without notice.

Not sure what you need? Fill out an application datasheet at Lesman.com/datasheets/ and send it to Lesman for an engineering review.

Illinois, Indiana, Missouri, and Iowa
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman Instrument Company
www.lesman.com
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

V 01.2019

TABLE OF CONTENTS

3 **L**

Prices Start at See Page

Continuous Level — Capacitance

| | | |
|---|-----------|----|
| Siemens SITRANS LC300 Capacitance Continuous Level Transmitters | \$1020.00 | 40 |
| Siemens SITRANS LC500 Capacitance Continuous Level Transmitters | Call | 41 |

Continuous Level — Guided Wave Radar

| | | |
|--|-----------|----|
| Honeywell SmartLine SLG700 Guided Wave Radar Level Transmitter | \$2145.00 | 16 |
| Siemens SITRANS LG200 Guided Wave Radar System | Call | 18 |

Continuous Level — Hydrostatic Pressure

| | | |
|--|-----------|----|
| Lesman Turnkey Level Bubbler Systems | \$5978.00 | 34 |
| Honeywell SmartLine STF700 Flange Mount Smart Transmitter for Liquid Level | \$1982.00 | 32 |
| Siemens SITRANS LH100 Submersible Transmitter for Liquid Level | \$738.00 | 31 |
| WIKA LH-10 and LS-10 Submersible Transmitter for Liquid Level | \$497.81 | 30 |

Continuous Level — Load Cells for Level by Weight

| | | |
|---|------|----|
| Sartorius Contego® Hygienic Weighing System | Call | 38 |
| Sartorius PanCake® Load Cells for Level by Weight | Call | 36 |
| Sartorius Maxxim 5 Process Vessel Weighing Controller | Call | 39 |

Continuous Level — Magnetic Site Gauge

| | | |
|------------------------------------|------|----|
| WIKA WMI Magnetic Level Indicators | Call | 35 |
|------------------------------------|------|----|

Continuous Level — Nuclear

| | | |
|---|------|----|
| Ronan FlexDetector Scintillating Radiometric Detector for Liquid and Solids Level | Call | 39 |
|---|------|----|

Continuous Level — Radar

| | | |
|--|-----------|----|
| Siemens SITRANS LR250 Radar for Continuous Liquid Storage Levels | \$1928.00 | 8 |
| Siemens SITRANS LR260 Radar for Dry Bulk Solids Level | \$2424.00 | 14 |
| Siemens SITRANS LR460 Long Range FM Radar for Bulk Solids | \$4122.00 | 15 |
| Siemens SITRANS LR560 78GHz Long Range FM Radar for Bulk Solids | \$4122.00 | 12 |
| Siemens SITRANS Probe LR/LR200 Radar for Continuous Liquid Storage | \$1122.00 | 6 |

Continuous Level — Ultrasonic

| | | |
|--|-----------|----|
| Siemens HydroRanger 200 HMI Water Monitoring and Control System | \$1150.00 | 25 |
| Siemens MultiRangerHMI Ultrasonic Continuous Level Transceivers | \$1124.00 | 24 |
| Siemens SITRANS LU Long Range Ultrasonic Transceivers | Call | 26 |
| Siemens SITRANS LU150 Ultrasonic Liquid Level Transmitter | \$698.00 | 20 |
| Siemens SITRANS LUT400 Ultrasonic Level Controller | \$1023.00 | 22 |
| Siemens SITRANS Probe LU Ultrasonic Transmitter for Liquid Level | \$1109.00 | 21 |
| Siemens Echomax Ultrasonic Level Transducers and Accessories | \$556.00 | 28 |

Terminal Inventory Control and Tank Gauging

| | | |
|---|------|----|
| Honeywell Enraf 854ATG/854XTG Servo Gauges | Call | 42 |
| Honeywell Enraf SmartRadar Flexline Precision Tank Gauging System | Call | 44 |
| Honeywell Enraf SmartRadar 970 Series for Storage Tank Measurements | Call | 46 |

Point Level — Capacitance

| | | |
|--|----------|----|
| Siemens CLS100 Two-Wire Capacitance Point Level Switch | \$243.00 | 51 |
| Siemens CLS200 Capacitance Point Level Detection Switches | \$576.00 | 52 |
| Siemens CLS300 Capacitance Point Level Switch for Harsh Environments | \$810.00 | 54 |
| Siemens CLS500 Capacitance Point Level Switch for Extreme Conditions | \$864.00 | 56 |

Point Level — Floats

| | | |
|---|---------|----|
| Mechanical Bottle and Float-Type Level Switches | \$37.00 | 47 |
|---|---------|----|

Point Level — Paddle and Fork

| | | |
|---|----------|----|
| Siemens LPS200 Rotating Paddle Switch for Bulk Solids | \$377.00 | 48 |
| Siemens LVS200 Vibrating Fork Switch for Bulk Solids | \$588.00 | 49 |

Point Level — Ultrasonic

| | | |
|--|----------|----|
| Siemens ULS200 Ultrasonic Point Level Detection Switch | \$988.00 | 50 |
|--|----------|----|



SIEMENS



Radar Technology Cures Your Level Headaches

Ask yourself...

Do steam and vapors affect the accuracy and dependability of your existing level device?

Do you work with tanks or silos with coned bottoms? Have they caused problems getting reliable low level readings?

Is your current contacting level technology undependable, unreliable, or maintenance-intensive?

Have you considered non-contact technology, but rejected it because of excessive blanking distance requirements?

Have you tried radar, but experienced unexplained "loss of echo" errors?

Have you tried radar technology, but couldn't get it "tuned" to ignore false echoes caused by obstructions in the vessel?

Are you using radar technology now, but need to call a factory guy to set it up or retune it when operating conditions change?

When was the last time you installed a new radar unit? How long did it take? Have you ever had it configured and working in less than four minutes?

Did you know that for less than \$1000, you can buy a radar unit that works in liquids for vessels up to 66 feet?

Siemens Radar Technology Has the Answers!

- ✓ Reliable liquid and bulk solid level measurements, unaffected by steam and vapor
- ✓ Narrow beam angle radars that provide strong level signals, even in tanks and silos with coned bottoms
- ✓ Dependable, low-maintenance non-contact level technology
- ✓ Short blanking distances — 2" from the horn!
- ✓ Dynamic TVT thresholds that adjust depending on the signal strength, reducing "loss of echo" errors
- ✓ Self-learning algorithms, like automatic false echo suppression, ignore echoes caused by in-tank obstructions
- ✓ Process Intelligence Quick Start, easy menus, and step-by-step tuning, so you can configure the unit in as few as two parameters and less than five minutes — and reprogram the unit without a factory guy, if your needs change
- ✓ Models for any application, from simple liquid storage tank monitoring to harsh environments, bulk solids, and tall tanks — with prices starting under \$1000!

See What's Hot...



SITRANS LR250
See Page 8

2-Wire 25 GHz Pulse Radar
Liquids and Slurries
Short or Narrow Tanks
Low Dielectrics Materials
66 Feet Max.
5 mm Accuracy



SITRANS LR200 and Probe LR
See Page 6

2-Wire 6.3 GHz Pulse Radar
Liquids and Slurries
Storage or Process Vessels
Large Diameter Tanks
66 Feet Max.
10 mm Accuracy



SITRANS LR560
See Page 12

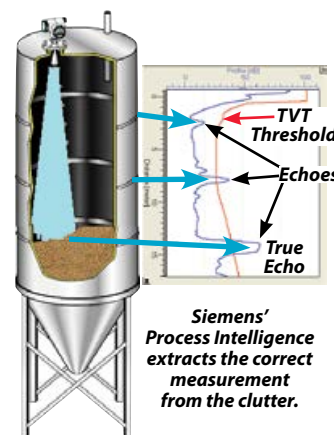
78 GHz FMCW Radar
Bulk Solids
Tall Tanks and Silos
Low Dielectric Materials
329 Feet Max.
0.25% Accuracy

Siemens Process Intelligence Provides Error-Free Results

Multiple signals, indirect path signals, weak signals, and false echoes from internal obstructions all contribute to the headaches of measuring level in tanks and silos. Your instrument has to learn how to ignore all of the noise and lock onto the correct echo signal for the material.

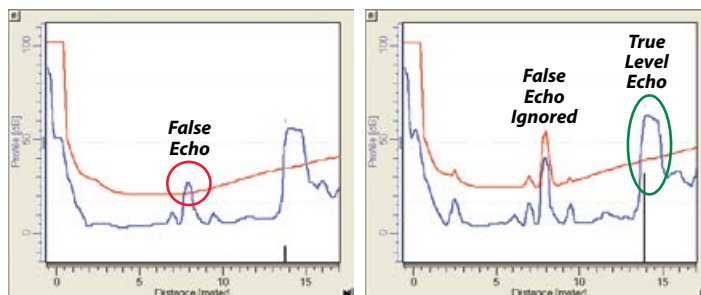
Process Intelligence software differentiates between true echoes from the material and false echoes generated by obstructions or electrical noise. It includes sophisticated algorithms, multiple-shot averaging, and automatic false-echo suppression for advanced echo selection.

For fast startup, the Process Intelligence Quick Start menu and Siemens' self-learning technology allows easy setup in minutes.



Siemens LG200 Guided Wave Radar

- Horizontal cylinders
- Measuring in side pipes or bypass
- Liquid interfaces
- Applications with steam or ammonia
- Processes with turbulence inside the tank
- Medium range solids
- See pages 18 and 19 for details
- See www.Lesman.com/datasheets/ for the LG200 application datasheet (Required with any LG200 order.)



Automatic False Echo Suppression

A false echo can be a silo seam, structural member, material buildup, or other interference, resulting in a low echo confidence. Siemens self-learning algorithm detects false echoes and instructs the radar to ignore them. All Process Intelligence algorithms can be fine-tuned using a handheld programmer or SIMATIC PDM software and your laptop PC.

Illinois, Indiana, Missouri, and Iowa
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman Instrument Company
www.lesman.com
sales@lesman.com






Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

V01.2019

**RADAR
LEVEL**

5 L

SIEMENS Comparing Radar Instruments for Liquid Level

| | | | | | |
|---------------------|---|--|--|--|---|
| |  |  |  |  |  |
| | SITRANS Probe LR | | SITRANS LR200 | | SITRANS LR250 |
| | Two-wire loop powered pulse radar level transmitters for liquids | | Two-wire pulse radar level transmitters for liquids and slurries | | |
| Function | Bulk storage in simple process vessels and tank farms. | | For general storage and process vessels. | For corrosive or aggressive chemical processes. | For hygienic or sanitary processes. |
| Range | 66 feet (20 meters) | | | | |
| Frequency | 6.3 GHz | | 25 GHz | | |
| Process Temperature | -40° to 176° F | -40° to 392° F | -40° to 320° F (using FKM O-ring) | -40° to 338° F | |
| Process Pressure | To 43.5 PSI | To 580 PSI | | | |
| Dielectric Constant | >3 (for <3 use waveguide antenna or stillpipe) | | >1.6, antenna and application-independent | | |
| Accuracy | ± Greater of 0.1% range or 10mm | | ±0.02 mA | | |
| Output | 4-20 mA, HART® | 4-20 mA, HART or Profibus PA, NAMUR NE 21, NE 43 | 4-20 mA, HART, Profibus PA, Foundation Fieldbus NAMUR NE 21, NE 43 | | |
| Communications | HART, SIMATIC PDM for configuration and diagnostics | HART or Profibus PA, SIMATIC PDM for configuration and diagnostics | HART or Profibus PA, SIMATIC PDM for configuration and diagnostics | | |
| Process Connections | 1.5" NPT, BSP, or G (polypropylene), flanges, sanitary | | 1.5" or 2" NPT; 2", 3", or 4" ANSI flange connections | 2" to 6" ANSI flange connections | 2", 3", 4" sanitary/hygienic flanged, threaded, clamp, or union connections |
| Antenna | Hermetically sealed polypropylene rod | Hermetically sealed polypropylene or PTFE Teflon® rod. Optional horn and sliding waveguide | 316L stainless steel or PVDF antenna, 1.5", 2", 3", 4" horns, with optional 4" horn extension | 316L stainless steel with PTFE lens | |
| Display | Multi-segment alphanumeric liquid crystal with bar graph (representing level) | | Graphical user interface including quick-start wizard and echo profile display | | |
| Enclosure | PBT polymer, polyether imide lid; Type 4X/NEMA 4X, Type 6/IP68 | Aluminum, polyester powder-coated; Type 4X/NEMA 4X, NEMA 6, IP67 | Polyester powder-coated aluminum; Ingress protection: Type 4X/NEMA 4X, Type 6/NEMA 6, IP67, IP68 | | |
| Approvals | CE, CSA, FM, ATEX | | CE, CSA, FM, ATEX | CE, CSA, FM, ATEX | CE, CSA, FM, ATEX, EHEDG, 3-A Sanitary |
| See page | 6 | 6 | 8 | 10 | 10 |

Siemens requires a completed radar application datasheet with most radar instrumentation orders. See www.Lesman.com/datasheets/

SITRANS Probe LR and LR200 for Bulk Liquid Storage Levels



Probe LR (left) has a plastic enclosure — ideal for chemical applications. LR200 (center/right) has an aluminum enclosure.

Features

- Two-wire loop-powered radars offer low-cost installation.
- Great for bulk liquid storage in simple process vessels and tank farms.
- Low frequency of 6.3 GHz offers high immunity against condensation or deposits.
- Very high signal-to-noise ratio for reliable performance to ranges to 66 feet. Ample signal to withstand condensation, turbulence, or low dielectrics.
- Initial setup and configuration can be completed with as few as two parameters — with no need for an echo profile.
- Program using intrinsically safe handheld programmer, Simatic PDM software and a PC, or HART® handheld communicator. You don't have to open the cover — exposing the terminals to the elements and corrosion.
- Built-in display has a primary reading, an auxiliary reading and a level bargraph.
- Rotating head swivels to line up with conduit or wiring connections. After installation, just rotate the head to the desired position for easy display viewing. After orientation, the head can be locked into place for permanent use.
- "Uni-construction" polypropylene rod antenna. The threads and rod antenna are made of the same material, and hermetically sealed to prevent chemical ingress. The internal shield ensures that no nozzle noise is introduced by the installation.
- Flange adapter version offers optional process connections and antennae.
- Sonic Intelligence signal-processing software includes Auto False-Echo Suppression for automatic detection and suppression of echoes from tank obstructions.
- Rugged, encapsulated enclosure is submersible and corrosion resistant. The potted design provides an extremely high level of shock and vibration resistance.

Probe LR and LR200 are designed for safe and simple programming, using the intrinsically safe hand programmer, without having to open the instrument's lid. Both units offer a standard uni-construction, hermetically sealed, polypropylene rod antenna that offers excellent chemical resistance.

A local alphanumeric display is standard to all models. A primary display shows engineering units or percent of level, distance, or volume; a secondary display shows mA, temperature, signal status, faults, and parameter values, and an active bargraph reports material level.

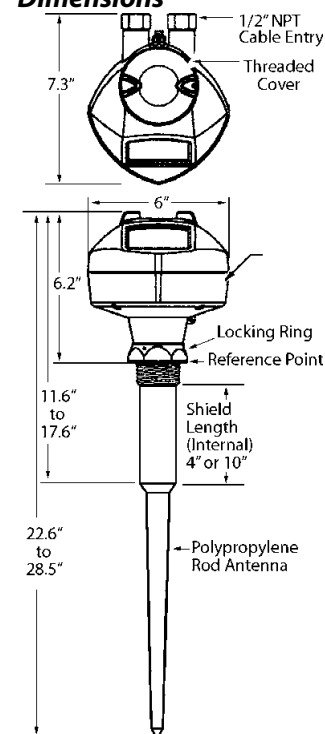
Startup is easy, with as few as two parameters for

basic operation. You can make parameter changes using the hand programmer, a HART® handheld communicator, or with a PC and Siemens Simatic PDM configuration software.

An echo status indicator ensures that your echo is reliable. If the echo confidence drops below the echo confidence threshold, the failsafe timer starts running. When the timer expires, a Loss of Echo status shows on the display. When a valid reading is received, the level reading display returns to normal operation.



Dimensions



Specifications

Range: 66 ft. (20 m)

Frequency: 6.3 GHz

Dielectric Constant: >3 (for <3 use waveguide antenna or stillpipe)

Accuracy: ± greater of 0.1% range or 10mm; Repeatability: ±5mm

Analog Output: 4 to 20 mA ±0.02 mA accuracy max. 550Ω @ 24 VDC

Local Display: Multi-segment alphanumeric liquid crystal with bar graph (representing level)

Communications: HART®, Infrared handheld programmer, SIMATIC PDM

Process Connections: 1.5" NPT, BSP, or G (polypropylene), flanges, sanitary

Antenna: Hermetically sealed polypropylene rod. Standard: 100 mm (4") shield for max. 100 mm (4") nozzle; *Optional:* 250 mm (10") long shield; Rod: Teflon® (PTFE); Other antenna types available; Purge optional

Enclosure: *Probe LR:* PBT polymer, hard-coated polyether imide lid; Type 4X/NEMA 4X, Type 6/IP68; *LR200:* Aluminum, polyester powder-coated; Type 4X/NEMA 4X, NEMA 6, IP67 protection

Power: 4 to 20 mA loop powered

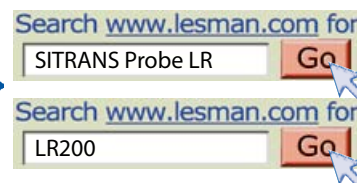
Temperature: *Ambient:* -40° to 176° F (-40° to 80° C); *Process:* -40° to 392° F (-40° to 200° C) process conn. type-dependent

Vessel Pressure: Up to 40 bar (600 PSI) process connections type-dependent

Approvals: CE, CSAUS/C, FM, ATEX, Industry Canada, FCC, R&TTE, 3A



Dielectric constants table available at www.Lesman.com/train/



Illinois, Indiana, Missouri, and Iowa
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman Instrument Company
www.lesman.com
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

V 01.2019

**TWO-WIRE
PULSE RADAR**

7 L

Ordering Instructions

Find the table for the model you need. Make one selection from each table section. Complete catalog numbers will look like:

7ML5430-___10, 7ML5422-___0,
7ML5424-___0___, or 7ML5425-___0___.

Siemens requires that customers include a completed application datasheet with all LR200 orders. Download it from www.Lesman.com/datasheets/.

Please submit orders to: Siemens Industry Inc., c/o Lesman Instrument Company

Note: It is considered good engineering practice to provide redundant disparate level technologies for overflow protection of storage tanks (per API 2350 standard). Call Lesman for point level solutions to complement your continuous level transmitter choice.

Ready to buy a Probe LR or LR200? Complete a radar application datasheet from www.Lesman.com/datasheets/ and send it to Lesman with your order. Not sure which unit is right for you? Use the datasheet to request an engineering review.



SITRANS Probe LR

| Description | Catalog Number | Price |
|---|---|--------------------------------|
| Sitrans Probe LR: PBT Enclosure, 2x0.5" NPT Cable Inlet | 7ML5430- | \$1122.00 |
| Antenna | 1.5" NPT, Integral 100 mm Shield 1.5" NPT, Integral 250 mm Shield | 1A ___ 371.00 1D ___ 506.00 |
| Approvals (Note 3) | FM, CSA General Purpose FM Class I, II, III, Div 1, Grps A-G Intrinsically Safe (with Suitable Barrier) | ___B___ 0.00 ___D___ 208.00 |
| Output | Hart Communications and 4-20 mA | ___10___ 0.00 |

SITRANS LR200 Uni-Construction Rod Antenna

| Description | Catalog Number | Price |
|---|---|--|
| Sitrans LR200 Uni-Construction PP Rod Antenna | 7ML5422- | \$1437.00 |
| Antenna Type | Polypropylene, Integral 100 mm Shield, 1.5" NPT | 2A ___ 421.00 |
| Approvals | FM General Purpose FM Class I, II, Div 1, Grp A-G, Intrinsic Safe FM Class I, Div 2, Grp A-D FM Class I, II, III, Div 1, Grp A-G | ___B___ 0.00 ___D___ 226.00 ___F___ 0.00 ___J___ 263.00 |
| Output | Hart Communications and 4-20 mA | ___30___ 0.00 |

SITRANS LR200 Rod Antenna, Flange Connection

| Description | Catalog Number | Price |
|---|---|--|
| Sitrans LR200 Flange Adapter, PTFE Teflon Rod Antenna | 7ML5423- | \$1931.00 |
| Process Conn. (316 SS) | 2" ANSI 150 Lb, FF Flange 3" ANSI 150 Lb, FF Flange 4" ANSI 150 Lb, FF Flange 1.5" NPT Threaded 2" Threaded | 1FB ___ 685.00 1GB ___ 945.00 1HB ___ 1244.00 1LA ___ 664.00 1MA ___ 702.00 |
| Antenna Extension | None 50 mm PTFE Extension 100 mm PTFE Extension 100 mm 316 SS Shield (Note 1) 150 mm 316 SS Shield (Note 1) 200 mm 316 SS Shield (Note 1) 250 mm 316 SS Shield (Note 1) | ___0___ 0.00 ___1___ 75.00 ___2___ 92.00 ___3___ 0.00 ___4___ 198.00 ___5___ 244.00 ___6___ 290.00 |
| Process Seal | Integral Gasket (Note 2) FKM O-Ring (Note 2) | ___0___ 163.00 ___1___ 0.00 |
| Output | Hart Communications and 4-20 mA | 2C ___ 0.00 |
| Approvals | FM General Purpose FM/IS: Class I, II, Div 1, Grp A-G FM Class I, Div 2, Grp A-D FM Class I, II, III, Div 1, Grp A-G | ___B___ 0.00 ___D___ 226.00 ___F___ 0.00 ___J___ 263.00 |
| Pressure Rating | Per Pressure/Temp Curves in Manual 0.5 bar (7.5 PSI) Maximum | ___0___ 80.00 ___1___ 0.00 |

Also available with 300# flanges. Call for details.

SITRANS LR200 Horn Antenna, Flange Connection

| Description | Catalog Number | Price |
|--|---|--|
| Sitrans LR200 with Flange Adapter Horn Antenna | 7ML5425- | \$1931.00 |
| Antenna | 316L Stainless Steel, PTFE Cone Emitter | 0 ___ 0.00 |
| Process Connect. (316 SS) | 2" ANSI 150 Lb, FF Flange (Note 4) 3" ANSI 150 Lb, FF Flange 4" ANSI 150 Lb, FF Flange 6" ANSI 150 Lb, FF Flange 8" ANSI 150 Lb, FF Flange | ___FB___ 148.00 ___GB___ 198.00 ___HB___ 290.00 ___JB___ 560.00 ___KB___ 998.00 |
| Output | Hart Communications and 4-20 mA | ___2___ 0.00 |
| Process Seal | FKM Nitrile (Sliding Waveguide Systems) | ___0___ 0.00 ___1___ 0.00 |
| Horn Size | 80 mm Horn for Stillpipe Applications 100 mm Horn for Stillpipe Applications 150 mm Horn 200 mm Horn 100 mm Horn, 150 mm Extension 150 mm Horn, 150 mm Extension | 2B ___ 547.00 2C ___ 547.00 2D ___ 547.00 2E ___ 547.00 2G ___ 998.00 2L ___ 998.00 |
| Approval | FM, CSA General Purpose | ___B___ 0.00 |
| Pressure Rating | Per Pressure/Temp Curves in Manual 0.5 bar (7.5 PSI) Maximum | ___0___ 80.00 ___1___ 0.00 |

Also available with 300# flange process connections and waveguide extensions. Call for price and availability.

Notes and Restrictions — All Models

- Requires flange connection >2"; threaded connection larger than 1.5"
- For flanged connections only. FKM O-ring for threaded connections or shielded antenna extension models.
- All approvals include radio FCC 6.3 GHz; Unit only rated FM intrinsically safe when used with a suitable barrier. Approval J not valid with Profibus PA output.
- Available only with Horn Size Options C, D, or E

Accessories — All Models

| Description | Catalog Number | Price |
|--|--------------------|----------|
| Probe LR IS/HART® Handheld Programmer | 7ML1930-1BK | \$170.00 |
| IS/Infrared Profibus Handheld Programmer | 7ML5830-2AJ | 170.00 |
| USB HART® Modem for Simatic PDM/PC | 7MF4997-1DB | 706.00 |
| SIMATIC PDM v9.1 Software Utility for Configuring, Commissioning, and Diagnostics; (Profibus, HART®, 4 Tags) | 6ES7658-3AB68-0YA5 | 805.00 |

SITRANS LR250 Two-Wire 25GHz Pulse Radar for Level



Features

- 25 GHz high frequency for small horn antennas for easy mounting in nozzles
- Short blanking distance for improved minimum measuring range to 50 mm from the end of the horn — provides high accuracy of low and high levels, even with low dielectric media
- Small horn (1.5" to 4") and narrow beam angle allows installation practically anywhere in your vessel
- Now available with a 2" threaded PVDF antenna. Great for measuring acids, alkalis, and other corrosive chemicals!
- Graphical local user interface — displays echo profiles and diagnostic information, makes operation simple
- Fast and easy to configure — Quick-Start Wizard guides you during setup
- Insensitive to mounting location and obstructions, and less sensitive to nozzle interference
- Process Intelligence — Advanced signal processing for improved measurement reliability, and automatic false echo suppression of fixed obstructions
- Operational in minutes — infrared handheld programmer for local operation or SIMATIC PDM via HART® — without exposing the electronics to the environment



Making Radar Work for Liquid and Slurry Level Monitoring

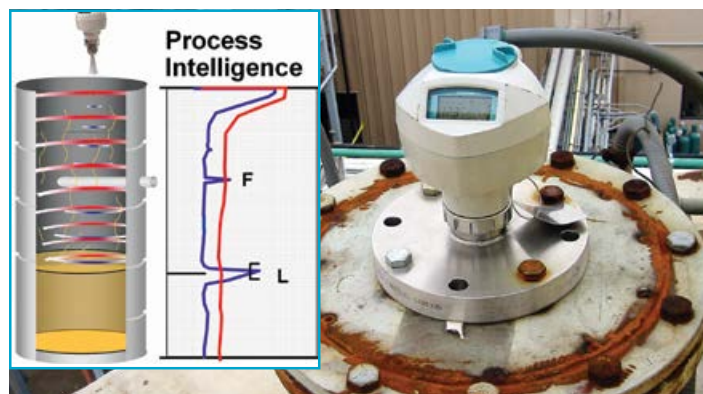
Siemens' SITRANS LR250 two-wire 25 GHz radar level transmitter measures liquids and slurries in vessels up to 20 m (66 ft).

The LR250 is the easiest to install and quickest to configure on the market today. With its narrow beam and small antenna, SITRANS LR250 can be installed practically anywhere on your vessel.

The small horns (1.5" to 4" models) allow for installation in existing openings, and the concentrated high-frequency beam ensures minimal interference from the vessel walls.

The Quick-Start Wizard guides you through programming the transmitter using a few key parameters, so the LR250 can be measuring in minutes. The transmitter can be programmed using the intrinsically safe handheld programmer, or remotely via HART® — without opening the transmitter lid and exposing the electronics to aggressive atmospheres.

Process Intelligence evaluates dynamic echo signals. It applies algorithms (based on field data collected from more than a million level measurement applications) to raw echoes, to produce accurate and reliable measurement readings. It can automatically ignore obstructions, and is the processor behind the advanced diagnostic tools, the Quick-Start Wizard, and automatic false-echo suppression. Sonic Intelligence significantly improves measurement accuracy in low level vessels and low dielectric media.



Specifications

Frequency: 25 GHz (k-band)

Measurement Range: *Minimum:* 2" from the end of the horn; *Maximum:* 65 feet (20 m), depending on horn size

Non-repeatability: 0.2" (5 mm)

Dielectric Constant: >1.6, horn and application dependent

Output: 4 to 20 mA; Accuracy: ±0.02 mA

Failsafe: Programmable as high, low, or hold (loss of echo); NE 43 programmable

Power: 24 VDC nominal, 30 VDC max.

Display: Local graphic interface with Quick Start Wizard and echo profiles

Programming: SIMATIC PDM or Intrinsically safe infrared handheld

Communication: HART®; PROFIBUS PA optional (Profile 3.0, Class B)



Process Conditions

Temperature: *Ambient:* -40° to 176° F; *Process:* -40° to 302° F at process connection with FKM O-ring

Pressure: 580 psi max., depending on temperature and process connection

Design

Enclosure: Die-cast aluminum, polyester powder-coated; *Ingress Protection:* Type 4X/NEMA 4X, Type 6/NEMA 6, IP67, IP68; *Cable Inlet:* Two 1/2" NPT inlets; *Process Connections:* 1.5" or 2" NPT

Horn Antenna: *Material:* 316L Stainless steel; *Sizes:* 1.5", 2", 3", or 4" nominal (40, 48, 75, or 95 mm); 4" (100 mm) optional horn extension; Threaded PVDF antenna for corrosive media

Approvals

General: CSAus/c, CE, FM, NE 21, NE 43, C-Tick

Radio: FCC, Industry Canada, Europe ETSI EN302-372, C-Tick

Hazardous Areas: *Intrinsically Safe (barrier required):* FM/CSA Class I, Div 1, Groups A-D; Class II, Div 1, Groups E-G; Class III T4; *Non-Incendive:* FM/CSA Class I, Div 2, Groups A-D T5; *Explosion-Proof:* FM Class I, II, III, Div 1, Groups A-G, no barrier required.



Illinois, Indiana, Missouri, and Iowa
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

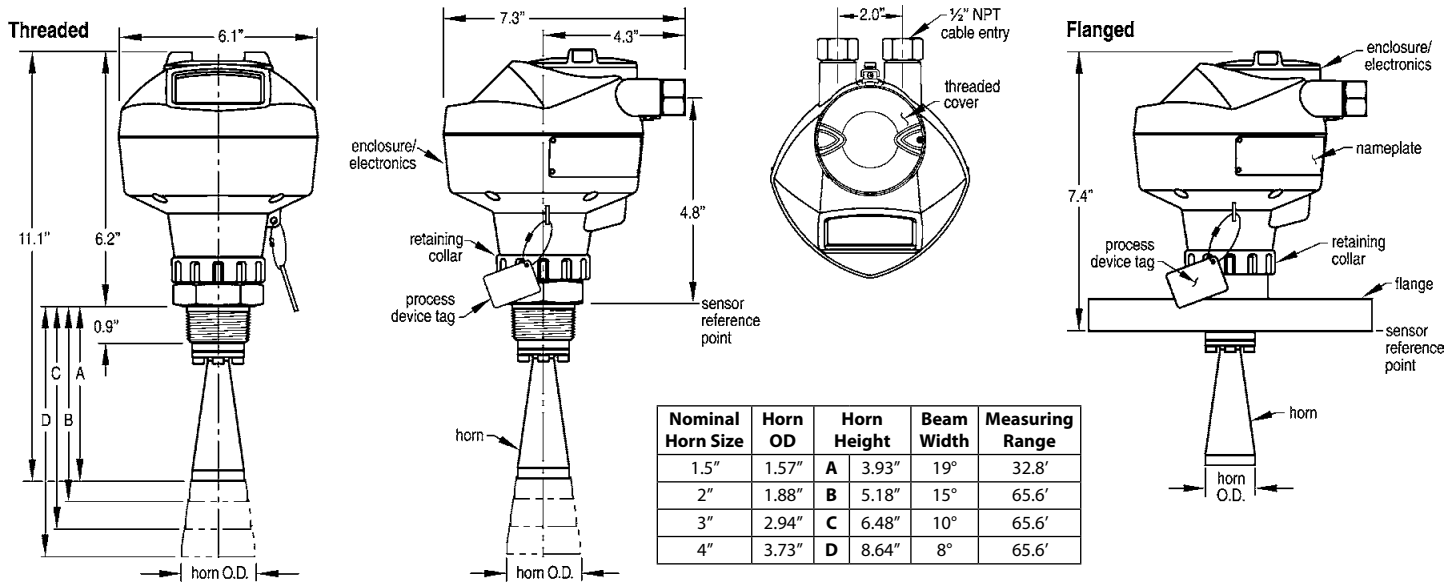
Lesman Instrument Company
www.lesman.com
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

V01.2019

**TWO-WIRE
PULSE RADAR**

9 L



Ordering Instructions

Make one selection from each table section below. A complete catalog number will look like this: 7ML5431-____0-____

Don't forget to order a handheld programmer and a manual. (Quick-start guide included with each unit.) Siemens radar application datasheets required with any SITRANS LR250 order. Visit www.Lesman.com/datasheets/.

Model Selection Guide

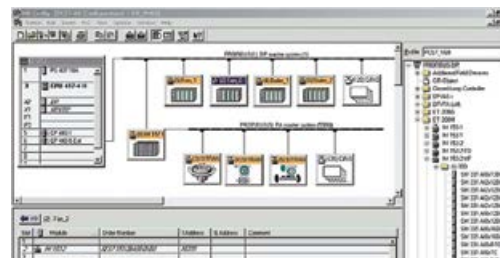
Please submit orders to: Siemens Industry Inc,
c/o Lesman Instrument Company.

| Description | Catalog Number | Price |
|--|--|--------------------|
| SITRANS LR250 Two-Wire 25GHz Pulse Radar | 7ML5431- | \$1928.00 |
| Process Connect | 316L SS, PTFE Emitter, FKM Seal | 0 ____ 528.00 |
| | 316L SS, PTFE Emitter, FFKM Seal | 1 ____ 747.00 |
| Process Connect. Type | 1.5" NPT Taper (ANSI/ASME B1.20.1) [1] | _AA _ 0.00 |
| | 2" NPT Taper (ANSI/ASME B1.20.1) | _AD _ 64.00 |
| | 2" ASME, 150 Lb | _BD _ 256.00 |
| | 3" ASME, 150 Lb | _BE _ 390.00 |
| | 4" ASME, 150 Lb | _BF _ 453.00 |
| Communication | 4-20 mA, HART® (Startup at <3.6 mA) | ___20- 0.00 |
| | PROFIBUS PA | ___10- 208.00 |
| Enclosure | Aluminum, Epoxy Paint, 2 x 1/2" NPT Inlets | 0 ____ 0.00 |
| Antenna | 1.5" Horn | _A _ 0.00 |
| | 2" Horn (Fits ASME Nozzles) | _B _ 0.00 |
| | 3" Horn (Fits ASME Nozzles) | _C _ 0.00 |
| | 4" Horn (Fits ASME Nozzles) | _D _ 0.00 |
| | 1.5" Horn with 100 mm Extension | _E _ 128.00 |
| | 2" Horn with 100 mm Extension | _F _ 128.00 |
| | 3" Horn with 100 mm Extension | _G _ 128.00 |
| | 4" Horn with 100 mm Extension | _H _ 128.00 |
| Approvals | General Purpose CE, CSA, FM, FCC | ___A _ 0.00 |
| | Intrinsically Safe CSA/FM, FCC [2] | ___B _ 208.00 |
| | Non-Incendive CSA/FM, FCC | ___D _ 0.00 |
| | Explosion Proof FM [3] | ___H _ 241.00 |
| Pressure | 7.5 PSI (0.5 bar) Max. Pressure Rating | ___1 _ 0.00 |
| SIL2 [4] | Functional Safety, SIL 2 Compliance Cert | , Z-C20 116.00 |
| Accessories | Handheld Programmer, IS HART® Modem, USB | 7ML1930-1BK 170.00 |
| | | 7MF4997-1DB 706.00 |

Model Selection Guide

Please submit orders to: Siemens Industry Inc,
c/o Lesman Instrument Company.

| Description | Catalog Number | Price |
|--|--|---------------------------|
| SITRANS LR250 Two-Wire 25GHz Pulse Radar | 7ML5431- | \$1928.00 |
| Connect | 2" NPT Threaded PVDF Antenna | 4PA __ 0.00 |
| Communication | 4-20 mA, HART® (Startup at <3.6 mA) | ___20- 0.00 |
| | PROFIBUS PA | ___10- 208.00 |
| Enclosure | Aluminum, Epoxy Paint, 2 x 1/2" NPT Inlets | OR __ 0.00 |
| Approvals | General Purpose CE, CSA, FM, FCC | ___A _ 0.00 |
| | Intrinsically Safe CSA/FM, FCC [2] | ___B _ 208.00 |
| | Non-Incendive CSA/FM, FCC | ___D _ 0.00 |
| | Explosion Proof FM [3] | ___H _ 241.00 |
| Pressure | Rating per Pressure/Temperature Curves | ___2 _ 0.00 |
| SIL2 [4] | Functional Safety, SIL 2 Compliance Cert | , Z-C20 116.00 |
| Accessories | Handheld Programmer, IS HART® Modem, USB | 7ML1930-1BK 170.00 |
| | | 7MF4997-1DB 706.00 |
| SIMATIC PDM v9.1 Software Utility for Configuring, Commissioning, and Diagnostics; (Profibus, HART®, 4 Tags) | | 6ES7658-3AB68-0YA5 805.00 |



Don't forget to order your SIMATIC PDM software.

Notes

- [1] For 1.5" horn antennae only.
- [2] Intrinsic safety barrier required.
- [3] No IS barrier required. Available only with HART® communications option.
- [4] For HART models with general purpose or intrinsically safe approvals only.

Note: It is considered good engineering practice to provide redundant disparate level technologies for overflow protection of storage tanks (per API 2350 standard). Call Lesman for point level solutions to complement your continuous level transmitter choice.

SITRANS LR250 Encapsulated Radar Transmitters



SITRANS LR250 FEA flanged encapsulated antenna for corrosives and harsh media.

Features

- 25 GHz high frequency
- Short blanking distance for improved minimum measuring range to 50 mm from the end of the horn — provides high accuracy of low and high levels, even with low dielectric media
- Graphical local interface displays echo profiles and diagnostics
- Insensitive to mounting location and obstructions, and less sensitive to nozzle interference
- Advanced signal processing for reliable measurement and automatic false echo suppression of fixed obstructions
- Infrared handheld programmer for local operation or SIMATIC PDM via HART® for remote programming

SIEMENS



SITRANS LR250 HEA hygienic encapsulated antenna for sanitary applications.



Specifications

Frequency: 25 GHz (k-band)

Measurement Range: Minimum: 2" from the end of the horn; Maximum: 65 feet (20 m), depending on horn size

Non-repeatability: 0.2" (5 mm)

Dielectric Constant: >1.6, antenna dependent

Analog Output: 4 to 20 mA; Accuracy: ±0.02 mA

Failsafe: Programmable, High, low, or hold (loss of echo); NAMUR NE43

Measured Error: 0.118" (3mm) max. at >500 mm from sensor reference point; 1" (25mm) max. at < 500 mm from sensor reference point

Temperature Range: Process: -40° to 338°F at process connection; Ambient: -40° to 176°F; Influence of ambient temperature: < 0.003 %/K

Digital Output: HART version 5.1, Profibus PA 3.01, Foundation Fieldbus H1

Display: Local graphic interface with Quick Start Wizard and echo profiles

Programming: Intrinsically Safe Siemens handheld programmer, Infrared receiver; handheld HART communicator (375/475), PC with SIMATIC PDM, Emerson AMS, Siemens SITRANS DTM (for connection into FDT, such as PACTware or Fieldcare)

Power Supply: 4-20 mA/HART: Nominal 24 VDC (max. 30 V DC) with max. 550Ω; PROFIBUS PA: 15 mA; FOUNDATION Fieldbus: 20.0 mA

Design

Enclosure: Type 4X/NEMA 4X, Type 6/NEMA 6, IP67, IP68 polyester powder-coated aluminum, with two x 1/2" NPT cable inlets

Process Connections: FEA version: Flanged connection, raised face; 2", 3", 4", 6" Class 150 ASME B16.5; HEA version: 2", 3" & 4" Sanitary Clamp according to ISO 2852, DN 50/ 80/ 100 Aseptic/ Hygienic threaded, flanged, clamped, or union connections, Type F (50 mm) and Type N (68 mm) Tuchenhausen Varivent; Hygienic lens surface finish: (Ra) 0.8 μm

Antenna: 316L stainless steel (1.4435 or 1.4404) and TFM 1600 PTFE Lens

Approvals

General: CSA, CE, FM, NE 21, RCM

Radio: FCC, Industry Canada and Europe ETSI EN 302-372, RCM

Hazardous Areas: Explosion Proof/ Intrinsically Safe: CSA/FM Class I, Div. 1, Groups A-D; Class II, Div. 1, Groups E-G; Class III T4; CSA/FM Class I, Div. 1, Groups A-D; Class II, Div. 1, Groups E-G; Class III T4; Non-Incendive: CSA/FM Class I, Div. 2, Groups A-D T5; INMETRO, NEPSI, IECEx/ATEX, GOST

Hygienic/Sanitary: HEA version only; EHEDG EL Class I, EL Aseptic Class I

Functional Safety: SIL-2 suitable in accordance with IEC 61508/61511

Ordering Instructions

Select one option from each table section below. A complete catalog number looks like this: 7ML5432 - _____ - 0A_0.

Siemens requires a completed radar application datasheet with all LR250 orders. Find it at www.Lesman.com/datasheets/ and include with your order.

Please submit orders to: Siemens Industry Inc, c/o Lesman Instrument Company.




Model Selection Guide

| Description | | Catalog Number | Price |
|--|---------------------------------------|----------------|-----------|
| SITRANS LR250 Flanged Encapsulated Antenna Radar | | 7ML5432- | \$2864.00 |
| Process Connection | 2" Class 150 ANSI Flange | 0BF_ _- | 264.00 |
| | 3" Class 150 ANSI Flange | 0BG_ _- | 401.00 |
| | 4" Class 150 ANSI Flange | 0BH_ _- | 470.00 |
| | 6" Class 150 ANSI Flange | 0BJ_ _- | 520.00 |
| Communication | Profibus PA | ___ 10- | 228.00 |
| | 4-20 mA HART (Startup at <3.6 mA) | ___ 20- | 0.00 |
| | Foundation Fieldbus | ___ 30- | 370.00 |
| Approvals | General Purpose CE, CSA, FM, FCC | 0AA0 | 0.00 |
| | Intrinsically Safe CSA/FM, FCC | 0AB0 | 228.00 |
| | Non-Incendive CSA/FM, FCC | 0AD0 | 0.00 |
| | Explosion Proof CSA/FM, FCC | 0AH0 | 265.00 |
| Safety | SIL 2 Safety Compliance Certification | , Z-C20 | 119.00 |

| Description | | Catalog Number | Price |
|---|---------------------------------------|----------------|-----------|
| SITRANS LR250 Hygienic Encapsulated Antenna Radar | | 7ML5433- | \$2792.00 |
| Hygienic/ Sanitary Approval | EHEDG EL Class I | 1 _ _ _ - | 0.00 |
| | EHEDG EL Aseptic Class I | 2 _ _ _ - | 0.00 |
| | EHEDG EL Class I & 3-A Sanitary | 4 _ _ _ - | 0.00 |
| Process Connection | 2" Sanitary Clamp per ISO 2852 | _ AA _ _- | 0.00 |
| | 3" Sanitary Clamp per ISO 2852 | _ AB _ _- | 237.00 |
| | 4" Sanitary Clamp per ISO 2852 | _ AC _ _- | 274.00 |
| Communication | Profibus PA | ___ 10- | 208.00 |
| | 4-20 mA HART (Startup at <3.6 mA) | ___ 20- | 0.00 |
| | Foundation Fieldbus | ___ 30- | 337.00 |
| Approvals | General Purpose CE, CSA, FM, FCC | 0AA0 | 0.00 |
| | Intrinsically Safe CSA/FM, FCC | 0AB0 | 208.00 |
| | Non-Incendive CSA/FM, FCC | 0AD0 | 0.00 |
| | Explosion Proof CSA/FM, FCC | 0AH0 | 241.00 |
| Safety | SIL 2 Safety Compliance Certification | , Z-C20 | 1169.00 |

See page 9 model selection guide for handheld programmers.

Picking the Right Radar for Bulk Solids Level

| |  |  |  |
|---------------------------------------|---|---|---|
| | LR260 | LR460 | LR560 |
| Method | 25 GHz pulse radar | 24.2 to 25.2 GHz FMCW Radar | 78 GHz FMCW Radar |
| Range | 98 feet (30 m) | 328 feet (100 m) | 329 feet (100 m) |
| Power | Nominal 24 VDC, 30 VDC max, 4-20 mA Profibus PA: 15.0 mA | 100-230 VAC $\pm 15\%$, 50/60 Hz, 6W (12A) or 24 VDC $\pm 25\%$ -20% 6W optional | Nominal 24 VDC or 9 to 32 VDC (PROFIBUS) |
| Media Dielectric Constant | $\epsilon_r > 1.6$ | $\epsilon_r > 1.4$ | $\epsilon_r > 2.0$ |
| Analog Output | 4-20 mA loop powered | 4-20 mA optically isolated | 4-20 mA |
| Local Display | Graphic LCD with bargraph and echo profile | Alphanumeric LCD | Graphic LCD, with bar graph for level |
| Communications and Programming | HART®, Profibus PA, SIMATIC PDM, Intrinsically safe handheld programmer, local operation | HART®, Profibus PA, SIMATIC PDM, Intrinsically safe handheld programmer, local operation | HART® communicator 375/475, SIMATIC PDM, AMS, PACTware, Infrared receiver |
| Enclosure | Polyester powder-coated aluminum Type 4X/NEMA 4X, Type 6/NEMA 6, IP67, IP68 Two 1/2" NPT cable inlets | Polyester powder-coated aluminum Type 4X/NEMA 4X, Type 6/NEMA 6, IP67 Two 1/2" NPT cable inlets | Type 4X/NEMA 4X, Type 6/NEMA 6, IP68 with lid closed, 316L/1.4404 stainless steel |
| Process Connections | Universal: 2", 3", 4", or 6" with integral EasyAimer | Universal: 3", 4", or 6" with integral EasyAimer | Universal: 3", 4", or 6" with integral EasyAimer |
| Horn Antenna | 2", 3", or 4" diameter horn, optional dust cover, optional 1/8" NPT purge connection | 3" or 4" diameter horn, optional dust cover, optional 1/8" NPT purge connection | None required |
| Process Conditions | Ambient: -40° to 176° F; Process: -40° to 392° F | Ambient: -40° to 149° F; Process: -40° to 392° F | Ambient: -40° to 176° F; Process: -40° to 392° F |
| Approvals | General: CSA us/c, CE, FM Radio: FCC, Industry Canada, European (R&TTE), C-TICK Hazardous Areas: CSA, FM, ATEX, IEC Ex | General: CSA us/c, CE, FM Radio: FCC, Industry Canada, European (R&TTE), C-TICK Hazardous Areas: CSA, FM, ATEX, IEC Ex | General: CSA us/c, CE, FM Radio: Europe (R&TTE), FCC, Industry Canada, C-TICK FM/CSA Class II, Div. 1, Groups E-G; Class III T4: FM/CSA Class I, Div. 2, Groups A-D, T4 |
| See Page | 14 | 15 | 12 |

LR560 ignores dust, reports true level

In a coal-fired power plant, the coal is transported from the yard to the silos on a conveyor system.

The process of dumping coal from the conveyed buckets into the silo creates a lot of dust.



One Lesman power plant customer had been using laser transmitters to detect the level of coal in their silos. But since the laser didn't discriminate between the dust and the true level of the coal, they were experiencing false high levels, which forced unnecessary process shutdowns. They'd then have to override the system to get it back online.

Eager to end their shutdown issues, the customer considered switching to load cells, which are very accurate at measuring volume, but very costly. They would have needed to cut all the steel support members on their coal tanks, at a cost of nearly \$100,000 per tank.

The customer agreed to put a Siemens LR560 radar unit on trial, and it worked flawlessly right away, providing true level readings regardless of the dusty environment.

At a cost of only \$3,300 per silo, the customer was able to save roughly \$750,000 and a significant amount of downtime for accurate level readings and the end of their forced shutdown issues.

Sensor design cures material buildup headaches

A local flour processing plant has more than 30 different storage tanks: outdoor holding tanks for when the grain comes off the rail cars, and indoor tanks for processing the wheat flour after processing.

When they first installed their level detection system 15 years ago, ultrasonics were the only available solution. Radar level systems for dry solids didn't exist.

Their problem was the dust buildup on the ultrasonic transducer, which was mounted at the floor. When the sensors stopped seeing level, they'd come by and kick the transducer to knock the flour buildup off. The sensor would start working again, and all was fine... till the next time.

The Siemens LR560's lens antenna was designed specifically to resist material buildup, and includes a built-in air purge to keep the sensor face clean at all times.



After a one-week demonstration, the customer bought 10 LR560s for their processing plant, and has since recommended the devices to their end-user customers who were having similar level monitoring issues.



SITRANS LR560 78GHz Radar for Bulk Solids

Features

- 78GHz frequency allows for a narrow 4° beam angle
- Virtually unaffected by dust, vapor, pressure, or temperature
- Installs almost anywhere on top of a silo, and can even measure cone area
- Short wavelength for excellent reflection, even on highly sloped surfaces
- Lens antenna with built-in air purge resists material and dust build-up
- 2.5" antenna fits into almost any tank opening or nozzle
- Quick-Start Wizard gets the transmitter up and operational in minutes
- Local display interface for pushbutton programming diagnostics



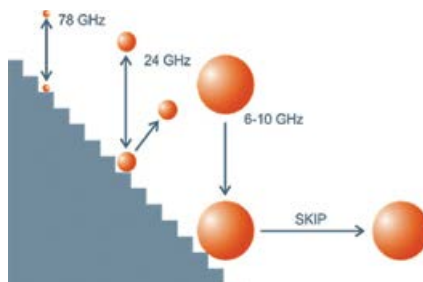
Extreme dust? No problem. Siemens two-wire, loop-powered SITRANS LR560 is a state-of-the-art transmitter for continuous solids level measurement. The LR560 is the first radar transmitter on the market to operate at the 78 GHz frequency. It has an exceptionally narrow 4° beam, short wavelength and a unique non-clogging lens antenna.

The narrow beam angle means the transmitter can be installed practically anywhere on the top of a silo and still achieve accurate readings. Its small size and 2.5" lens antenna allow the unit to be installed on any existing nozzle or tank opening. To set the LR560 on a correct angle, you can easily add an aiming flange.

The traditional problems of noisy signals due to the standpipe or nozzle are now eliminated.

Wider beam angles typical of lower frequency radars can have difficulty measuring the cone area of a silo. They tend to see the sides of the silo and miss the true level reading in the cone area. Not so with the LR560. Since the narrow beam can be aimed into the cone, the LR560 can measure it effectively.

The other critical aspect of a 78 GHz radar is its short wavelength. All solids have an angle of repose that causes the transmit signal to split into two returning paths, one direct and one indirect, leading to complicated signal and measurement drift. The high frequency of 78 GHz minimizes this issue. The short wavelength yields exceptional reflection from sloped solids, even without aiming, and less skip. Less skip means more signal and better reliability.



The SITRANS LR560 is the first radar to have a lens antenna, designed from the start to be highly resistant to material build-up. It comes standard with an air purge which blows directly across the lens face in a circular path. Most LR560s in dry solid applications will require little to no maintenance or cleaning.

Do you prefer buttons for programming or an infrared handheld? With the LR560, you can use either one. A quick-start booklet comes with the unit, and can be stored in the transmitter lid for use in the field, though most users don't require the paper guide. The graphical Quick-Start Wizard on the display makes the LR560 easy to program.

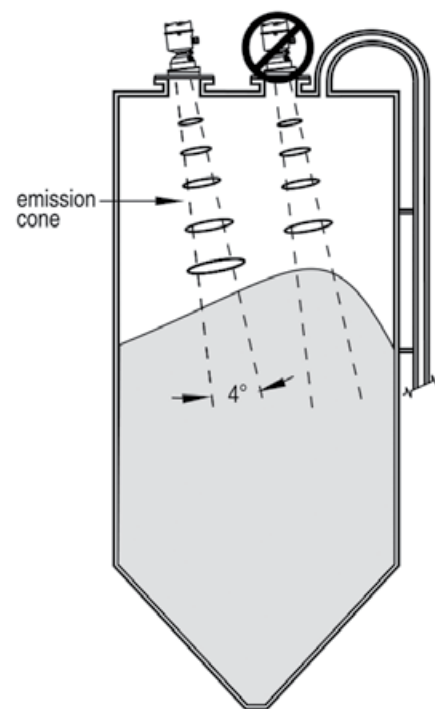


Look!!! No horn for material to build up on!

You also have the option of configuring the transmitter and viewing echo profiles using Siemens SIMATIC PDM, PACTware, or Emerson AMS software. SITRANS LR560 models are available with HART®, PROFIBUS PA, or Foundation™ Fieldbus protocols.

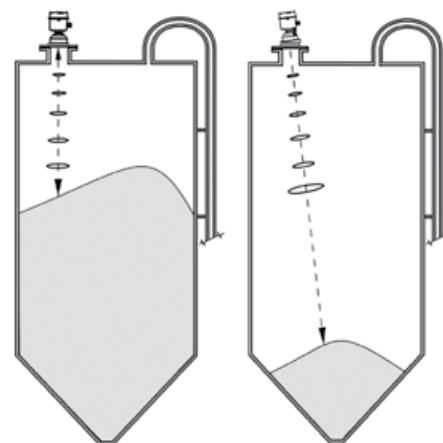
It's available in two versions: one for 40 meters and process temperatures to 212° F, one for 100 meters and 392° F. Designed for rugged field use, the LR560 is approved for hazardous conditions. The stainless steel enclosure is rated IP68, and the encapsulated electronics cup is easily replaceable.

Nozzle Location



- Beam angle is the width of the cone, where the energy density is half of the peak energy density
- The peak energy density is directly in front of and in line with the antenna
- A signal is transmitted outside the beam angle, so false targets can be detected

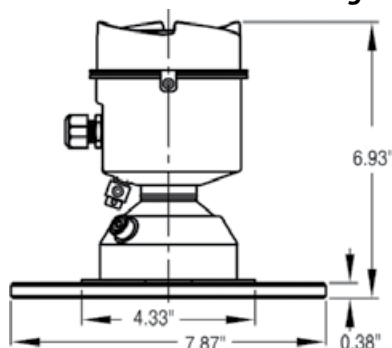
Aimer Adjustment



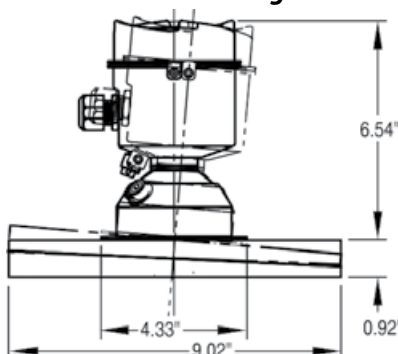
With 78 GHz frequency, aiming is rarely required for signal optimization. Still, proper aiming will improve your ability to measure material in the cone of your vessel.

Need a backup level alarm for overflow protection? Call Lesman for point level solutions.

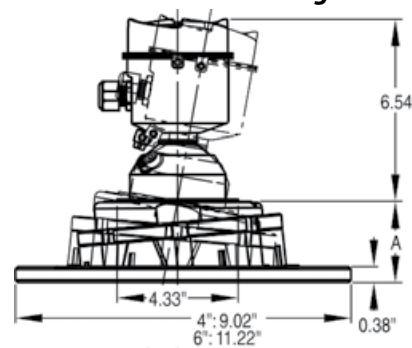
Universal Flat-Faced Flange



3" Aimer Flange



4" or 6" Aimer Flange



Specifications

Measurement Principle: 78 GHz FMCW radar level

Detectable Distance: 15.75" to 131 feet (400 mm to 40 m) or 15.75" to 328 feet (400 mm to 100 m) from reference point

Output: *Analog:* 4 to 20 mA; *Communications:* HART standard, PROFIBUS PA or Foundation Fieldbus; *Fail-safe:* Programmable as high, low or hold, Loss of Echo, NAMUR NE43 programmable

Accuracy: Greater of 1" or $\pm 0.25\%$ range from minimum detectable distance to full range

Ambient Operating Temperature: -40° to 176° F

Media Conditions: Dielectric constant >2.0; *Process temperature:* 40 m version: -40° to 212° F; 100 m version: -40° to 392° F

Enclosure: 316L/SS, M20x1.5" conduit entry, or 1/2" NPT via adapter; with PEI or PEEK lens; *Degree of protection:* Type 4X/NEMA 4X, Type 6/NEMA 6, IP68 with lid closed

Display: Graphic LCD, with bargraph representing level

Process connections: 3", 4", or 6" universal flat-faced flanges in 304 or 316L stainless steel; *Aimer flanges:* 3", 4", or 6" polyurethane powder-coated cast aluminum

Power Supply: 4-20 mA/HART: Nominal 24 VDC (max. 30 VDC) with max. 550W, PROFIBUS PA/Foundation Fieldbus: 13.5 mA, 9 to 32 VDC, per IEC 61158-2

Approvals: *General:* CSAUS/C, CE, FM; Radio Europe (R&TTE), FCC, Industry Canada, C-TICK; *Hazardous:* FM/CSA Class II, Div. 1, Groups E-G, Class III, T4, Class I, Div. 2, Groups A-D, T4

Programming: *Intrinsically safe Siemens programmer:* ATEX, CSA/FM Class I, II, III, Div. 1., Gr. A-G, T6 Ta=50C; *HART® communicator:* Model 375/475; PC with SIMATIC PDM, AMS, or PACTware; Local graphical display with quick start wizard and echo profiles

Notes

(1) Universal flat flange with integral aimer rated to 248° F when used with pressure rating option 1 (7.5 PSIG max.)



No power? No problem!

Power your SITRANS LR560 radar level transmitter from a wireless radio's battery on a scheduled, periodic, or intermittent basis for true wireless performance. With it, you can sample 3x per hour with a 3 month battery life.

The Banner D5 is a 150 mW node radio in a metal enclosure with a dome antenna. It is intrinsically safe for use in Div 1 locations.

D5 Performance Node Radio20178.... \$1549.00

Visit Lesman.com for more on Banner wireless I/O systems.



This SITRANS LR560 is available from Lesman stock, ready to ship to you within 24 hours!

4" Flat Flange, Integral Aimer, 4-20 mA Output, HART Interface, CSA/FM for Hazardous Environments, Removable Local Display Interface

7ML5440-0HA00-0AB2 \$2879.00

Ordering Instructions

Select one option from each table section below.

A complete catalog number looks like this: 7ML5440 - _____ - _____

Model Selection Guide

Please submit orders to: Siemens Industry Inc, c/o Lesman Instrument Company

| Description | Catalog Number | Price |
|---|----------------|-----------|
| SITRANS LR560: Two-Wire 78GHz Radar Transmitter, Stainless Steel Enclosure, 1x1/2" NPT Cable Inlet | 7ML5440- | \$2448.00 |
| Measuring Range | | |
| 131 Feet Max Range, -40° to 212° F | 0 _ _ _ _ | 0.00 |
| 329 Feet Max Range -40° to 392° F | 1 _ _ _ _ | 955.00 |
| Process Connection | | |
| 3" (80mm) Universal Flat Flange, 304 SS | _ AA00 | 0.00 |
| 4" (100mm) Universal Flat Flange, 304 SS | _ BA00 | 112.00 |
| 6" (150mm) Universal Flat Flange, 304 SS | _ CA00 | 166.00 |
| 3" (80mm) Universal Flat Flange, 316L SS | _ DA00 | 72.00 |
| 4" (100mm) Universal Flat Flange, 316L SS | _ EA00 | 179.00 |
| 6" (150mm) Universal Flat Flange, 316L SS | _ FA00 | 235.00 |
| 3" (80mm) Flat Flange, Integral Aimer | _ GA00 | 0.00 |
| 4" (100mm) Flat Flange, Integral Aimer | _ HA00 | 112.00 |
| 6" (150mm) Flat Flange, Integral Aimer | _ JA00 | 166.00 |
| Pressure Rating | | |
| 7.5 PSIG Max (0.5 bar g) | 0 _ _ _ | 0.00 |
| 40 PSIG Max (3 bar g) | 1 _ _ _ | 72.00 |
| Output/Interface | | |
| 4-20 mA and HART | _ A _ _ | 0.00 |
| Profibus PA | _ B _ _ | 216.00 |
| Foundation Fieldbus | _ C _ _ | 349.00 |
| Agency Approvals | | |
| CSA, CE, FM General Purpose | _ _ A _ | 0.00 |
| CSA/FM Hazardous Environments | _ _ B _ | 112.00 |
| Local Display | | |
| None | _ _ _ 1 | 0.00 |
| Removable Local Display Interface | _ _ _ 2 | 207.00 |
| Options | | |
| Stainless Steel Tag: 16 Characters | _ , Z-Y15 | 47.00 |
| Accessories | | |
| Infrared Hand Programmer, IS | 7ML1930-1BK | 170.00 |
| LR560 Sun Shield Cover | 7ML1930-1FK | 160.00 |

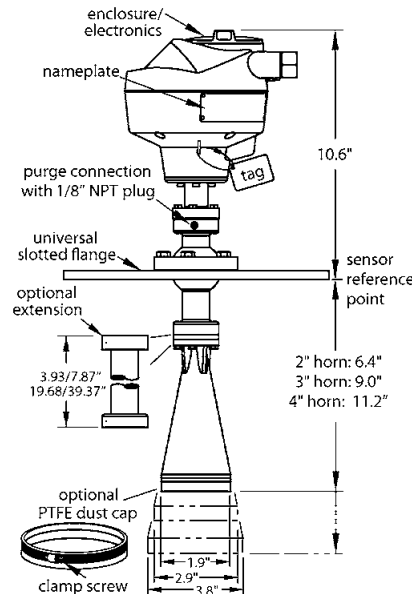
Unit ships with electronic manual and quick-start guide. Order printed manual separately.



SITRANS LR260 Loop-Powered Radar for Dry Bulk Solids

Features

- Small antenna, narrow beam, flexible mounting locations, short and long ranges, excellent reflection properties on solids and low dielectric media
- Built-in Easy Aimer flange for optimal signal reflection
- Quick-Start Wizard guides you through basic function setup. Enhanced EDD with Quick-Start Wizard for SIMATIC PDM
- Patented Process Intelligence differentiates between true media echoes and false echoes generated by obstructions
- Diagnostic messaging define which errors are important and directs the error codes where they are needed
- Built-in timers with automated alerts let you schedule routine cleaning or replacement activities



Specifications

Measuring Principle: 25 GHz K-band pulse radar

Detectable Distance: 0.05 m (2") minimum from end of horn

Measuring Range: 2" horn: 10 m (32.8 ft) max.; 3" horn: 20 m (65.6 ft) max.; 4" horn: 30 m (98.4 ft) max.

Media Dielectric Constant: $\epsilon_r > 1.6$, antenna and application dependent

Accuracy: 25 mm (1") from minimum detectable distance to 300 mm (11.8"); *Remainder of range:* Greater of 10 mm (0.39") or 0.1% span. Accuracy includes hysteresis and non-repeatability

Operating Conditions: *Ambient temperature:* -40° to 176° F; *Process temperature:* -40° to 392° F; *Process pressure:* 7.25 PSIG max (0.5 bar) standard, 43.5 PSIG (3 bar) optional with 176° F max temperature; *Installation category:* 1; *Pollution degree:* 4

Enclosure: Type 4X/NEMA 4X, Type 6/NEMA 6, IP67, IP68 rated, polyester powder-coated aluminum; Two 1/2" NPT conduit entries; 304 SS flange and horn; *Process connections:* 2", 3", 4", and 6" universal flanges

Display: Graphic LCD, with bargraph representing level

HART® Output: 4 to 20 mA (± 0.2 mA accuracy); Nominal 24 VDC; *Fail signal:* 3.6–23 mA or last value; *Load:* 230–600 Ω ; *Line length:* Multiwire, ≤ 1500 m (4921 ft) max; *Protocol:* HART Version 5.1

PROFIBUS PA Output: Per IEC 61158-2, 15.0 mA; Profile V3.01, Class B

Programming: Local interface with quick-start wizard and echo profile displays; Siemens handheld programmer and infrared receiver; Intrinsically safe, ATEX II 1G EEx ia IIC T4, CSA/FM Class I, Div. 1, Groups A–D; HART® handheld; Siemens SIMATIC PDM Windows-based software

Approvals: *General:* CSAUS/C, CE, FM; *Radio:* Europe (R&TTE), FCC, Industry Canada, C-Tick; *Hazardous:* CSA/FM Class II, Div. 1, Groups E–G, Class III, ATEX II 1D, 1/2D, 2D Ex tD A20 IP67, DP68 T 100° C

Note: It is considered good engineering practice to provide redundant disparate level technologies for overflow protection of storage tanks (per API 2350 standard). Call Lesman for point level solutions to complement your continuous level transmitter choice.

Ordering Instructions

Make a selection from each table section below. A complete catalog number will look like this: 7ML5424-0__-0__-0__.

Don't forget to order a handheld programmer and a manual. (One quick-start guide is included with each unit.)

Model Selection Guide

Please submit orders to: Siemens Industry Inc, c/o Lesman Instrument Company

| Description | | Catalog Number | Price |
|--|---|----------------|-----------|
| Sitrans LR260 Two-Wire 25GHz Pulse Radar | | 7ML5427- | \$2424.00 |
| Process Connect. | Universal Flat Faced 3" (80mm) | 0B _ _ _ | 288.00 |
| | Universal Flat Faced 4" (100mm) | 0C _ _ _ | 288.00 |
| | Universal Flat Faced 6" (150mm) | 0D _ _ _ | 371.00 |
| | | | |
| Antenna | 3" Horn, Fits 3" Nozzles | _ _ F _ _ | 0.00 |
| | 3" Horn, 100 mm Extension | _ _ G _ _ | 134.00 |
| | 3" Horn, 200 mm Extension | _ _ H _ _ | 263.00 |
| | 3" Horn, 500 mm Extension [1] | _ _ J _ _ | 648.00 |
| | 3" Horn, 1000 mm Extension [1] | _ _ K _ _ | 1293.00 |
| | 4" Horn, Fits 4" Nozzles | _ _ L _ _ | 0.00 |
| | 4" Horn, 100 mm Extension | _ _ M _ _ | 134.00 |
| | 4" Horn, 200 mm Extension | _ _ N _ _ | 263.00 |
| | 4" Horn, 500 mm Extension [1] | _ _ P _ _ | 648.00 |
| | 4" Horn, 1000 mm Extension [1] | _ _ Q _ _ | 1297.00 |
| | | | |
| | | | |
| Purge | None | _ _ _ 00- | 0.00 |
| | Purge (Self-Cleaning) Connection | _ _ _ 10- | 301.00 |
| Communication | 4-20 mA, HART® | 0 _ _ _ | 0.00 |
| | Profibus PA | 1 _ _ _ | 208.00 |
| Cable Inlet | Two 1/2" NPT Cable Inlets | _ B _ _ | 0.00 |
| Approvals | General Purpose CSAus/c, FCC, CE, R&TTE | _ _ A _ _ | 0.00 |
| | CSA/FM Class II, Div 1, Gr E-G, Class III | _ _ B _ _ | 160.00 |
| Pressure Rating | 43.51 PSI (3 bar) pressure rating in Bar | _ _ _ 0 | 73.00 |
| | 7.25 PSI (0.5 bar) maximum | _ _ _ 1 | 0.00 |
| Accessories | Handheld Programmer, IS | 7ML5830-2AJ | 170.00 |
| | HART® Modem, USB | 7MF4997-1DB | 706.00 |
| | PTFE Dust Cover for 3" Horn | 7ML1930-1BL | 165.00 |
| | PTFE Dust Cover for 4" Horn | 7ML1930-1BM | 165.00 |

[1] Not available with Purge Connection option.

Illinois, Indiana, Missouri, and Iowa
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman Instrument Company
www.lesman.com
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

V01.2019

**BULK SOLIDS
RADAR LEVEL**

15 **L**

SIEMENS

SITRANS LR460 Radar for Bulk Solids Level

Features

- 24 GHz FMCW four-wire radar provides excellent reflection from solids
- Process Intelligence for advanced echo processing and quick, easy adjustment
- Extremely high signal-to-noise ratio yields high performance
- 328 ft (100m) range for long-range and difficult applications
- Built-in Easy Aimer for optimizing signal on sloped surfaces
- Self-guided Quick-Start Wizard for fast simple setup — in just eight parameters
- Program using infrared intrinsically safe handheld programmer or HART handheld device and SIMATIC PDM
- Dynamic TVT threshold automatically adjusts echo detection sensitivity depending on echo strength



What Makes the LR460 Unique?

- **Four-Wire Power, 24 GHz FMCW Radar Technology:** High frequency radar provides a narrow beam angle, reducing side-wall path interference and false signals from internal obstructions in tall silos. Combined with four-wire power, this results in extremely high signal-to-noise ratio, ensuring exceptional performance in long-range applications.
- **Process Intelligence Echo Processing:** Differentiates between true echoes from the material and false echoes generated by obstructions. Dynamic threshold adjusts automatically to changing conditions in the vessel. The result is repeatable, fast and reliable measurement, even through severe dust.
- **Digital Communications:** HART®; PROFIBUS PA; Connectivity with commonly used communication buses makes for flexible networking with a DCS or PLC.
- **Infrared Handheld Programmer:** No need to open the device for programming. Programmer is rated intrinsically safe for use in hazardous environments. Make changes without interrupting your process or exposing electronics to the environment.
- **Enhanced Electronic Device Description (EDD) with Quick-Start Wizard:** One of the first instruments to have an Enhanced EDD file that can be used in configuration software, like SIMATIC PDM and Emerson AMS. A number of new advanced features are built in, including, easy-to-use graphical Quick-Start Wizard and the ability to save echo profiles. The Quick-Start Wizard is also available via the infrared handheld programmer.

Specifications

Frequency: 24.2 to 25.2 GHz FMCW radar

Range: 1.15 to 328 feet (0.35 to 100 m)

Medium: Dielectric constant $\epsilon_r > 1.4$

Accuracy: Non-Linearity: Greater of 1" (25 mm) or 0.25% span; Non-Repeatability: ≤ 0.4 " (10 mm)

Analog Output: Optically isolated 4 to 20 mA, 600 Ω max load; Failsafe: MA signal programmable as high, low or hold (loss-of-echo)

Digital Output: Relay, NC or NO function, max. 50 VDC, 200 mA, rating 5 W

Communication: HART; PROFIBUS PA

Vessel Pressure: 7.25 psi (0.5 bar) max.

Temperature: Ambient for enclosure: -40° to 149° F; Process: -40° to 392° F

Enclosure: Diecast aluminum, IP67/Type 4X/NEMA 4X/Type 6/NEMA 6; Cable Inlet: Two 1/2" NPT; Location: Indoor/outdoor; Installation category: II; Pollution Degree: 4; Optional: PTFE dust cap, 1/8" NPT air purge connection

Horn Antenna: Universal flanges, 316L stainless steel, flat faced, with integral Easy Aimer; 3", 4" or 6" (80 mm, 100 mm, or 150 mm) mates with flange EN 1092-1, ASME B16.5, or JIS B2238 bolt pattern

Power Supply: 100 to 230 VAC, 6 W (12 VA) or 24 VDC, 6 W (optional)

Programming: Intrinsically safe handheld programmer, ATEX II 1G EEx ia, IIC T4, CSA/FM Class I, Div. 1, Groups A-D T6 @ max. ambient temperature 104° F (40° C); HART® Handheld: HART Communicator 375; PC Software: SIMATIC PDM

Local Display: Alphanumeric LCD for readout and entry

Approvals: General: CSAUS/C, CE, FM; Radio: European Radio (R&TTE), Industry Canada, FCC; Hazardous Areas: CSA/FM Class II, Div. 1, Groups E-G, Class III; ATEX II 1D, 1/2 D, 2D T85° C

Dielectric constants table available at www.Lesman.com/train/



Ordering Instructions

Make a selection from each table section below. A complete catalog number will look like this: 7ML5424-0__0-__0.

Don't forget to order a handheld programmer and a manual. (One quick-start guide included with each unit.)

Model Selection Guide

Please submit orders to: Siemens Industry Inc, c/o Lesman Instrument Company

| Description | | Catalog Number | Price |
|--|---|----------------|-----------|
| Sitrans LR460 Four-Wire 24GHz FMCW Radar | | 7ML5426- | \$4122.00 |
| Process Connect. | Universal Flat Faced 3" (80 mm) | 0A ____ | 312.00 |
| | Universal Flat Faced 4" (100 mm) | 0B ____ | 312.00 |
| | Universal Flat Faced 6" (150 mm) | 0C ____ | 404.00 |
| Antenna | 3" Horn, Fits 3" Nozzles | __A __ | 0.00 |
| | 4" Horn, Fits 4" Nozzles | __F __ | 0.00 |
| | 4" Horn, 200 mm Extension | __H __ | 285.00 |
| Purge | None | __00- | 0.00 |
| | Purge (Self-Cleaning) Connection | __10- | 328.00 |
| Communication | 4-20 mA, HART® | 0 ____ | 0.00 |
| | Profibus PA | 1 ____ | 226.00 |
| Power/Cable Inlet | 100 to 230 VAC, Two 1/2" NPT Cable Inlets | __B __ | 0.00 |
| | 24 VDC, Two 1/2" NPT Cable Inlets | __D __ | 0.00 |
| Approvals | General Purpose CSAus/c, FCC, CE, R&TTE | __A0 | 0.00 |
| | CSA/FM Class II, Div 1, Gr E-G, Class III | __B0 | 175.00 |
| Accessories | Handheld Programmer, IS | 7ML5830-2AJ | 170.00 |
| | HART® Modem, USB | 7MF4997-1DB | 706.00 |
| | PTFE Dust Cover for 3" Horn | 7ML1930-1BL | 165.00 |
| | PTFE Dust Cover for 4" Horn | 7ML1930-1BM | 165.00 |

Note: It is considered good engineering practice to provide redundant disparate level technologies for overflow protection of storage tanks (per API 2350 standard). Call Lesman for point level solutions to complement your continuous level transmitter choice.



SmartLine SLG700 Guided Wave Radar Level Transmitter



New!

Honeywell

Features

- 0.4 to 50 m range
- Two-wire, loop-powered 4-20 mA transmitter with HART or Foundation Fieldbus communications
- Accuracy greater of ± 3 mm or 0.03% of measured distance
- Integral dual seal design for safety based on ANSI/NFPA 70-202 and ANSI/ISA 12.27.01
- Automatic temperature compensation
- Comprehensive on-board diagnostic capabilities
- External zero, span, and configuration
- Modular dual-compartment design with polarity-insensitive electrical connections
- Compliant to SIL 2/3 requirements

Honeywell's new SLG 700 guided wave radar level transmitters feature high performance Time Domain Reflectometry (TDR) level measurement technology. They provide high accuracy and stability for level and interface applications.

SmartLine level transmitters feature the same powerful features with the other transmitters in the SmartLine family: modular design, polarity insensitive electrical connections, transmitter messaging, tamper notification, and integration with Experion® PKS.

Display Options

The SmartLine SLG series level transmitter's modular design includes a basic alphanumeric LCD display or a unique advanced graphics LCD display, either of which can be added in the field.

Basic Alphanumeric LCD Display Features

- 0°, 90°, 180° and 270° position adjustments
- Ft, in, m, cm, or mm for level measurement units and corresponding units supported for volume and level rate
- Two lines, 16 characters alphanumeric display

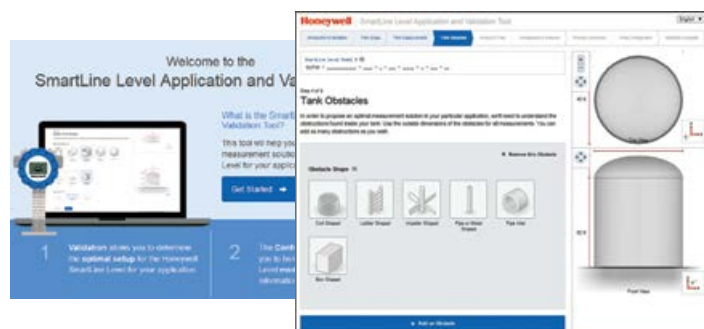
Advanced Graphics LCD Display Features

- 0°, 90°, 180° and 270° position adjustments
- Standard measurement units available (Custom units applicable only for Foundation Fieldbus)
- Eight display screens with 3 formats are possible
- 128 by 64 dot matrix graphics display
- Large PV, bargraph and trend graph format supported. Echo stem plots with distance-to-product and distance-to-interface, configurable screen rotation timing.

The local SmartLine Level display provides measurement values for the flange location, interface level, and Ullage level. The complete Echo curve is visible through your choice of user interface.

Diagnostics

SmartLine transmitters all offer digitally accessible diagnostics that aid in providing advanced warning of possible failure events minimizing unplanned shutdowns, providing lower overall operational costs.



A new online SmartLine Application and Validation Tool (AVT) addresses one of the most common issues involved in ordering and implementing level transmitters — the proper specification of the correct level transmitter for your application.

The AVT intelligently guides you through the engineering process and electronically captures and documents your choices and inputs. The AVT output also serves as input to the Honeywell order management system, to ensure correct input of the transmitter model, resulting in a transmitter with configuration parameters that exactly match your targeted tank application. Errors are eliminated and the engineering effort is preserved from start to finish.

Try it yourself at <https://levelconfig.honeywellsmartline.com/>

Modular Design

To help contain maintenance and inventory costs, all SLG series transmitters are modular in design, giving you the ability to change electronic modules without affecting overall performance or approval body certifications.

Electronic modules may be swapped without losing in-tolerance performance characteristics. With no performance effects, Honeywell's unique modularity results in lower inventory needs and lower overall operating costs.

Configuration Tools

SmartLine offers the ability to configure the transmitter and display via three externally accessible buttons. Zero or span capabilities are also available via these buttons, no display necessary.

SmartLine transmitters feature two-way communication and configuration capability between the operator and the transmitter via Honeywell's field-rated Multiple Communication Configurator (MCT404).

SmartLine Level uses the standard unified DTM technology to access device parameters through the new Field Service Tool. Novice users are offered a guided experience to set up device parameters, while expert users can easily access the parameters desired through the well organized parameter pages. The Field Service Tool runs on any PC and avoids the need for a handheld configurator.

Honeywell's Field Device Manager (FDM) Software and FDM Express are available for managing HART and FOUNDATION Fieldbus device configurations.

Specifications

Measuring Range: Liquids 164 feet (50 m)

Dielectric Constant: 1.4 minimum

Measuring Principle: Time Domain Reflectometry (TDR)

Measurements Performed: Level, volume, interface

Process Storage Tank Types: Vertical and horizontal cylinders, rectangular tanks, spheres, stilling / bypass wells

Available Probe Types: Rod, wire, coax

Illinois, Indiana, Missouri, and Iowa
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman Instrument Company
www.lesman.com
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

V01.2019

**GUIDED WAVE
RADAR LEVEL**

17 **L**

Display: Basic: 2 lines by 16 characters LCD; Advanced: 128 x 64 pixels LCD; Output Units: Level: ft, in, m, cm, or mm; Volume: ft³, in³, US gal, Imp gal, barrels, yd³, m³, liters; Rate: ft/s, m/s, in/min, m/h, ft/min, in/sec

Output Process Variables: Level, percentage level, distance to level, level rate, volume, vapor thickness, vapor thickness %, vapor volume, distance to interface, interface level, interface level rate, % interface level, upper layer thickness, lower volume, upper volume

Maximum Allowable Working Pressure: 580 PSI

Supply Voltage, Current, and Load Resistance (HART): Voltage at HART terminal is 13.5–42.0 VDC (IS versions limited to 30 VDC) 0–1440Ω

Analog Output: Two-wire, 4–20 mA (HART transmitters only)

Output Failure Modes: Honeywell standard: 3.8–20.8 mA normal limits, ≤3.6 mA and ≥21.0 mA failure mode; NAMUR NE21 compliance: 3.8–20.5 mA normal limits, ≤3.6 mA and ≥21.0 mA failure mode

Span: 15.75" to 164 feet (0.4 to 50 m)

Accuracy: Greater of 0.03% of level or ±0.12"; Repeatability: ±0.04"; Resolution: ±0.04"

Ambient Temperature Effect: Greater of ±0.2 mm/°K or ±30 ppm/°K of measured value

Damping Time Constant HART: Adjustable from 0 to 60 seconds in 0.1 increments; Default Value: 2 seconds

Electromagnetic Compatibility: IEC61326 (All transmitters), NAMUR NE21 (HART and 4–20 mA)

Lightning Protection: Leakage Current: 10 uA max @ 42.0 VDC 93C

Construction: Wetted materials: SS 316L; C-276 (future), PTFE (future); O-Ring seals: Kalrez, Viton, EPDM, Buna-N; Electronic housing: NEMA 4X, IP66, IP67 Pure polyester powder-coated low copper (<0.6%) aluminum; All stainless steel housing optional; Mounting: Zinc-plated carbon steel or 304 SS angle bracket, or carbon steel flat bracket available with 2" pipe bracket. Remote mount housing available

Electrical Connections: 1/2" NPTF, M20 female

Wiring: Accepts up to 16 AWG (1.5 mm diameter)

Probe Sensors: Rod or Coax: 316L SS, C-276 (future), 1.3 to 20.7 feet length; Wire: 316SS, 3.3 to 164 feet length

Centering Disk: Rod and Wire: 316L SS 2" to 8" length

Digital Communications: HART 7 protocol or FOUNDATION Fieldbus ITK 6.0.1 compliant. All transmitters have polarity insensitive connection

Approvals and Certification

International Approvals: ATEX, IECEx, SAEC, InMETRO, NEPSI

CSA: Explosion Proof with intrinsically safe output: Class I, Div 1, Gr A-D; Class I, Zone 0/1; Dust Ignition proof: Class II, Division 1, Gr E-G; T4, Class II Zone 21; Intrinsically safe: Class I, II, III, Div 1, Gr A-G; T4, Class I Zone 0; Nonincendive with intrinsically safe output: Class I, Div 2, Gr A-D; T4, Class I, Zone 0/2; Enclosure: Type 4X/ IP66/ IP67

FM: (With intrinsically safe probe) Explosion proof: XP-IS Class I, Div 1, Gr A-D, T4, Class 1, Zone 0/1; Dust Ignition proof: DIP-IS Class II, Div 1, Gr E-G, T4, Zone 21, Probe: Zone 20; Intrinsically safe: IS Class I, II, III, Div 1, Groups A-G, T4, Class I, Zone 0; Nonincendive: NI-IS Class I, II, III, Div 2, Groups A-G, T4, Class I, Zone 2; Enclosure: Type 4X/ IP66/ IP67

SIL 2/3 Certification: IEC 61508 SIL 2 for non-redundant use and SIL 3 for redundant use according to EXIDA and TUV Nord Sys Tec GmbH & Co. KG per: IEC61508-1: 2010; IEC 61508-2: 2010; IEC61508-3: 2010.

Certifications Available: NACE MRO175, MRO103, ISO15156; Steam Boiler Certification; Pressure Equipment Directive (PED); CE Mark; CRN Registration

Ordering Instructions

Make one selection from each table section below. Follow the availability column down and check any restriction letters or notes to be sure the unit is available. A finished catalog number looks like this:

SLG720-_____M_____ - _____ - _____ -A- _____, _____ - 00000

Model Selection Guide

| Description | | Catalog Number | Price |
|-------------------------------------|---|----------------|-----------|
| Guided Wave Radar Level Transmitter | | SLG720 | \$2145.00 |
| Probe | Rod, 8mm Dia., 2000 mm Segments | SRA _____ | 51.00 |
| | Rod, 12mm Dia., 2000 mm Segments | SRB _____ | 51.00 |
| | Rod, 8mm Dia., 500 mm Segments | SRH _____ | 90.00 |
| | Rod, 8mm Dia., 1000 mm Segments | SRJ _____ | 82.00 |
| | Rod, 12mm Dia., 500 mm Segments | SRM _____ | 98.00 |
| | Rod, 12mm Dia., 1000 mm Segments | SRN _____ | 86.00 |
| | Wire, Single 4mm Dia. | SWA _____ | 27.00 |
| | Wire, Single 4mm Dia., Max 300 mm Nozzle | SWB _____ | 112.00 |
| Probe End | None | ___ N ___ | 0.00 |
| | Weighted | ___ W ___ | 43.00 |
| Disk | None | ___ 00 ___ | 0.00 |
| | 2" 316L SS Centering Disk | ___ S2 ___ | 51.00 |
| | 3" 316L SS Centering Disk | ___ S3 ___ | 59.00 |
| | 4" 316L SS Centering Disk | ___ S4 ___ | 66.00 |
| | 6" 316L SS Centering Disk | ___ S6 ___ | 74.00 |
| | 8" 316L SS Centering Disk | ___ S8 ___ | 82.00 |
| Seal Material | Viton/Fluorocarbon Elastomer (-30° to 150°C) | ___ V ___ | 66.00 |
| | Kalrez 6375 (-20° to 200°C) | ___ K ___ | 207.00 |
| | EPDM (-40° to 120°C) | ___ E ___ | 74.00 |
| | Buna-N (-30° to 120°C) | ___ B ___ | 74.00 |
| Probe Length | Metric Units, Length in 100mm Increments Enter Length from 400 to 50000 mm | M _____ | 0.00 |
| Flange | ANSI B16.5, 316L SS, 1.5" Class 150# RF | AS1A- | 273.00 |
| | ANSI B16.5, 316L SS, 2" Class 150# RF | AS2A- | 273.00 |
| | ANSI B16.5, 316L SS, 3" Class 150# RF | AS3A- | 398.00 |
| | ANSI B16.5, 316L SS, 4" Class 150# RF | AS4A- | 468.00 |
| | ANSI B16.5, 316L SS, 6" Class 150# RF | AS6A- | 663.00 |
| | ANSI B16.5, 316L SS, 8" Class 150# RF | AS8A- | 987.00 |
| Approvals | None Required | 0 | 0.00 |
| | CSA Approved | B | 20.00 |
| Transmitter Housing | Aluminum, 1/2" NPT Connection | A __ | 0.00 |
| | Aluminum, 1/2" NPT Conn., Lightning Protection | C __ | 59.00 |
| | 316 SS, 1/2" NPT Connection | E __ | 470.00 |
| | 316 SS, 1/2" NPT Conn., Lightning Protection | G __ | 528.00 |
| Output | 4-20 mA and HART Communications | ___ H ___ | 70.00 |
| | Foundation Fieldbus Communications | ___ F ___ | 402.00 |
| Indicator and Interface | No Indicator or Buttons | ___ 0- ___ | 0.00 |
| | No Indicator, External Zero/Span Buttons | ___ A- ___ | 46.00 |
| | Advanced Indicator | ___ D- ___ | 157.00 |
| | Advanced Indicator, External Config Buttons | ___ E- ___ | 219.00 |
| Measure-ment Type | Standard Level | 100 __ | 0.00 |
| | Interface Level | 110 __ | 421.00 |
| | Flooded Interface Level | 120 __ | 421.00 |
| Output Limits | Honeywell Std, Fail High >21.0 mA | ___ 1S-A | 0.00 |
| | Honeywell Std, Fail Low <3.6 mA | ___ 2S-A | 19.00 |
| | Write Protect, Honeywell Std, Fail High >21.0 mA | ___ 3S-A | 19.00 |
| | Write Protect, Honeywell Std, Fail Low <3.6 mA | ___ 4S-A | 19.00 |
| | Write Protect, Fieldbus or Profibus Limits | ___ 5S-A | 19.00 |
| Tagging | None | ___ 0 ___ | 0.00 |
| | One Wired SS Tag (4 lines x 26 char/line) | ___ 1 ___ | 20.00 |
| Conduit Plugs/Adapters | None | ___ A0 | 0.00 |
| | 1/2" NPTM to 3/4" NPTF 316 SS Conduit Adapter | ___ A2 | 165.00 |
| | 1/2" NPT 316 SS Certified Conduit Plug | ___ A6 | 52.00 |
| Certificates | Calibration Test & Cert of Conformance (F3399) | F1 | 29.00 |
| | Certificate of Origin (F0195) | F5 | 20.00 |
| | FMEDA (SIL 2/3) Certification (FC33337) | FE | 20.00 |

SITRANS LG200 Guided Wave Radar

SIEMENS

Features

- Measures level, interface, or both
- Versatile, reliable, accurate measurement to 0.12" — even with aggressive vapors, high temperatures and pressure, dust, steam, or material buildup
- Standard 4-20 mA output and HART® communication on all models
- Intrinsically safe, explosion-proof, and non-incendive approvals
- Unaffected by change in density and dielectric properties — Accurately measures materials with a dielectric range of 1.4 and higher. Can even measure light hydrocarbons
- No on-site setup required — unit comes pre-configured for your application
- LG240 hygienic rod and cable models for food, pharmaceutical, or corrosive liquids
- LG250 rod, cable, and coaxial models for liquid level and interface in storage, processing, and raw materials plus difficult ammonia applications
- LG260 solids rod and cable model for measuring level in mid-range applications, including grains, plastics, cement, or other powders or granules
- LG270 rod, cable, and coaxial model for extreme temperature or pressure applications, chemical HPI and energy industries, LPG gas tanks, steam boilers, and distillation columns



Ready to order a guided wave radar level system? Get Siemens' LG200 application datasheet from www.Lesman.com/datasheets/ and send it to Lesman for engineering review.

Tight spaces and harsh conditions are no match for Siemens level solutions

Near the end of the production process in a US paper mill, a pulp dryer uses steam to dry cellulose pulp into a sheet. Steam condenses in the dryer, giving up latent heat and converts to condensate. The condensate is pulled from the dryer drums into a tank and returned to the boiler.

Treating and purifying boiler feedwater is expensive, so every drop of condensate that can be returned to the boiler for reuse saves having to treat additional water. This process requires effective controls to collect the condensate and return it to the boiler.

In the paper mill, condensate tanks are in cramped quarters, with site glasses mounted to the side of the tanks. Because of the dangers of working around hot water and steam, when a site glass breaks or leaks, it's hard to repair. The plant also used differential pressure cells mounted behind the tank to measure tank levels. For repairs, the tank had to be shut off, losing any condensate. Broken valves also made it tough to isolate the transmitters from the tanks. Because of the hot steam hazard, routine calibration was skipped.

Siemens recommended using the SITRANS LG Guided Wave Radar transmitter, mounted in a magnetic level gauge, to measure level in their condensate tanks. The level gauge has a closed chamber bolted to the side of the tank, and a displacer/float indicates the level of the condensate. In the second chamber, the LG reads the condensate level. The transmitter then sends a 4-20 mA signal back to the Siemens DCS system to control the condensate pump.

The SITRANS LG solved several problems at once. The magnetic level gauge eliminated the dangers of broken glass and exposing workers to steam and hot water. The transmitter was installed at the front of the tank, so it's easier to access and can be checked via HART. Plus, the combination of the magnetic level gauge and the guided wave radar provides redundant level measurement, for accurate readings.



16 Different Probes Make LG200 Fit Almost Any Level Application

| Coaxial probes | | Single rod probes | | Twin rod probes | |
|---------------------------------|--|---------------------------------|--|---|---|
| Probe Type | Application | Probe Type | Application | Probe Type | Application |
| General purpose | Liquids with dielectric as low as 1.4 | Rigid | Liquids and slurries with a dielectric ≥ 1.9 (>10 if away from tank wall) | Standard twin rod | For applications where buildup is possible. Dielectric ≥ 1.9 |
| High pressure | 5000 psig | Flexible for liquids | Applications with severe coating and buildup, ranges up to 75 ft | Extended twin rod | Dirty, viscous or low-dielectric media |
| High pressure, high temperature | 750° F at 2000 psig | Non-stick | High viscosity liquids | Flexible twin rod | Bulk solids |
| Steam | Saturated steam environments | Sanitary (3A approved) | Food and beverages, pharmaceutical, semiconductors | Dielectric constants table available at www.lesman.com/train/ | |
| Interface | Measures both upper liquid level and interface level | Corrosion | Aggressive media | | |
| Overfill | Measures 100% full point of a tank | High pressure, high temperature | Viscous materials | | |
| | | Flexible for solids | Bulk solids ranges up to 75 ft | | |

SITRANS LG200 is compatible with Windows-based SIMATIC PDM software for configuration and management.

Call Lesman for software and communication accessories.

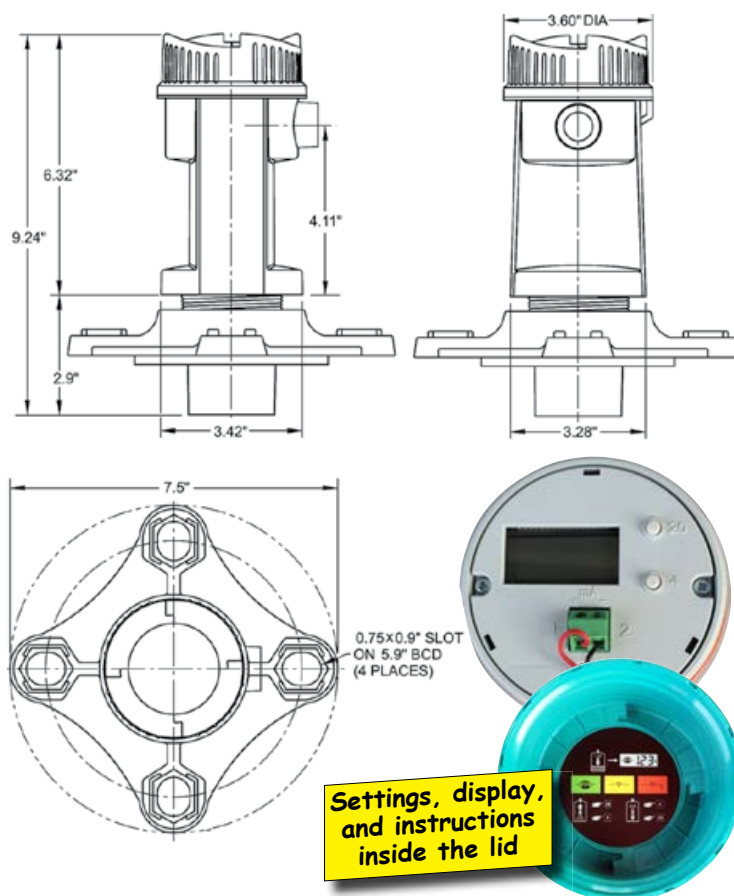
SITRANS LU150 Ultrasonic Continuous Level Transmitter



SIEMENS

Features

- Reliable level readings from 0.8 to 16 feet
- For liquids and slurries in open or closed vessels
- 4-20 mA output
- Non-contacting
- One-piece design
- Built-in temperature compensation
- Uses Siemens patented Sonic Intelligence to discriminate between true and false echoes
- Easy to install, program, and maintain
- 2" NPT, BSP, G, and 4" Tri-Clamp connections
- Replaces "The Probe"



Siemens' new SITRANS LU150 is a short-range, non-contacting ultrasonic level measurement transmitter that combines the sensor and electronics into a one-piece, sealed unit. It has a rugged, fully encapsulated IP68-rated PVDF sensor that is resistant to corrosion, chemicals, and extreme shock.

Designed primarily for environmental, water/wastewater, and energy management applications, the LU150 is ideal for continuous level measurement of liquids and slurries in open or closed vessels.

With only two wires, installation is straightforward, and the unit's two-button interface makes it both simple to configure and easy to use.

The LU150 includes Siemens Sonic Intelligence echo processing algorithms, which use a filter to differentiate the true material level echoes from the false ones that can result from acoustic or electrical noises, as well as from agitator blades in motion. The ultrasonic pulse propagation time to the material and back is temperature-compensated and converted into distance for display, analog output.

Specifications

Measuring Principle: 54 kHz non-contacting ultrasonic level

Range: 0.8 to 16.4 feet (0.25 to 5 meters)

Beam Angle: 12°

Accuracy: Measurement error 0.25 % range (in air); 0.125" resolution (3 mm); Built-in temperature compensation

Output: 4-20 mA. Max. load 600Ω in the loop at 24 VDC

Power Supply: 12-30 VDC, 0.1 A surge; Max. power consumption 0.75 W (25 mA at 24 VDC)

Echo Processing: Siemens patented Sonic Intelligence

Ambient Temperature: -22° to 140°F; *Metallic mounting:* -4° to 140°F

Materials: IP68/NEMA 6/Type 6 PBT electronic enclosure, PVDF copolymer transducer

Process Connection: 2" NPT, 2" BSP, 2" G, and 4" Tri-clamp;
Cable entry connections: M20x1.5 or 1/2" NPT

Approvals: CE, cCSAus



**This SITRANS LU150 is in stock,
ready to ship to you within 24 hours!**

7ML5201-0ECO\$715.00

Ordering Instructions

Make one selection from each table section below. A complete catalog number looks like this: 7ML5201 - _ _ _ _ _

Model Selection Guide

Please submit orders to: Siemens Industry Inc,
c/o Lesman Instrument Company.

| Description | | Catalog Number | Price |
|--|--------------------------------|----------------|----------|
| SITRANS LU150 4-20 mA Output Level Transmitter | | 7ML5201- | \$698.00 |
| SITRANS LU180 Explosion-Proof Transmitter | | 7ML5202- | 1048.00 |
| Process Connection | 2" NPT | OE _ _ | 0.00 |
| | R 2" BSPT | OF _ _ | 0.00 |
| | G 2" BSPP | OG _ _ | 0.00 |
| | 4" Sanitary mount | OJ _ _ | 76.00 |
| | | | |
| Cable Inlet | 1/2" NPT Stainless Steel Entry | _ _ C0 | 17.00 |
| Accessories | | | |
| Printed English User Manual | | A5E34590123 | 24.00 |
| Sanitary 4" Mounting Clamp | | 7ML1830-1BR | 74.00 |
| Stainless Steel Tag | | 7ML1930-1AC | 53.00 |
| Universal Box Bracket Mounting Kit | | 7ML1830-1BK | 148.00 |
| Universal Mounting Adapter for 3" Flange, 2" NPT | | 7ML1830-1BT | 145.00 |



SITRANS Probe LU for Ultrasonic Level Measurement

Features

- Continuous level measurement up to 40 feet (12 meters)
- Easy installation and simple startup — set two parameters and go!
- Patented Sonic Intelligence signal processing
- Auto False-Echo Suppression for fixed obstruction avoidance
- Short blanking distance, even on long range applications
- Programming using Siemens' infrared intrinsically safe handheld programmer, HART® communicator, or Siemens SIMATIC PDM software and a laptop PC
- ETFE or PVDF transducers for chemical compatibility
- Built-in alphanumeric display — visible through the transparent lid

SITRANS Probe LU is a two-wire, loop-powered ultrasonic transmitter for level, volume, and flow monitoring of liquids in storage tanks and simple process vessels, as well as in open channels. The Probe LU is ideal for level monitoring in the water/wastewater industry and for overseeing chemical storage vessels.

Siemens took the time-tested Milltronics Probe and applied new revolutionary features — including the latest microprocessor and communication technologies. The low noise transmitter and noise shield result in an excellent signal-to-noise ratio, providing higher accuracy and reliability.

You can choose a SITRANS Probe LU with either an ETFE or a PVDF transducer to suit the chemical conditions of your application. Both have built-in temperature sensors, to compensate for the varying process temperatures in your application.

Using the handheld infrared programmer, you can set up the unit or change configurations without ever opening the lid — even in hazardous areas.

SIEMENS



Specifications

Measuring Range: 10" to 20' (6m) or 10" to 40' (12m); **Blanking distance:** 10" (0.25m); **Beam Angle:** 10° at -3 dB boundary

Accuracy: Greater of $\pm 0.15\%$ range or $\pm 0.25"$; **Repeatability:** ≤ 3 mm (0.12"); **Resolution:** ≤ 3 mm (0.12")

Frequency: 54 KHz (ultrasonic)

Update Time: <5 seconds

Output: 4-20 mA; **Accuracy:** ± 0.02 mA

Temperature: **Ambient:** -40 to 176° F (-40 to 80° C); **Process temperature at flange or threads:** -40 to 185° F (-40 to 85° C)

Temperature Compensation: Built in to compensate over full range

Power: Nominal 24 VDC, max. 550 Ω ; 30 VDC max.; 4 to 20 mA

Enclosure: PBT polymer, hard-coated polyether imide lid; Type 4X/NEMA 4X, Type 6/IP68 protection

Sensor: ETFE (Tefzel) or PVDF (Kynar®)

Process Connection: Threaded: 2" NPT, BSP, or G/PF; Flange: 3" universal

Cable Inlets: Two 1/2" NPT threads

Design: Rotating head aligns with conduit, adjusts for optimal visibility

Local Display: Alphanumeric display, visible through the transparent lid

Communication: HART® standard, integral to analog output; Configuration using Siemens SIMATIC PDM (PC) or HART handheld communicator, or Siemens infrared hand programmer

Approvals: ATEX Ex II 1 G, EEx ia IIC T4, SIRA certificate 01ATEX2147; ATEX hazardous area II 1G EEx ia IIC T4; FM Class 1, Div. 1, Groups A-D (barrier required); Class II, Div. 1, Groups E-G; Class III; CSA Class I, Div. 1, Groups A-D (barrier required); Class II, Div. 1, Group G; Class III

Ordering Instructions

Make one selection from each table section below. A complete catalog number looks like this: 7ML5221 - ____

Model Selection Guide

Please submit orders to: Siemens Industry Inc,
c/o Lesman Instrument Company.

| Description | | Catalog Number | Price |
|--|--------------------------------------|--------------------|-----------|
| SITRANS Probe LU: Ultrasonic Level Transmitter | | 7ML5221 - | \$1109.00 |
| Range | 20 Ft (6 M) ETFE | 2A ____ | 95.00 |
| | 20 Ft (6 M) PVDF Copolymer | 2B ____ | 22.00 |
| | 40 Ft (12 M) ETFE | 2C ____ | 311.00 |
| | 40 Ft (12 M) PVDF Copolymer | 2D ____ | 228.00 |
| Communication | HART® and 4-20 mA Output | __ A1 __ | 0.00 |
| | Profibus PA | __ A2 __ | 207.00 |
| Approvals | General Purpose FM, CSA, CE | ____ 1 | 0.00 |
| | FM Class I, Div 2 | ____ 4 | 0.00 |
| | Intrinsically Safe (HART) FM/CSA | ____ 8 | 283.00 |
| | Intrinsically Safe (Profibus) FM/CSA | ____ 5 | 213.00 |
| Accessories | | | |
| Intrinsically Safe Handheld Programmer | | 7ML5830-2AH | 170.00 |
| Universal Mounting Adapter for 3" Flange, 2" NPT | | 7ML1830-1BT | 145.00 |
| SITRANS Probe LU Instruction Manual | | A5E32337695 | 50.00 |
| USB HART® Modem for PC and SIMATIC PDM | | 7MF4997-1DB | 706.00 |
| SIMATIC PDM v9.1 Software Utility for Configuring, Commissioning, and Diagnostics; (Profibus, HART®, 4 Tags) | | 6ES7658-3AB68-0YA5 | 805.00 |

Note: It is considered good engineering practice to provide redundant disparate level technologies for overflow protection of storage tanks (per API 2350 standard). Call Lesman for point level solutions to complement your continuous level transmitter choice.

No power? No problem!



Power your SITRANS LR560 radar level transmitter from an intrinsically safe wireless radio's battery on a scheduled, periodic, intermittent basis for true wireless performance. With it, you can sample 3x per hour with a 3 month battery life.

D5 Performance Node Radio20178\$1549.00

SITRANS LUT400 Ultrasonic Controller



- SITRANS LUT400's $\pm 0.04''$ accuracy gives you confidence in your measurements
- Improved Sonic Intelligence for better performance in noisy environments
- Enhanced diagnostics — echo profile and trend view on the display
- Graphical Quick-Start Wizards guide you through setup
- Local user interface with four-button programming, menu-driven parameters, and Wizard support for key applications
- Integrated datalogger — record historic performance and alarm events
- Universal 4-20 mA analog output with sourcing/sinking reduces ground loops!
- Energy-saving algorithms and real time clock help you reduce pump operation costs by avoiding peak energy periods
- Communications convenience — HART® communications with access via the local user interface, SIMATIC PDM, Emerson handhelds, and web-browser
- Case design includes wall, pipe, and DIN rail mounting configurations with removable terminal strips for hassle-free wiring

Comparing Features of SITRANS LUT400 Models

- LUT420 level controller: Level or volume measurement of liquids, slurries, and solids, as well as basic pump control and basic data logging capability.
- LUT430 level, volume, pump, and flow controller: Includes all features of the LUT420 plus advanced pump control and alarm functionality, open channel flow monitoring, and basic flow data logging capability.
- LUT440 High Accuracy OCM: Siemens' fully featured, highest accuracy model. Includes all features of the LUT430, plus the industry's best accuracy ($\pm 0.04''$), advanced control functionality, and enhanced flow logging capability.



Replacing an old
MiniRanger Plus?
Try the SITRANS
LUT420.



| Category | Feature | LUT420 Level controller | LUT430 Level, pump and flow controller | LUT440 Open channel flow controller |
|-----------------------------------|---|----------------------------|--|---|
| Operations | Level, space, and distance measurement | ✓ | ✓ | ✓ |
| | Volume conversion | ✓ | ✓ | ✓ |
| | Open channel flow measurement | | ✓ | ✓ |
| Specifications | Compatible with EchoMax and ST-H transducers | ✓ | ✓ | ✓ |
| | Standard accuracy: $\pm 1 \text{ mm} + 0.17 \%$ of measured distance | ✓ | ✓ | ✓ |
| | Mounting options: wall or panel, pipe, DIN-rail | ✓ | ✓ | ✓ |
| Datalogging and communications | HART communications | ✓ | ✓ | ✓ |
| | 4–20 mA output (active and passive) | ✓ | ✓ | ✓ |
| | Integrated datalogger for measurement value and alarms | ✓ | ✓ | ✓ |
| | Integrated datalogger for fixed rate flow logging | | ✓ | ✓ |
| | Integrated datalogger for variable rate flow logging | | | ✓ |
| | Daily logging for min/max/avg flow, totalized volume, and min/max temperature | | | ✓ |
| Flow monitoring | 9 digit daily and running flow totalizers | | ✓ | ✓ |
| | High and low flowrate alarms | | ✓ | ✓ |
| | External totalizer and sampler control | | ✓ | ✓ |
| | High accuracy open channel flow measurement | | | ✓ |
| Pump control | Wall cling reduction | ✓ | ✓ | ✓ |
| | Alternate duty pump routines | ✓ | ✓ | ✓ |
| | Submergence detection | ✓ | ✓ | ✓ |
| | Energy saving algorithms for pump control | | ✓ | ✓ |
| | Pump run-on functionality | | ✓ | ✓ |
| | Pump start and power resumption delays | | ✓ | ✓ |
| | Fixed duty and service ratio pump routines | | ✓ | ✓ |
| | Discrete input pump interlocks | | ✓ | ✓ |
| | Pumped volume totalizer | | ✓ | ✓ |
| | Time to spill calculation | | ✓ | ✓ |



Dan Weise,
Product Specialist

A "So What" review of Siemens SITRANS LUT400 Controller

Part of my job as technical specialist at Lesman is to make sense of new products, and figure out what's going to matter most to our customers.

Sometimes it's much-needed new functionality, or better configuration tools, easier mounting, or switching to the most current form of data storage. In the case of Siemens' LUT400, it's all that and more.

Siemens Milltronics ultrasonic transceivers, like the HydroRanger, MultiRanger, and OCM-III have been around for years with no notable improvements. Instead of updating these devices, Siemens has done a complete redesign with the SITRANS LUT400.

Here are my initial thoughts on this new player in the ultrasonic game.

The pros:

- Three models: One for level, one for pump control, and one for open channel flow monitoring (replacing the retired Milltronics OCM-III).
- No more handheld programmer or 1970s-era "Pxxx" parameters to decode during configuration and programming updates. There are Quick-Start Wizards for configuration, and English-named settings. Not a P-code in sight! There's also HART® communications for configuration and monitoring through SIMATIC PDM.
- New LCD display gives you more information. Includes not just numeric values, but an echo profile and trend view on the screen, so it's better for all the visual folks.
- USB connection and a built-in web server for setup, maintenance, diagnostics, communication, and security.

- Universal 4-20 mA analog output helps reduce ground loop issues.
- Completely redesigned case! It's a 1/2 DIN, out-of-the-box ready for DIN-rail, wall-, and pipe-mounting. Conduit knockouts are built in, so you don't have to drill the case, and snap-off/snap-on terminal wiring connectors mean you can wire the unit without contortions! They even included quarter-turn door screws for easy access. If you want to panel-mount the LUT400, you can. There's a remote display that connects via cable to the electronics box.
- Improved signal-to-noise and echo processing algorithms (Siemens calls it Sonic Intelligence) for accuracy and performance. Still compatible with the current Echomax ultrasonic transducers, so if you're upgrading, you only upgrade the transceiver/controller. You can use your existing sensors.

The cons (temporarily...):

- It's a single channel device, so it can only handle one transducer. You can't do differential level with this unit. But, it is the first one Siemens has released. I'm confident the multi-channel units will follow.
- Other than HART, no digital communication. The LUT400 doesn't do Modbus, Profibus, or Remote I/O. Again, this will be coming, in time.
- It only has three relays, so if you need more for pump control, you'll need to use a different device.

If your application requires any of these features, check out Siemens HydroRanger HMI or MultiRanger HMI, (pages 24 and 25). They'll be your best solutions for these requirements.

Read more of Dan's tips at blog.lesman.com.

A complete LUT400 system includes:

1. LUT400 series controller
2. Echomax transducer (page 28-29)
3. TS3 temperature sensor (optional for added accuracy)
4. Point level solution for storage tank overflow protection (recommended good engineering practice per API 2350 standard).

Specifications

Range: 1 to 200 ft, depending on transducer

Accuracy: ±1 mm (0.04") plus 0.17% distance

Resolution: Greater of 0.1% measured range or 0.08"

Temperature: Ambient: -4° to 122° F; Process: -40° to 302° F

Communications: HART®, USB

Interface: Back-lit LCD; Removable display, operational up to 16 ft from enclosure base

Programming: Four local push buttons, SIMATIC PDM Emerson AMSTM, web browser (IE), Field Device Tool (DT), Field Communicator 375/475 (FC375/FC475)

Output: One Form C SPDT relay, two Form A SPST relays; One 4-20 mA output (active or passive)

Input: Two discrete inputs (0-50 VDC max switching level) with 24 VDC bias for contact level device and/or pump interlock; One TS3 temperature sensor input optional

Enclosure: Wall/Pipe/DIN Rail mount; 1/2 DIN; Type 4X/ NEMA 4X/IP65, panel mount display IP 54 (Type 3/NEMA 3/ IP54); Polycarbonate.

Approvals: General purpose: CE, CSAUS/C, FM, UL Listed, C-TICK; Hazardous location: CSA Class I, II, III, Div 2 (Groups A-G), CE, ATEX 3D, IECEx, C-TICK

Ordering Instructions

Select one option from each table section below. A complete catalog number looks like this: 7ML5050-_____-_____-Z

Model Selection Guides

Please submit orders to: Siemens Industry Inc,
c/o Lesman Instrument Company.

| Description | | Catalog Number | Price |
|---|--|----------------|------------|
| SITRANS LUT400 Single Channel Ultrasonic Controller | | 7ML5050- | \$ 1023.00 |
| Model | SITRANS LUT420 Level controller | 0A ____ | 0.00 |
| | SITRANS LUT430 Level, pump, flow controller | 0B ____ | 460.00 |
| Enclosure Display Options | With display | __ A __ | 149.00 |
| | With remote panel mount display | __ B __ | 336.00 |
| | No display (blank lid provided) | __ C __ | 0.00 |
| Input Voltage | 100 to 230 VAC ± 15% | __ 1 __ | 0.00 |
| | 10 to 32 VDC | __ 2 __ | 0.00 |
| Cable Inlet | 3 cable inlets, cable glands not supplied | __ 1 - | 0.00 |
| Approvals | General purpose CE, FM, CSA US/C, UL, C-TICK | 1DA0 | 0.00 |
| | CSA Class I, II, III, Div 2 Groups A-G | 1DC0 | 73.00 |
| Optional Addrs | Manufacturer's test certificate | -Z-C11 | 31.00 |
| | Stainless steel tag: Max. 27 characters plain text | -Z-Y15 | 47.00 |
| | Preset Namur NE43 Failsafe setting <3.6mA | -Z-NO7 | 48.00 |
| Manual | Printed English User Manual | A5E33329501 | 77.00 |
| Accessories | Stainless steel tag, 0.47 x 1.77", one text line | 7ML1930-1AC | 53.00 |
| | Panel Mount Cable Extension 2.5 m (8.2 ft) | 7ML1930-1GF | 64.00 |
| | 3-Pack Cable Glands and Retaining Nuts | 7ML1930-1GB | 22.00 |
| | HART Modem, USB | 7MF4997-1DB | 706.00 |
| | LUT400 Sunshield, 304 Stainless Steel | 7ML1930-1GE | 263.00 |

Need even better accuracy? Add a TS-3 temperature sensor. Call for pricing.

MultiRanger HMI Ultrasonic Level Transceiver System



Features

- Single or dual point level monitoring
- Level, volume, open channel flow measurement, differential control, extended pump control, and alarms
- HMI display with four-button programming, menu-driven parameters, and graphical Wizard support
- Digital input for back-up level override from point level device
- Auto False-Echo Suppression algorithms for fixed obstruction avoidance
- Differential amplifier transceiver for common mode noise reduction and improved signal-to-noise ratio
- Communication using built-in Modbus RTU via RS 485
- Removable terminal blocks for easy wiring

Siemens' new MultiRanger 200 HMI is a versatile short- to medium-range ultrasonic single and multi-vessel level monitor/controller. It can be used with water, municipal waste, acids, woodchips, or on materials with high angles of repose.

MultiRanger 200 HMI will monitor open channel flow and features advanced relay alarming and pump control functions and volume conversion.

MultiRanger 200 HMI features Sonic Intelligence advanced echo-processing software for increased reading reliability. It offers true dual-point monitoring, digital communications with built-in Modbus RTU via RS 485, plus compatibility with SIMATIC PDM for PC configuration and setup.



A complete continuous level measurement system includes:

1. Ultrasonic transceiver
2. Transducer (compatible with ST-H, XRS-5, XPS-10, XPS-15/15F)
3. Additional cable lengths, as necessary
4. Handheld programmer/calibrator
5. Optional flanges, aiming kits, software, and communications, as needed
6. Point level solution for storage tank overfill protection (recommend good engineering practice per API 2350 standard)



Specifications

Measuring Range: 1 to 50 feet (0.3 to 15 m) depending on transducer

Measuring Points: 1 or 2

Accuracy: Greater of 0.25% range or 0.24" (6 mm)

Resolution: Greater of 0.1% range or 0.08" (2 mm)

Temperature Compensation: -58° to 302° F; Integral temperature sensor or External TS-3 temperature sensor; Programmable fixed temperature values

Input: Analog: 0/4-20 mA, from alternate device, scalable; Discrete: 10-50 VDC switching level; Logical 0 ≤ 0.5 VDC, Logical 1 = 10 to 50 VDC Max. 3 mA

Compatible Transducers: ST-H and EchoMax series XPS-10, XPS-15/15F, and XRS-5

Output: Relays: Rating 5A @ 250 VAC, non-inductive; Analog: 0/4-20 mA, 750Ω, isolated, 0.1% of range

Display: 2.36" x 1.57" LCD, 240 x 160 pixels resolution

Communication: RS 232 with Modbus RTU or ASCII via RJ-11 connector; RS 485 with Modbus RTU or ASCII via terminal strips; Optional: SmartLinx cards for PROFIBUS DPV1, DeviceNet

Power: AC version: 100 to 230 VAC ±15%, 50/60 Hz, 36 VA (17 W); DC version: 12 to 30 VDC (20 W)

Electrical Connection: Transducer and mA output signal: 2-core copper conductor, twisted, shielded, 22 to 18 AWG, Belden 8760 or equivalent is acceptable; Separation between transducer and transceiver: 365 m (1 200 ft) max

Enclosure: Wall mount: IP65/Type 4X/NEMA 4X; Panel mount: IP54/Type 3/NEMA 3

Certificates and Approvals: CE, RCM2, FM, CSAUS/C, UL, CSA Class I, Div. 2, Groups A-D, Class II, Div. 2, Groups F and G, Class III (wall mount only)



Ordering Instructions

Make one selection from each table below. A complete catalog number looks like this: 7ML5033 - _ _ _ _ - _ _

Model Selection Guide

Please submit orders to: Siemens Industry Inc, c/o Lesman Instrument Company.

| Description | | Catalog Number | Price |
|---|--|----------------|-----------|
| MultiRanger HMI Ultrasonic Level Controller | | 7ML5033 - | \$1124.00 |
| Model | MultiRanger 100: Level Only | 1 _ _ _ _ - | 115.00 |
| | MultiRanger 200: Level, Volume, and Flow | 2 _ _ _ _ - | 501.00 |
| Mounting | 4-Button HMI, Wall Mt, Standard Enclosure | _ D _ _ _ - | 0.00 |
| | 4-Button HMI, Panel Mount | _ F _ _ _ - | 75.00 |
| Input Voltage | 100 to 230 VAC | _ _ A _ _ - | 0.00 |
| | 12 to 30 VDC | _ _ B _ _ - | 0.00 |
| Software | Single Point System | _ _ _ 0 _ - | 0.00 |
| | Dual Point System | _ _ _ 1 _ - | 285.00 |
| Communications | SmartLinx Ready (No Module) | _ _ _ _ 0 - | 0.00 |
| | SmartLinx DeviceNet Module | _ _ _ _ 3 - | 781.00 |
| | SmartLinx Profibus-DP V1 Module | _ _ _ _ 4 - | 781.00 |
| Output Relays | 3 Relays: 2 Form A, 1 Form C (250 VAC) | 1 _ | 23.00 |
| | 6 Relays: 4 Form A, 2 Form C (250 VAC) | 2 _ | 163.00 |
| | 1 Relay: Form A, 250 VAC (MultiRanger 100) | 3 _ | 0.00 |
| Approvals | General Purpose CE, CSA, FM, UL Listed | _ A | 0.00 |
| | CSA Class I, Div 2; Class II, Div 2; Class III | _ B | 77.00 |
| Accessories | English Instruction Manual | 7ML1998-5FB06 | 77.00 |
| | Handheld Programmer for MultiRanger | A5E36563512 | 71.00 |

Need help finding the right level system for your process?

Visit www.Lesman.com/datasheets/ for the Siemens ultrasonic level datasheet. Complete the form and fax it to Lesman. We'll have an engineer review your process and specify the best instrument to meet your needs.

Illinois, Indiana, Missouri, and Iowa
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman Instrument Company
www.lesman.com
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

V 01.2019

**WASTEWATER
MONITORING** **25** **L**

HydroRanger 200 HMI Water Monitoring and Control System

SIEMENS



Features

- Single or dual point level monitoring
- Local programming, menu-driven parameters, and Quick-Start Wizard support — set up in less than a minute
- Sonic Intelligence echo processing and Auto False-Echo Suppression to avoid fixed obstructions
- Modbus RTU and Profibus DPV1 digital communications
- Redesigned enclosure with a protected wiring compartment, removable terminal blocks, and an updated face
- Submergence shield option senses flooding or overflow conditions

For nearly thirty years, Siemens' HydroRanger 200 has been the industry standard for level measurement in monitoring and pumping wet wells, weirs, and flumes, inventory management, truckload-outs, and open channel monitoring.

The new HydroRanger 200 HMI is an ultrasonic level controller for up to six pumps and provides control, differential control, and open channel flow monitoring. It offers single-point monitoring with all models or dual-point monitoring with the six-relay model.

HydroRanger 200 HMI uses continuous ultrasonic echo ranging technology to monitor water and wastewater of any consistency up to 50 feet deep. It is immune to problems caused by suspended solids, harsh corrosives, grease or silt in the effluent.

The six-relay HydroRanger 200 HMI will monitor open channel flow and features advanced relay alarming and pump control functions as well as volume conversion. It is compatible with SIMATIC PDM for PC configuration and setup. It also features digital communications with built-in Modbus RTU via RS-485.

A complete ultrasonic continuous level measurement system includes:

1. Transceiver
2. Echomax transducer (compatible with ST-H, XPS-10, XPS-15/15F, and XRS-5)
3. Additional cable lengths, as necessary
4. Handheld programmer/calibrator
5. Optional flanges, as necessary
6. Aiming kits, software, and communications

**See transducers
on pages 28-29.**



Note: It is considered good engineering practice to provide redundant disparate level technologies for overflow protection of storage tanks (per API 2350 standard). Call Lesman for point level solutions to complement your continuous level transmitter choice.

Specifications

Measuring Principle: Ultrasonic level

Range: 1 to 50 feet (0.3 to 15 meters), transducer and material dependent

Measuring Points: 1 or 2

Input: *Analog:* 0-20 mA or 4-20 mA, from alternate device, scalable (six-relay model); *Discrete:* 10-50 VDC switching level; Logical 0 ≤ 0.5 VDC or 1 = 10-50 VDC, 3 mA max.

Transducer: 44 kHz; *Compatible transducers:* ST-H, EchoMax XPS-10, XPS-15/15F, and XRS-5; 1200 ft (365 meters) max. between transducer and transceiver

Relays: Rating 5 A at 250 VAC, non-inductive; *Six-relay model:* 4 SPST Form A, 2 SPDT Form C

Analog Output: 0/4-20 mA, Max. load 750Ω, isolated, *Resolution:* 0.1 % range

Accuracy: Greater of 0.24" (6 mm) or 0.25% of maximum range

Resolution: Greater of 0.1% of measuring range or 0.08" (2 mm)

Temperature Compensation: -58° to 302°F; Integral temperature sensor in transducer or optional TS-3 external sensor; Programmable fixed temperature values

Display: 2.36" x 1.57" LCD, 240x160 pixel resolution

Communication: RS-232 with Modbus RTU or ASCII via RJ-11 connector; RS-485 with Modbus RTU or ASCII via terminal blocks; *Optional:* SmartLinx cards for PROFIBUS DPV1 or DeviceNet

Enclosure: Polycarbonate; Wall mount IP65/Type 4X/NEMA 4X, Panel mount IP54/Type 3/NEMA 3

Cable: Transducer and mA output signal two-core copper conductor, twisted, shielded, 300 VRMS, 18 AWG, Belden 8 760 or equivalent is acceptable

Power Supply: *AC version:* 100-230VAC ± 15%, 50/60 Hz, 36 VA (17 W); *DC version:* 12-30 V DC (20 W)

Approvals: CE, RCM, FM/CSA, UL listed, CSA us/c Class I, Div 1, Groups A-D, Class II, Div 2, Groups F, G, Class III (wall mount only); MCERTS Class 2 approved for Open Channel Flow



Ordering Instructions

Make a selection from each table section below. A complete catalog number looks like this: 7ML5034 - _____. All models ship with one printed user manual.

Model Selection Guide

Please submit orders to: Siemens Industry Inc,
c/o Lesman Instrument Company.

| Description | | Catalog Number | Price |
|--|--|--------------------|-----------|
| HydroRanger 200 HMI Ultrasonic Level Controller with Four-Button Interface | | 7ML5034 - | \$1150.00 |
| Mounting | Wall Mount, Standard Enclosure | 4 ____ | 0.00 |
| | Panel Mount | 6 ____ | 75.00 |
| Input Voltage | 100 to 230 VAC | _ A ____ | 0.00 |
| | 12 to 30 VDC | _ B ____ | 0.00 |
| Feature Software | Single Point System, 6 Relays | __ A __ | 472.00 |
| | Dual Point System, 6 Relays | __ B __ | 758.00 |
| | Single Point System, Level Only, 1 Relay | __ C __ | 115.00 |
| | Single Point System, Level Only, 3 Relays | __ D __ | 137.00 |
| Data Communications | SmartLinx Ready (No Module) | __ 0 __ | 0.00 |
| | SmartLinx Profibus-DP V0 Module | __ 2 __ | 781.00 |
| | SmartLinx DeviceNet Module | __ 3 __ | 781.00 |
| | SmartLinx Profibus DP V1 Module | __ 4 __ | 781.00 |
| Approvals | General Purpose, CE, CSA, FM, UL Listed | __ 1 __ | 0.00 |
| | CSA Class I, Class II, Class III Approvals | __ 2 __ | 75.00 |
| Accessories | Handheld Programmer | A5E36563512 | 71.00 |
| | Printed English Instruction Manual | 7ML1998-5FC03 | 77.00 |
| SIMATIC PDM v9.1 Software Utility for Configuring, Commissioning, and Diagnostics; (Profibus, HART®, 4 Tags) | | 6ES7658-3AB68-0YA5 | 805.00 |

SITRANS LU Long Range Ultrasonic Level Transmitters



Features

- Single point or dual point long range level monitoring in tanks up to 200 feet
- Accuracy to 0.25% target range
- Easy to install and program using infrared keypad
- Backlit LCD displays level, space, distance, or volume; Shows icons for vessel filling/emptying and bargraph for quick view of changing levels
- Automatic level-to-volume conversion for standard or custom tank shapes
- Single 0- or 4-20 mA analog output plus four SPDT alarm control relays
- Compatible with Dolphin Plus programming software and SmartLinx communication interface modules



The SITRANS LU01 system reliably monitors static or dynamically changing level of liquids, slurries, or solids in single-tank processes involving high temperatures, harsh chemicals, caustics, steaming solids, and fine powders.

The SITRANS LU02 adds the flexibility of a multi-frequency capability. One monitor can be used to scan liquids, solids or both, in two bins of differing size, shape, and configuration. The electronics are so powerful it is possible to place the unit up to 1200 feet from its transducers.

The SITRANS LU02 is shipped from the factory pre-calibrated for typical liquid and solid applications without the need for detailed setup. Select a single parameter to switch between liquid and solid materials, enter the bin dimensions and the control unit is up and running.

A complete level transmitter system includes:

1. Transceiver
2. Ultrasonic transducer (see pages 28 and 29)
3. Additional cable lengths
4. Handheld programmer/calibrator
5. Optional flanges, as necessary
6. Aiming kits, software, communications, as needed
7. Point level solution for storage tank overfill protection (recommended good engineering practice per API 2350 standard)

Specifications

Range: From 1 to 200 feet max.

Compatible Transducers: Echomax XPS 10,15, 30, 40; XCT 8, 12; XLS 30, 60; XLT 30, 60; Ultrason STH

Accuracy: 0.25% of target range subject to application.

Resolution: Greater of 0.1% of target range or 0.08".

Display: Graphic 2" x 5" LCD for measurement readings, operating status; **Reading:** Level, space or distance in cm, mm, ft., in., %, or any other units as programmed. Volume in desired units; **Operating Status:** Level bargraph, alarm, data communication, filling/emptying, temperature, rate of change

Temperature: Ambient: -5° to 122° F; Compensation: -58° to 302° F. Error: 0.09% of range with compensation. 0.31% per ° F deviation from programmed temperature.

Single mA Output: 0-20 or 4-20 mA, scalable 0.1% resolution 350Ω max. load (common ground) or 750Ω max. load (floating common) or 600Ω isolated (LIS-1 required).

Relay Outputs: Four alarm/control relays; one form C SPDT contact per relay, rated 5A at 250 VAC, non-inductive.

Enclosure: Type 4X/NEMA 4X/IP65 polycarbonate enclosure. 11.2"W x 8.2"H x 3.6"D.

Cable: Transducer: RG-62U Coaxial for extensions to 1,200 ft. TS-3: Belden 8760 2 wire shielded/twisted, 18 AWG or equivalent, good to 1,200 ft.

Programming: Removable magnetic base programmer communicating through an infrared interface or Dolphin interface.

Programmer: Power: 9V (ANSI/NEDA 1604, PP3 or equivalent); Keypad: 20 keys, tactile feedback; Interface: Noninvasive, infrared.

Approval: CE, CSA (NRTL/C)



Need help finding the right level system for your process?

See www.Lesman.com/datasheets/ for the Siemens ultrasonic level data-sheet. Complete the form and fax it to Lesman. We'll have an engineer review your process and specify the best instrument to meet your needs.

Model Selection Guide

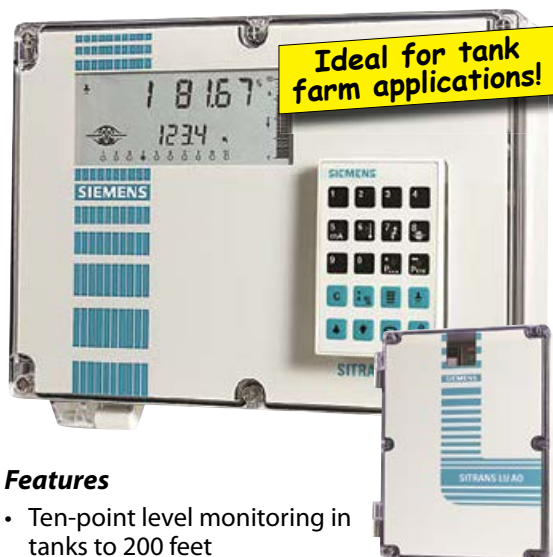
Please submit orders to: Siemens Industry Inc,
c/o Lesman Instrument Company.

| Description | | Catalog Number | Price |
|---|--|----------------|-----------|
| SITRANS LU Long Range Ultrasonic Level Transceivers | | 7ML5004 - | \$2802.00 |
| Version | LU01, Single Point LU02, Dual Point | 1 | 0.00 |
| Input Voltage | AC, V | | 257.00 |
| Enclosure | Star | | 0.00 |
| Accessories | Handheld Programmer | | 71.00 |
| | Dolphin Plus | | 410.00 |
| | Dolphin Plus | | 499.00 |
| | LU01 | | 1850.00 |
| | LU02 | | 1481.00 |
| Additional Manuals | SITRANS LU01 | 7ML1998-5BE02 | 47.00 |
| | SITRANS LU02 | 7ML1998-5BD02 | 47.00 |

Product Lifespan Announcement!
This model has been retired by Siemens and is no longer available for purchase.
Please see the MultiRanger 100/200 HMI and the LUT400 series for suitable replacements.

Need to add SmartLinx communications? Call us!

SIEMENS Multichannel Ultrasonic Level Transmitter



Features

- Ten-point level monitoring in tanks to 200 feet
- Accuracy to 0.25% target range
- Easy to program using infrared keypad
- Program the backlit LCD display for level, space, distance, or volume; Icons for vessel filling/emptying and bargraph for quick viewing of changing levels
- Automatic level-to-volume conversion for standard or custom tank shapes
- On-board analog and relay for programming only. Add AO-10 for additional 0/4-20 mA outputs
- Compatible with Dolphin Plus programming software and SmartLinX interface modules

The SITRANS LU10 controls and measures efficiently in multiple tank applications. It has been field-proven in extremely high temperatures, as well as steamy, dusty, and corrosive environments.

If your processes demand reliable level measurement data in one to 10 vessels of any shape or size, in any liquid or bulk solid, and in any environment, a single SITRANS LU10 has the flexibility to get the job done.

The SITRANS LU10 is shipped from the factory pre-calibrated for typical liquid and solid applications without the need for detailed setup. Select a single parameter to switch between liquid and solid materials, enter the bin dimensions and the control unit is up and running.

You can view program values during setup and operation, so you don't have to shut down the process or switch between display modes to interrogate.



Specifications

Range: 1 to 200 feet, depending on transducer; **Span:** 196 ft max., 2" min.

Channels: Max. 10 active channels per LU10 unit.

Accuracy: Greater of 0.25% range or 0.24"; **Resolution:** Greater of 0.1% range or 0.08".

Temperatures: **Operating:** -5° to 140° F; **Electronics:** -5° to 122° F; **Process:** -40° to 300° F; **Compensation:** Common temp sensor input

Volume Conversion: User-selected units for eight common tank shapes.

Display: 2" x 5" graphic LCD. Two 4-digit 0.7" numeric displays. **AO10/SAM20 Display:** 1 power/comms status LED; 20 relay status LEDs (SAM-20).

Analog Output: Programming only, no on-board output. **AO-10 Output Module:** 10 analog outputs. Isolated 0/4-20 mA into 750Ω max., 0.1% resolution.

Relay Outputs: Programming only, no on-board relays.

Power: 100/115/200/230 VAC ±15%, jumper selective; 50/60Hz, 15VA.

Enclosure: NEMA 4X polycarbonate, stainless steel screws

Cable: 18 AWG shielded twisted pair for extensions to 333 ft. max., use RG-62 A/U coaxial for extensions to 1200 ft.; **Interconnection Cable:** Belden 8760, 1 pair shielded/twisted, 18 GA.

Transducer Drive: 44 kHz, 315V peak pulses of max. 1 mSec duration typical; 22 kHz, 150V peak pulses of max. 1.7 mSec. duration typical; or 13 kHz, 150V peak pulses of max 1.7 mSec. duration typical; **Max. repetition rate:** 200 mSec/transmit.

Data Link: Transmit only; Single ±20 mA bi-polar current loop @ 4800 baud. 10,000 feet max loop. **Loading:** 3 peripheral devices max.

Memory: 10 minutes minimum data retention.



A complete level transmitter system includes:

1. Transceiver
2. Transducer (see pages 28 and 29)
3. Additional cable lengths
4. Handheld programmer/calibrator
5. Optional flanges, as necessary
6. Aiming kits, software, communications,

Note: It is considered good engineering practice to provide redundant disparate level technologies for overflow protection of storage tanks (per API 2350 standard). Call Lesman for point level solutions to complement your continuous level transmitter choice.

Model Selection Guide

Please submit orders to: Siemens Industry Inc,
c/o Lesman Instrument Company.

| Description | | Catalog Number | Price |
|--|---------------------------------------|----------------|-----------|
| SITRANS LU10 Long-Range Ultrasonic Level Transceiver | | 7ML5007 - | \$6207.00 |
| Configuration | AC, Voltage Selector Switch, Standard | | |
| | SmartLinx | | 0.00 |
| Temperature Option | None | | 0.00 |
| | Standard | | 306.00 |
| Enclosure | Standard | | 0.00 |
| Accessories | SITRANS Handheld Programmer | | 1757.00 |
| | TIB-9 T | | 71.00 |
| | Comm | | 367.00 |
| | Comm Display | | 4885.00 |
| | Display | | 2589.00 |
| Instruction Manuals | SITRANS LU10 Instruction Manual | 7ML1998-SAN02 | 64.00 |
| | SITRANS LU AO Instruction Manual | 7ML1998-SCE01 | 23.00 |

Product Lifespan Announcement!
This model has been retired by Siemens and is no longer available for purchase.

Please see the MultiRanger 100/200 HMI and the LUT400 series for suitable replacements.

Need to add SmartLinX communications? Call us!

Echomax Ultrasonic Level Transducers

 Please submit orders to: Siemens Industry Inc,
 c/o Lesman Instrument Company


Features

- Two-way dynamic impedance matching provides high output and sensitive echo capture
- Unique unidriver construction gives highest temperature operation available in any ultrasonic system: 300° F (150° C)
- Uniformity as close as one foot, so you can depend on short-range reliability
- Reliable in liquids and solids from 1 to 200 feet
- No moving parts to cause downtime
- Simple, economical installation
- Mounting location is more flexible, so obstacles can be avoided
- Chemically resistant
- Hermetically sealed models immune to dust, steam, turbulence, corrosives
- Aiming is less critical
- 1" NPT conduit connection with NEMA 4 ingress protection (except XRS-5, which has IP68 rating)
- Models available with CSA, FM, CE, 3A, and FDA approvals



Transducers Compatible with All Siemens Continuous Ultrasonic Transmitter Systems

| Beam Angle | Measuring Distance | Temperature Range | Process Connection | Series | Cable Length | Catalog Number | Price |
|---|--------------------|-------------------|--------------------|-----------|--------------|------------------|----------|
| For Wet Applications: Blue Kynar Housing and Aluminum Sensor Face. ATEX and FM Approvals. | | | | | | | |
| 6° | 1 to 50 Ft | -40 to 203° F | 1" NPT Thread | XPS-15 | 5M | 7ML1118-0BA30 | \$902.00 |
| 6° | 1 to 50 Ft | -40 to 203° F | 1" NPT Thread | XPS-15 | 10M | 7ML1118-0CA30 | 936.00 |
| 6° | 1 to 50 Ft | -40 to 203° F | 1" NPT Thread | XPS-15 | 30M | 7ML1118-0EA30 | 979.00 |
| 6° | 1 to 50 Ft | -40 to 203° F | 6" CPVC Flange | XPS-15-6 | 5M | 7ML1118-0BD30 | 1308.00 |
| 6° | 1 to 50 Ft | -40 to 203° F | 6" CPVC Flange | XPS-15-6 | 10M | 7ML1118-0CD30 | 1342.00 |
| 6° | 1 to 50 Ft | -40 to 203° F | 6" CPVC Flange | XPS-15-6 | 30M | 7ML1118-0ED30 | 1344.00 |
| 6° | 1 to 50 Ft | -40 to 203° F | 8" CPVC Flange | XPS-15-8 | 5M | 7ML1118-0BE30 | 1412.00 |
| 6° | 1 to 50 Ft | -40 to 203° F | 8" CPVC Flange | XPS-15-8 | 10M | 7ML1118-0CE30 | 1446.00 |
| 6° | 1 to 50 Ft | -40 to 203° F | 8" CPVC Flange | XPS-15-8 | 30M | 7ML1118-0EE30 | 1489.00 |
| 12° | 1 to 33 Ft | -40 to 203° F | 1" NPT Thread | XPS-10 | 5M | 7ML1115-0BA30 | 709.00 |
| 12° | 1 to 33 Ft | -40 to 203° F | 1" NPT Thread | XPS-10 | 10M | 7ML1115-0CA30 | 746.00 |
| 12° | 1 to 33 Ft | -40 to 203° F | 1" NPT Thread | XPS-10 | 30M | 7ML1115-0EA30 | 795.00 |
| 12° | 1 to 33 Ft | -40 to 203° F | 3" CPVC Flange | XPS-10-3 | 5M | 7ML1115-0BC30 | 923.00 |
| 12° | 1 to 33 Ft | -40 to 203° F | 3" CPVC Flange | XPS-10-3 | 10M | 7ML1115-0CC30 | 987.00 |
| 12° | 1 to 33 Ft | -40 to 203° F | 3" CPVC Flange | XPS-10-3 | 30M | 7ML1115-0EC30 | 1036.00 |
| 12° | 1 to 33 Ft | -40 to 203° F | 4" CPVC Flange | XPS-10-4 | 5M | 7ML1115-0BD30 | 990.00 |
| 12° | 1 to 33 Ft | -40 to 203° F | 4" CPVC Flange | XPS-10-4 | 10M | 7ML1115-0CD30 | 1027.00 |
| 12° | 1 to 33 Ft | -40 to 203° F | 4" CPVC Flange | XPS-10-4 | 30M | 7ML1115-0ED30 | 1076.00 |
| 12° | 1 to 33 Ft | -40 to 203° F | 6" CPVC Flange | XPS-10-6 | 5M | 7ML1115-0BE30 | 1221.00 |
| 12° | 1 to 33 Ft | -40 to 203° F | 6" CPVC Flange | XPS-10-6 | 10M | 7ML1115-0CE30 | 1258.00 |
| 12° | 1 to 33 Ft | -40 to 203° F | 6" CPVC Flange | XPS-10-6 | 30M | 7ML1115-0EE30 | 1307.00 |
| For Corrosive and Wet Applications: Blue Kynar Housing, Teflon-Coated Aluminum Sensor Face. ATEX, FM Approvals. | | | | | | | |
| 12° | 1 to 33 Ft | -40 to 203° F | 3" CPVC Flange | XPS-10T-3 | 5M | 7ML1115-2BC30 | 1079.00 |
| 12° | 1 to 33 Ft | -40 to 203° F | 3" CPVC Flange | XPS-10T-3 | 10M | 7ML1115-2CC30 | 1116.00 |
| 12° | 1 to 33 Ft | -40 to 203° F | 3" CPVC Flange | XPS-10T-3 | 30M | 7ML1115-2EC30 | 1165.00 |
| 12° | 1 to 33 Ft | -40 to 203° F | 4" CPVC Flange | XPS-10T-4 | 5M | 7ML1115-2BD30 | 1119.00 |
| 12° | 1 to 33 Ft | -40 to 203° F | 4" CPVC Flange | XPS-10T-4 | 10M | 7ML1115-2CD30 | 1156.00 |
| 12° | 1 to 33 Ft | -40 to 203° F | 4" CPVC Flange | XPS-10T-4 | 30M | 7ML1115-2ED30 | 1205.00 |
| 12° | 1 to 33 Ft | -40 to 203° F | 6" CPVC Flange | XPS-10T-6 | 5M | 7ML1115-2BE30 | 1350.00 |
| 12° | 1 to 33 Ft | -40 to 203° F | 6" CPVC Flange | XPS-10T-6 | 10M | 7ML1115-2CE30 | 1387.00 |
| 12° | 1 to 33 Ft | -40 to 203° F | 6" CPVC Flange | XPS-10T-6 | 30M | 7ML1115-2EE30 | 1436.00 |
| 6° | 1 to 50 Ft | -40 to 203° F | 6" CPVC Flange | XPS-15T-6 | 5M | 7ML1118-2BD30 | 1424.00 |
| 6° | 1 to 50 Ft | -40 to 203° F | 6" CPVC Flange | XPS-15T-6 | 10M | 7ML1118-2CD30 | 1458.00 |
| 6° | 1 to 50 Ft | -40 to 203° F | 6" CPVC Flange | XPS-15T-6 | 30M | 7ML1118-2ED30 | 1501.00 |
| For Hazardous Environments: Blue Kynar Housing, Aluminum Sensor Face. FM (Class 1, Division 1) Approval. | | | | | | | |
| 6° | 1 to 50 Ft | -40 to 203° F | 1" NPT Thread | XPS-15F | 5M | 7ML1171-1BA10 | 1163.00 |
| 6° | 1 to 50 Ft | -40 to 203° F | 1" NPT Thread | XPS-15F | 10M | 7ML1171-1CA10 | 1197.00 |
| 6° | 1 to 50 Ft | -40 to 203° F | 1" NPT Thread | XPS-15F | 30M | 7ML1171-1DA10 | 1240.00 |
| For Caustic Liquids and Slurries: Polypropylene Housing, Hypalon Rubber Sensor Face. CE, CSA, FM, ATEX Approvals. Teflon Facing Available on Flanged Models— Call Lesman. | | | | | | | |
| 10° | 1 to 16.5 Ft | -4 to 149° F | 1" NPT Thread | XRS-5 | 5M | 7ML1106-1AA20-0A | 556.00 |
| 10° | 1 to 16.5 Ft | -4 to 149° F | 1" NPT Thread | XRS-5 | 10M | 7ML1106-1BA20-0A | 589.00 |
| 10° | 1 to 16.5 Ft | -4 to 149° F | 1" NPT Thread | XRS-5 | 30M | 7ML1106-1CA20-0A | 630.00 |
| 10° | 1 to 16.5 Ft | -4 to 149° F | 3" ANSI Flange | XRS-5-3 | 5M | 7ML1106-1AA20-0B | 764.00 |
| 10° | 1 to 16.5 Ft | -4 to 149° F | 3" ANSI Flange | XRS-5-3 | 10M | 7ML1106-1BA20-0B | 797.00 |
| 10° | 1 to 16.5 Ft | -4 to 149° F | 3" ANSI Flange | XRS-5-3 | 30M | 7ML1106-1CA20-0B | 838.00 |
| For FM Class I, Div 1 Liquid and Solid Applications, including Hazardous, Corrosive and Wastewater Environments. Tefzel Base and Lid Epoxy Fitted Joint). CE, CSA, CENELEC Approvals. | | | | | | | |
| 12° | 1 to 33 Ft | -40 to 164° F | 2" NPT Thread | ST-H | 5M | 7ML1100-0AA20 | 962.00 |
| 12° | 1 to 33 Ft | -40 to 164° F | 2" NPT Thread | ST-H | 10M | 7ML1100-0BA20 | 1004.00 |
| 12° | 1 to 33 Ft | -40 to 164° F | 2" NPT Thread | ST-H | 30M | 7ML1100-0CA20 | 1058.00 |

Transducers Compatible Only with Siemens LU (AiRanger) Series Ultrasonic Transmitters

| Beam Angle | Measuring Distance | Temperature Range | Process Connection | Series | Cable Length | Catalog Number | Price |
|--|--------------------|-------------------|--------------------|--------|--------------|----------------|-----------|
| For Wet Applications: Blue Kynar Housing, Aluminum Sensor Face. CSA, FM Approvals. 1-1/2" NPT Mounting Thread. | | | | | | | |
| 6° | 2 to 100 Ft | -40 to 203 F | 1.5" NPT Thread | XPS-30 | 5M | 7ML1123-0BA50 | \$1381.00 |
| 6° | 2 to 100 Ft | -40 to 203° F | 1.5" NPT Thread | XPS-30 | 10M | 7ML1123-0CA50 | 1414.00 |
| 6° | 2 to 100 Ft | -40 to 203° F | 1.5" NPT Thread | XPS-30 | 30M | 7ML1123-0EA50 | 1455.00 |

Don't see the process connection or cable length you need? Call us!

Illinois, Indiana, Missouri, and Iowa
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman Instrument Company
www.lesman.com
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

V01.2019

**ULTRASONIC
TRANSDUCERS** 29 **L**

SIEMENS



XRS-5

FMS Series Mounting Brackets Compatible With

Probe (FMS-200 Only)
ULS200 (FMS-200 Only)
XPS-15 XPS-10
XPS-15F XRS-5
ST-H

FMS Mounting Brackets

Siemens mounting brackets make installing Echomax ultrasonic transducers quick and easy. These rugged high-quality mounting brackets are made of 304 stainless steel, and are suitable for use in both indoor and outdoor installations. They adjust to fit almost any application, saving you the time and expense of building custom brackets.

Each kit contains all necessary mounting parts.







Mounting Brackets for Ultrasonic Sensors

- **Built-in temperature compensation** automatically adjusts for velocity variations caused by air temperature changes in the vessel, ensuring optimum accuracy from -4° to 149° F (-20° to 65° C)
- **Narrow beam pattern** with negligible side lobes gives reliable performance over full temperature range, even in narrow tanks.
- **Low ringing cuts blanking distance** to a minimum, so you can use the full tank capacity and eliminate the need for tall standpipes
- **Closed cell foam** is immune to moisture and temperature-independent
- **High sensitivity** across the transducer face improves performance on solids and is especially effective for long shots up to 200 feet
- **Self-cleaning, low maintenance.** Condensation, liquid, and dust won't build up on the active transducer face

Search www.lesman.com for
Echomax



**Need an aiming kit
or field mounting
hardware for your
level sensor?**

| | | | |
|---|---|---|---|
|  | FMS-200 Universal Box Bracket Allows any unit with a threaded 1" or 2" connection to be mounted 8" to 12" out from a wall or beam. Box design also acts as a sun shield. | Kit Includes Two 1" mounting nuts One 2" mounting nut | Order 7ML1830-1BK \$148.00 |
|  | FMS-210 Wall Mount Channel Bracket Lets any transducer with a threaded 1" connection be mounted 5" to 19" out from a wall or beam. | Kit Includes Four 1/4" lock washers Two 1" mounting nuts Two 2" mounting nuts Four M6x12 bolts | Order 7ML1830-1BL \$215.00 |
|  | FMS-220 Extended Channel Bracket Allows any transducer with a threaded 1" connection to be mounted 13" to 39" out from a wall or beam. | Kit Includes Four 1/4" lock washers Two 1" mounting nuts Four M6x12 bolts Two M6x30 bolts | Order 7ML1830-1BM \$370.00 |
|  | FMS-310 Floor Mount Channel Bracket Lets any transducer with a threaded 1" connection be mounted from 19" high and 22" out past the mounting. | Kit Includes Four 1/4" lock washers Two 1" mounting nuts Four M6x12 bolts One M8x50 bolt | Order 7ML1830-1BN \$355.00 |
|  | FMS-320 Floor Mount Extended Channel Bracket Allows any transducer with a threaded 1" connection to be mounted from 19" high and from 16" to 43" out past the mount. | Kit Includes Four 1/4" lock washers Two 1" mounting nuts Six M6x12 bolts Two M6x30 bolts One M8x50 bolt | Order 7ML1830-1BP \$509.00 |
|  | FMS-350 Floor Mount Bridge Channel Bracket Lets any transducer with a threaded 1" connection be mounted from 19" high, anywhere along a 65" beam. Great for open channel flow applications. Provides a stable mount for the transducer above a flume or weir. | Kit Includes Four 1/4" lock washers Two 1" mounting nuts Twelve M6x12 bolts Three M6x30 bolts Two M8x50 bolts | Order 7ML1830-1BQ \$836.00 |

Please submit orders to: Siemens Industry Inc, c/o Lesman Instrument Company

| Aluminum Easy Aimer Kits | Catalog Number | Price | 304SS Easy Aimer Kits | Catalog Number | Price |
|--------------------------------|----------------|----------|------------------------|----------------|----------|
| NPT, 1.5" Galvanized Coupling* | 7ML1830-1AN | \$153.00 | NPT with 1.5" Coupling | 7ML1830-1AT | \$666.00 |
| NPT, 1" Galvanized Coupling | 7ML1830-1AP | 153.00 | NPT with 1" Coupling | 7ML1830-1AU | 666.00 |
| NPT, 3/4" x 1" PVC Coupling | 7ML1830-1AQ | 153.00 | | | |

* For use with XPS-30 or XPS-40 transducers only.

WIKAL® LH-10/LS-10 Submersible Liquid Level Transmitters

Features

- Standard ranges available from stock
- Rated IP68 for permanent submersion
- 4-20 mA two-wire output signal
- Vented polyurethane cable withstands 220 pounds of strain
- Custom cable lengths available on LS-10. LH-10 comes with integral 40' cable.

WIKAL LS-10 liquid level transmitter is designed for economical and reliable performance in a variety of level measurement applications. The LS-10 provides a 4-20 mA signal output and an accuracy of 0.25% span.

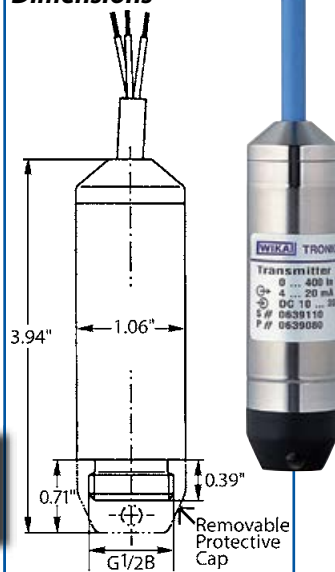
The high performance LH-10 provides 0.125% accuracy. The LH-10 includes a dual cable entry design that prevents ingress of moisture into the electronics, even if the cable is damaged.

Both models feature watertight vented cable that can withstand more than 220 pounds of strain. This means the transmitters can be supported without the need for additional cabling.

Both the LS-10 and LH-10 can be ordered with the LevelGuard™ (below) for protection in difficult environments.

Need an FM approved intrinsically safe submersible transmitter? Call Lesman for the WIKAL IL-10.

Dimensions



Model Selection Guide

| Pressure Range | Maximum Pressure* | Burst** Pressure | Catalog Number | Price Each |
|---|-------------------|------------------|----------------|------------|
| LH-10: 0.125% Accuracy, 316 SS, Polyurethane, Polyamid wetted parts, G1/2B pressure connection, 4-20 mA output. <i>Integral 40' vented polyurethane cable.</i> | | | | |
| 0-50"WC | 14 PSI | 29 PSI | 9699703 | \$891.99 |
| 0-100"WC | 30 PSI | 35 PSI | 9699711 | 891.99 |
| 0-150"WC | 30 PSI | 35 PSI | 9699729 | 891.99 |
| 0-250"WC | 60 PSI | 70 PSI | 9699737 | 848.93 |
| 0-5 PSI | 30 PSI | 35 PSI | 8371846 | 848.93 |
| 0-10 PSI | 60 PSI | 70 PSI | 9699754 | 891.99 |
| 0-15 PSI | 72 PSI | 87 PSI | 9736225 | 848.93 |
| 0-25 PSI | 145 PSI | 170 PSI | 9699762 | 891.99 |
| LS-10: 0.25% Accuracy, 316 SS, Polyurethane, Polyamid wetted parts, G1/2B pressure connection, 4-20 mA output. <i>Select cable length below and append to catalog number.</i> | | | | |
| 0-100"WC | 30 PSI | 35 PSI | 4262761 | \$497.81 |
| 0-150"WC | 30 PSI | 35 PSI | 4262779 | 497.81 |
| 0-250"WC | 60 PSI | 70 PSI | 4262787 | 497.81 |
| 0-5 PSI | 30 PSI | 35 PSI | 4262809 | 497.81 |
| 0-10 PSI | 60 PSI | 70 PSI | 4262817 | 497.81 |
| 0-15 PSI | 72 PSI | 87 PSI | 4262825 | 497.81 |
| 0-25 PSI | 145 PSI | 170 PSI | 4262833 | 497.81 |
| 0-30 PSI | 145 PSI | 170 PSI | 4262841 | 497.81 |
| 0-50 PSI | 240 PSI | 290 PSI | 4262850 | 497.81 |
| 0-100 PSI | 500 PSI | 600 PSI | 4262868 | 497.81 |
| Vented Polyurethane Cable (Append to Transmitter Model Number e.g., 4262850/4360903) | 5' | | 4347868 | 0.00 |
| | 10' | | 4347876 | 8.11 |
| | 15' | | 4347885 | 16.22 |
| | 20' | | 4347893 | 24.34 |
| | 25' | | 4347906 | 32.45 |
| | 30' | | 4347915 | 40.56 |
| | 40' | | 4347931 | 56.78 |
| | 50' | | 4347957 | 73.01 |
| | 60' | | 4347974 | 89.23 |
| | 70' | | 4347990 | 105.46 |
| | 75' | | 4348006 | 113.57 |
| | 100' | | 4348040 | 154.13 |
| Accessories | | | | |
| Stainless Steel LevelGuard™ | | | 50077091 | 296.40 |
| Desiccant Drying Cartridge | | | 9836700 | 22.26 |
| Vent Tube Filter | | | 7193131 | Call |
| Cable Clamp | | | 2074257 | 33.34 |
| Additional Weight | | | 1524399 | 107.56 |
| Cable Junction Box | | | 2459686 | 119.13 |

Ordering an LS-10? Don't forget to order a desiccant drying cartridge to prevent moisture buildup inside the vent tube.

Notes

- * Maximum pressure, causing no permanent changes in specifications but may lead to adjustable zero/span shifts.
- ** Burst pressure, leading to destruction of transmitter.

Need a cable longer than 100 feet? Call for pricing and availability.

WIKAL LevelGuard™ Anti-Clog Attachment for Submersible Liquid Level Transmitters

- For lift stations, wet wells, and other level applications
- All 316 stainless steel body construction for durability
- 2" diameter diaphragm provides excellent measurement sensitivity
- Birdcage-style enclosure protects diaphragm from physical damage and turbulence
- Added weight prevents unwanted transmitter movement

The WIKAL LevelGuard attachment is designed for difficult level sensing applications where sludge, slurry, or turbulence may be present.

The large 2" diaphragm provides excellent sensitivity and performance, even when used to monitor extremely low liquid levels, or when the assembly is buried in a layer of sludge or slurry. The cable supplied with the WIKAL LS-10 submersible transmitter is designed to withstand more than 200 pounds of strain, so no additional support or conduit connections are required.



Great for dirty media applications and turbulent processes!

SITRANS LH100 Submersible Liquid Level Transmitter

SIEMENS



Features

- 0.3% accuracy
- Transmitter for hydrostatic depth measurement
- Piezoresistive flush-mounted sensor
- Stainless steel sensor and enclosure
- 4-20 mA two-wire output
- Easy installation with junction box or cable hanger
- Replaces the retired SITRANS P MPS submersible transmitter

Siemens' SITRANS LH100 pressure transmitter is a submersible sensor for hydrostatic liquid level measurement in tanks, containers, channels, dams, unpressurized/open vessels and wells.

On one side of the sensor, the diaphragm is exposed to the hydrostatic pressure, which is proportional to the submersion depth. This pressure is compared with atmospheric pressure. Pressure compensation is carried out using the vent pipe in the connecting cable. The vent pipe is equipped with a humidity filter which prevents the build-up of condensation in the vent pipe.

The hydrostatic pressure of the liquid column acts on the diaphragm of the sensor and transmits the pressure to the Wheatstone resistance bridge in the sensor. The output voltage of the sensor is applied to the electronic circuit where it is converted into an output current of 4 to 20 mA.

Specifications

Measuring Range

0-3 m (0-9 ft) H₂O
0-4 m (0-12 ft) H₂O
0-5 m (0-15 ft) H₂O
0-6 m (0-18 ft) H₂O
0-10 m (0-30 ft) H₂O
0-20 m (0-60 ft) H₂O

Maximum Working Pressure

1.5 bar (21.8 psi) 15 m (45 ft) H₂O
1.5 bar (21.8 psi) 15 m (45 ft) H₂O
1.5 bar (21.8 psi) 15 m (45 ft) H₂O
1.5 bar (21.8 psi) 15 m (45 ft) H₂O
3.0 bar (43.5 psi) 30 m (90 ft) H₂O
6.0 bar (87.0 psi) 60 m (180 ft) H₂O

Zero/Span: Ambient Temperature Influence: 0-3 m (0-9 ft) H₂O: 0.5%/10 K fullscale; 4-6 m (12-18 ft) H₂O: 0.45%/10 K full scale; ≥6 m (18 ft) H₂O: 0.3%/10 K full scale; Long-Term Stability: 0-3 m (0-9 ft) H₂O: 0.5% full scale/year; 4-6 m (12-18 ft) H₂O: 0.25% full scale/year; ≥6 m (18 ft) H₂O: 0.2% full-scale/year

Ambient Operating Temperature: 14° to 176° F (-10° to 80° C)

Material: Seal Diaphragm: Al₂O₃ ceramic, 96%; Sensor/Casing: 316L stainless steel; Gasket: FPM; Connecting Cable: PE/HD sheath

Power Supply: Terminal voltage on pressure transmitter: 10-33 VDC

Explosion Protection: Intrinsic safety IECEx SEV 14.0003, SEV 14ATEX 0109; Identification: II 1 G Ex ia IIC T4 Ga

Junction Box: Enclosure: IP65 Polycarbonate; Electrical Connection: 2x 3-way (28-18 AWG); Cable Entry: 2x Pg9

Cable Hanger: For mounting the transmitter; Galvanized steel, polyamide

Ordering Instructions

Select one option from each table following. A complete catalog number looks like this: 7MF1572 - _____

Model Selection Guide

Please submit orders to: Siemens Industry Inc, c/o Lesman Instrument Company.

| Description | Catalog Number | Price |
|----------------------------------|--|----------|
| Measuring Range/ Cable Length | 0-12 Ft H ₂ O, 33 Ft Cable 7MF1572-2DA10 | \$738.00 |
| | 0-15 Ft H ₂ O, 33 Ft Cable 7MF1572-2EA10 | 738.00 |
| | 0-18 Ft H ₂ O, 33 Ft Cable 7MF1572-2FA10 | 738.00 |
| | 0-30 Ft H ₂ O, 66 Ft Cable 7MF1572-2HA10 | 850.00 |
| | 0-60 Ft H ₂ O, 98 Ft Cable 7MF1572-2KA10 | 966.00 |
| | 0-4 m H ₂ O, 10 m Cable 7MF1572-1DA10 | 738.00 |
| Range/ Cable | 0-5 m H ₂ O, 10 m Cable 7MF1572-1EA10 | 738.00 |
| | 0-6 m H ₂ O, 25 m Cable 7MF1572-1FA10 | 738.00 |
| | 0-10 m H ₂ O, 25 m Cable 7MF1572-1HA10 | 850.00 |
| | 0-20 m H ₂ O, 25 m Cable 7MF1572-1KA10 | 966.00 |
| Accessories | Plastic Junction Box, IP54 7MF1572-8AA | 91.00 |
| | Carbon Steel Cable Hanger 7MF1572-8AB | 22.00 |

Local Level Indication in Feet and Inches

**PRECISION
DIGITAL**

PD6801 Level Meter

- Display level in feet and inches — no translations needed!
- 20-segment tank level indicator
- Lower display for tag, volume, or percent
- Open collector alarm output
- Displays with wide viewing angle; Mountable at 0°, 90°, 180°, and 270°
- 4-20 mA input loop-powered
- Programmable 1/8" or 1/16" tall digital display with SafeTouch® through-glass button programming
- Loop or external DC-powered backlight standard
- HART® protocol transparent
- Explosion-proof, IP68, NEMA 4X die-cast aluminum enclosure; FM, CSA, CE, ATEX, IEC approvals



Model Selection Guide

| Description | Catalog Number | Price |
|--|----------------|----------|
| FM-Approved Level Meter, 0.7" Display, Backlit | PD6801-0K1 | \$899.00 |

Intrinsically Safe Loop-Powered Submersible Level Transmitter

- 2-5/8" Teflon-coated Buna-N diaphragm
- FM/CSA intrinsically safe, Class I, Div. 1, Group A-D rated with approved barrier
- 4-20 mA output, 0.25% full scale accuracy, 0.2% full scale/year long-term stability



**For severe
wastewater
applications**

Temperature Range: -40° to 185° F

Max Overpressure Range: 1.5 PSI 8X full scale; 5.0 PSI 4X full scale; 15 PSI & 30 PSI 2X full scale

Materials: Teflon-coated 315SS housing; Teflon/Buna N diaphragm; Polyethylene cable, vent tube, shielded 18 AWG conductors

Power Required: 9-30 VDC (750Ω load @ 24VDC)

Call for pressure ranges. Prices start at \$1000.00

SmartLine STF700 Flange-Mount Liquid Level Transmitter

Features:

- Accuracies up to 0.05% standard
- Stability up to 0.015% URL per year for ten years
- Automatic static pressure and temperature compensation
- Rangeability up to 100:1
- Response times as fast as 90 mSec
- Multiple local display capabilities
- External zero, span, and configuration capability
- Modular design
- World-class overpressure protection
- Polarity insensitive electrical connections
- Integral dual seal design for highest safety per ANSI/NFPA 70-202 and ANSI/ISA 12.27.0
- Comprehensive on-board diagnostic capabilities
- Communications Options: Honeywell Digitally Enhanced (DE), HART® v7.0, FOUNDATION™ Fieldbus
- Full compliance to SIL 2/3 requirements
- Available with 15 year warranty



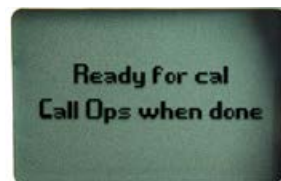
SmartLine family pressure transmitters are designed around a high performance piezo-resistive sensor; One sensor integrates multiple sensors, linking process pressure measurement with on-board static pressure (DP models) and temperature compensation measurements. This allows the STF700 to replace most competitive transmitters available today.

Indication/Display Option: Honeywell's STF700 modular design accommodates a basic alphanumeric LCD display.

LCD Display Features:

- Can be added or removed in the field
- 16 most-common engineering measurement units
- 2 Lines 16 Characters alphanumeric display
- Position display at 0°, 90°, 180°, and 270° for easy reading
- Square root output indication ($\sqrt{}$)

Diagnostics: SmartLine transmitters offer digitally accessible diagnostics that help provide advanced warning of possible failure events, minimizing shutdowns, and providing lower operational costs.



Configuration Tools

Integral Three-Button Configuration Option: SmartLine offers the ability to configure the transmitter and display via three externally accessible buttons. Zero/span capabilities are also optionally available via these buttons with or without selection of the display option.

Handheld Configuration: SmartLine transmitters feature two-way communication and configuration capability between the operator and the transmitter via Honeywell's field-rated Multiple Communication Configurator (MCT404). The MCT404 is capable of field configuring DE and HART devices and can be ordered for use in intrinsically safe environments. Honeywell transmitters are designed and tested for compliance with the offered communication protocols and are designed to operate with any validated hand held configuration device.

PC Configuration: Honeywell's SCT3000 Configuration Toolkit provides an easy way to configure Digitally Enhanced (DE) instruments using a personal computer as the configuration interface. Field Device Manager (FDM) Software and FDM Express are also available for managing HART and Fieldbus device configurations.

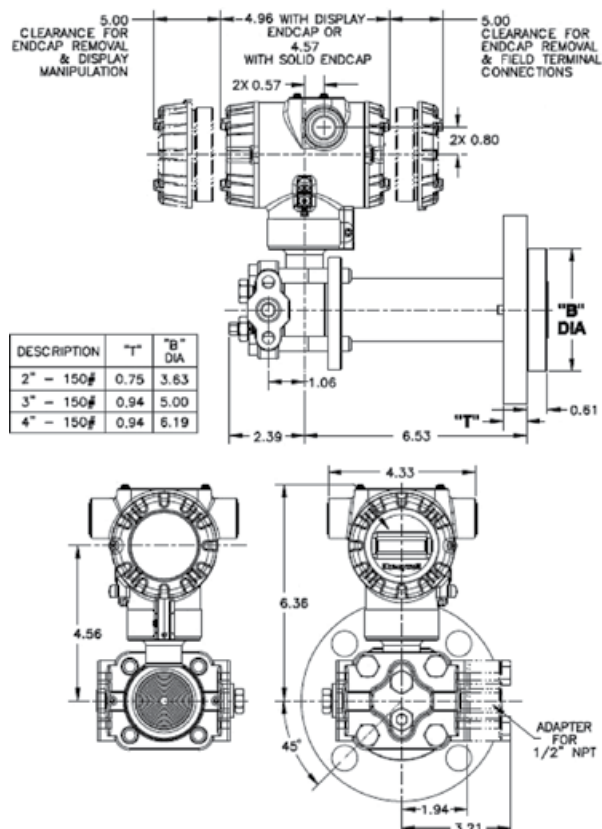
Modular Design: STF700 transmitters are modular in design, so you can replace meter bodies, add indicators or change electronic modules without affecting performance or approval body certifications. Each meter body is uniquely characterized to provide in-tolerance performance over a range of variations in temperature and pressure.

Modular Features:

- Meter body replacement
- Exchange/replace electronics/comms modules
- Add or remove integral indicator
- Add or remove lightning protection (terminal connection)



Dimensions



Illinois, Indiana, Missouri, and Iowa
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman Instrument Company
www.lesman.com
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

V01.2019

**LIQUID LEVEL
TRANSMITTER**

33



Honeywell

Specifications

Reference Accuracy: 0.05% span

Stability (%URL/year for five years): STF728: 0.020%;
STF72F: 0.020%; STF732: 0.040%

Temperature: Ambient: -40° to 185° F; Meter Body:
-40° to 257° F

Humidity: 0 to 100% RH

Maximum Allowable Working Pressure (MAWP):
4500 PSI for temperatures -40° to 275° F

Analog Output: Two-wire, 4 to 20 mA (HART and DE transmitters only)

Output Failure: Normal Limits: 3.8 to 20.8 mA Honeywell standard, or 3.8 to 20.5 mA NAMUR NE 43 Compliant; Failure Mode: ≤3.6 mA and ≥21.0 mA

Supply Voltage: 10.8 to 42.4VDC at terminals (IS versions limited to 30 VDC); Voltage Effect: 0.005% span per volt

Transmitter Turn-On Time: HART or DE: 2.5 seconds

Response Time (Delay + Time Constant): HART or DE: 100 ms; Foundation Fieldbus: 150 ms host-dependent

Damping Time Constant: HART: Adjustable from 0 to 32 seconds in 0.1 increments. Default: 0.50 seconds; DE: Discrete values from 0 to 32 seconds. Default: 0.48 seconds

Vibration Effect: Less than ±0.1% URL without damping. Per IEC60770-1 field or pipeline, high vibration level

Electromagnetic Compatibility: IEC 61326-3-1

Lightning Protection (Option): Leakage Current: 10uA max @ 42.4VDC 93C

Materials: Barrier Diaphragms: 316LSS, Hastelloy® C-276, Monel® 400, Process Head: 316SS, Zinc-plated CS, Hastelloy C-276; Vent/Drain Valves/Plugs: 316SS, Hastelloy C-276; Head Gaskets: PTFE; Meter Body Bolting: Zinc-plated CS, 316SS, NACE A286 SS bolts; Mounting Flange: CS, 304SS, or 316SS; Fill Fluid: Silicone DC® 200 oil or CTFE; Electronic Housing: Polyester powder-coated aluminum. All stainless optional.

Process Connections: 1/4" or 1/2" NPT with DIN adapter

Wiring: Accepts up to 16 AWG (1.5 mm diameter)

Enclosure: Type 4X, IP66, IP67

Digital Communications: Honeywell DE, HART 7 protocol or FOUNDATION Fieldbus ITK 6.0.1 compliant

Communication/Diagnostics: HART 7,  Foundation Fieldbus, Honeywell DE

Agency Approvals: FM/CSA: Explosion-Proof: Class I, Div 1, Grps A-D; Dust-Ignition Proof: Class II, III, Div 1, Grps E-G T4; Intrinsically Safe: Class I, II, III, Div 1, Grps A-G T4; Non-Incendive: Class I, Div 2, Grps A-D; ATEX: Flameproof: II 1/2 G Ex d IIC T4; Intrinsically Safe: II 1 G Ex ia IIC T4; Non-Incendive: II 3 G Ex na IIC T4; Enclosure: IP66/IP67

SIL 2/3 Certification: IEC 61508 SIL 2 for non-redundant use and SIL 3 for redundant use according to EXIDA and TÜV Nord Sys

Restrictions

w Not available with extended mount meters

v Available only with extended mount meters

Note: It is considered good engineering practice to provide redundant disparate level technologies for overflow protection of storage tanks (per API 2350 standard). Call Lesman for point level solutions to complement your continuous level transmitter choice.

Ordering Instructions

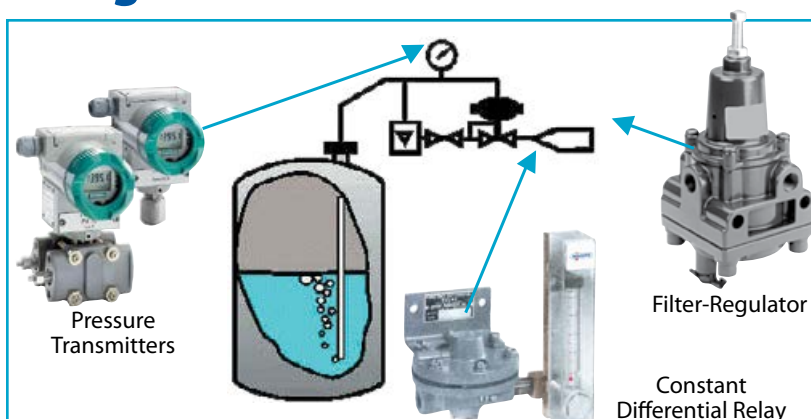
Make one selection from each table section below. Check the restriction letters to be sure the unit you need is available. A finished catalog number looks like this:

STF724-_____-_____-_____-_____-_____-_____-A-_____-_____-_____-0000

Model Selection Guide

| Description | | Catalog Number | Availability | Price |
|-------------------------------|--|----------------|--------------|-----------|
| Model Range Limits (Span) | -400 to 400" H2O (4 to 400" H2O) | STF724- | ↓ | \$2116.00 |
| | -100 to 100" PSI (1 to 100" bar) | STF732- | ↓ | 2374.00 |
| | -400 to 400" H2O (1 to 400" H2O) | STF72F- | ↓ | 1982.00 |
| | -100 to 100" PSI (1 to 100" bar) | STF73F- | ↓ | 2105.00 |
| Meter Body | Flush Mount 316SS Wetted Parts, CS Head | A_____ | • | 0.00 |
| | Flush Mount All 316 SS Wetted Parts | E_____ | • | 61.00 |
| | Extended Mt, 316SS Wetted Parts, CS Head | M_____ | • | 270.00 |
| | Pseudo-Flange, CS Head, 316 SS Vent/Drain Valve | 1_____ | • | 0.00 |
| Fill Fluid | Silicone Oil DC200 | _1_____ | • | 0.00 |
| | Fluorinated Oil CTFE | _2_____ | • | 80.00 |
| Process Connections | 1/4" NPT Ref. HD, High Pressure Side Flange | __A____- | • | 0.00 |
| | 1/4" NPT Ref. HD, Low Pressure Side Flange | __C____- | • | 0.00 |
| Process Head Bolts | Carbon Steel Bolts | __C____- | • | 0.00 |
| | 316 SS Bolts and Nuts for Process Head | __S____- | • | 56.00 |
| Vent/ Drain | Single Ended Reference Head | ____1__- | • | 0.00 |
| | Dual Ended Reference Head with Vent | ____4__- | • | 46.00 |
| Gasket | Teflon or PTFE (Glass Filled) | ____A__- | • | 0.00 |
| Flange | 2" ANSI Class 150, Carbon Steel | 7____- | • | 0.00 |
| | 3" ANSI Class 150, Carbon Steel | 1____- | • | 0.00 |
| | 4" ANSI Class 150, Carbon Steel | 4____- | • | 40.00 |
| Pseudo Flange | 2" ANSI Class 150, No Vent/Drain, 316 SS | S____- | • | 193.00 |
| | 3" ANSI Class 150, No Vent/Drain, 316 SS | P____- | • | 0.00 |
| Gasket Ring | No Selection | _0____- | • | 0.00 |
| | Flush Design, 316 Stainless Steel | _1____- | • | 0.00 |
| | Extended Design, 316 Stainless Steel | _5____- | • | 0.00 |
| Extension | No Selection | __0____- | • | 0.00 |
| | Flush Extension | __F____- | w | 0.00 |
| | 1.87" Diameter, 2" Long Tank Spud | __C____- | v | 160.00 |
| | 1.87" Diameter, 4" Long Tank Spud | __D____- | v | 1750.00 |
| Approvals | No Approvals Required | 0____- | • | 0.00 |
| | FM Explosion Proof | A____- | • | 29.00 |
| | CSA Explosion Proof | B____- | • | 29.00 |
| Connection Type | Aluminum, 1/2" NPT, No Lightning Protection | A____- | • | 0.00 |
| | Aluminum, 1/2" NPT, Lightning Protection | C____- | • | 82.00 |
| Output/ Protocol | 4-20mA DC, HART Protocol | _H____- | • | 78.00 |
| | 4-20mA DC, DE Protocol | _D____- | • | 333.00 |
| | No Analog Output, Foundation Fieldbus Protocol | _F____- | • | 447.00 |
| Customer Interface Selections | None | __0____- | • | 0.00 |
| | Zero and Span Only | __A____- | • | 65.00 |
| | Basic Indicator | __B____- | • | 227.00 |
| | Basic Indicator plus Zero/Span/Configuration | __C____- | • | 350.00 |
| Failsafe/Write Protect | Fail Mode High | 11S-A- | • | 0.00 |
| | Fail Mode Low | 12S-A- | • | 27.00 |
| | Fail Mode High, Write Protect Enabled | 13S-A- | • | 27.00 |
| | Fail Mode Low, Write Protect Enabled | 14S-A- | • | 27.00 |
| Customer Tag | None | 00____- | • | 0.00 |
| | One Wired SS Tag (4 Lines, 26 Char/Line) | 01____- | • | 29.00 |
| | Two Wired SS Tag (4 Lines, 26 Char/Line) | 02____- | • | 40.00 |
| Conduit Plugs and Adapters | No Conduit Plugs or Adapters Required | __A0____- | • | 0.00 |
| | 1/2" NPTM to 3/4" NPTF 316 SS Conduit Adapter | __A2____- | • | 247.00 |
| | 1/2" NPT 316 SS Conduit Plug | __A6____- | • | 78.00 |
| Certificates | Calibration Test Report, Conformance Cert. (F3399) | F1 | • | 40.00 |
| Paper Manuals | ST 700 User Manual | 34-ST-25-44 | | 35.00 |
| | ST 700 HART/DE Communications Manual | 34-ST-25-47 | | 35.00 |
| | ST 700 Safety Manual | 34-ST-25-37 | | 35.00 |

Using a Pressure Transmitter as a Bubbler for Liquid Level



Advantages

- Not affected by foam or turbulence
- Can be used in small diameter pipes
- Easy to understand/proven technology
- Large installed base

Common Applications

- Determine head through a flume or weir
- Level in a lift station
- Tank level when foam is present
- Can be used with atmospheres other than air

Air Bubbler Theory

- 1 A constant flow of pressurized air is applied to the tube
- 2 A pressure transducer monitors the air pressure in the tube
- 3 The pressure in the tube equals the pressure at the tank's bottom
- 4 The liquid level equals the pressure inside the tube divided by the liquid's density
- 5 As long as the material density remains constant, the pressure is proportional to the liquid level in the tank

A bubbler system is an inexpensive but accurate means of measuring the fluid level in open or vented containers, especially those in harsh environments such as cooling tower sumps, swimming pools, reservoirs, vented fuel tanks, drain sumps, or air washers.

A complete system consists of a source of compressed air, air flow restrictor, sensing tube, and pressure transmitter. The only component exposed to the elements is the sensing tube. All others can be remotely located in a protected area.



Assembled, wired, configured to your level range, tested, and ready for easy installation.

Air bubbler systems contain no moving parts, making them suitable for measuring the level of water, viscous fluids, liquids with large quantities of suspended solids, slurries, sewage, drainage water, and sludge. Since the only part of the bubbler that touches media is the air flow tube, it can be used for applications where you don't want the liquid to contact a sensor. And, since bubblers can be used in small diameter pipes, they allow for installations in tanks where other systems won't fit.

In the past, if you wanted a bubbler, you needed to buy all the components and assemble the bubbler system yourself. Now, you can do it the easy way and let Lesman build a bubbler for you. Your Lesman bubbler system comes pre-configured, wired, and ready to drop directly into your application.

All you need to do is identify your application depth below and decide whether you need an air purge to help keep your air flow tube clean.



A basic Lesman bubbler system includes:

- NEMA 4/12 carbon steel panel with hinged door, sub-panel, heater/thermostat, and wall mount flange bracket kit
- Air supply regulator with 0–60 PSIG output
- 0.3 Micron coalescing filter (replaceable element)
- Gauge pressure HART® transmitter, general purpose approval, configured for level
- Six-digit digital level indicator with two Form C relays and 4–20 mA output
- Constant differential relay for air flow volumetric rate with indicating flow rotameter
- Nylon tubing and brass push-to-connect fittings inside the enclosure, compression fitting bulkhead connections for air and bubbler supply
- Air purge for diptube, controlled by manual pushbutton
- Panel nameplate label (specify up to 40 characters)

Model Selection Guide

To build a complete model number, choose one option from each section below. Be sure to include your maximum level and label in your order.

Example: LSB100-020 Y= 75 Ft
Panel Label: North Side Sump, Capacity 7200 Gal

| Description | | Catalog Number | Price |
|--|---|----------------|-----------|
| Lesman Bubbler System (See included items list at left.) | | LSB100-020 | \$5978.00 |
| Range | Specify Level: (XXX), units (% In, Ft, Gal) | Y= _ _ _ | 0.00 |
| Panel Label | Specify Label: Up to 40 characters | | 0.00 |

For custom requirements, call the Lesman bubbler system specialists at 800-953-7626.

Illinois, Indiana, Missouri, and Iowa
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman Instrument Company
www.lesman.com
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

Float Level Indicator

35 **L**

WIKAI® WMI Magnetic Indicator for Liquid Level Storage

Features

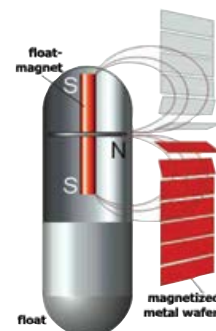
- Dependable liquid and interface level indication for years with minimal maintenance required
- Liquid and interface specific gravities as low as 0.35
- Bright, bold-scale, two-color indicator for easy reading up to 200 feet away
- Measuring lengths from 6" to 20 feet standard, longer lengths available
- Temperatures from 320° to 1000°F; Pressures from full vacuum to 5000 PSI
- Options: Magnetostrictive or reed chain transmitter output, dry contact or reed switch output, built-in thermocouple or RTD, WIKA pressure gauges
- Can be combined with WIKA WLC chamber for redundant level measurement

WIKAI WMI magnetic level indicator is primarily used for visual indication of liquid levels. The WMI chamber is mounted parallel to the tank application. It can mount horizontally with side connections to a tank, or vertically to be mounted on top of or below a tank. The liquid level in the chamber will match the movement of the liquid level of the tank.

A float, built specifically for your level application, is contained in a chamber that connects directly to the process to be measured. The float is engineered to ensure buoyancy based on the specific gravity, temperature, and pressure of the liquid being measured. Each float is weighted so the liquid level is equal to the position at which the magnet is mounted in the float. The magnet assembly provides maximum strength balanced with minimum weight in an effort to reduce float and chamber size and length.

As the liquid level changes in the chamber, the float rises and falls with the liquid level. The force or flux of the float's magnet assembly affects the visual indicator mounted outside of the float chamber. The indicator includes a series of magnetized wafers or flags that react to the magnet included in the float, to provide accurate, dependable visual level indication.

WMI Indicator chambers are constructed out of nonmagnetic materials, most commonly stainless steel. All steel chambers will be designed and constructed in accordance with ASME B31.1, B31.3, or to meet NACE, if required. Level gauge chambers are built per your specifications to fit existing process connections or for new construction.



Add a transmitter output for continuous level monitoring or a switch output for point level detection.



Specifications

Indicator: Red and white / yellow and black flags ; Ruler in feet/ inches, metric, %, or special (no charge for custom rulers)

Indicator Length: 6" to 20 feet or more; *Center to center length:* Similar or different from indicator, upper or lower mounting

Construction: 304L, 314L, 317, 329, and 347 stainless steel (per AMSE B31.1, B31.3 or NACE requirements); Hastelloy B or C; Alloy 20; Inconel 625; 254 SMO; PVC; Teflon

Mounting: Horizontally with side connections to tank, or vertically on top of tank

Chamber/Flange Rating: From 150# to 2500#

Process Connections: ANSI flanges, NPTM or NPTF threads, O-lets, welded ends; Sizes: 1/2" to 8" standard

Available Outlets: Extruded, saddled, or welded T

Side Connection: Size: Ranges from no connection, 1/2" to 8" or more; *Flange:* Weld neck with raised face, Slip on with raised face, Weld neck RTJ; *Lap joint:* Soc-o-let, Thread-o-let, Weld-o-let; *Other:* Threaded coupling, socket weld coupling, socket weld nipple, threaded nipple, butt weld connection;

Vent and Drain Size: Ranges from no vent or drain connection, 1/2" to 8" or more

Vent or Drain Connections: *Flat or Dome Cap:* NPT, Hex plug, Threaded coupling, Socket weld coupling, Nipple for butt welding, Threaded male nipple, Welded flange; *Weld Neck or Slip-On Flange:* No mating flange for direct process connection, mating flange with NPT hex plug, socket weld coupling, nipple for butt welding, threaded male nipple, welded flange or valve; Other connections options can be engineered per application

Additional Options: Cryogenic and high temperature chamber and flange insulations from -300° to 999° F, steam tracing, electrical heat tracing, gussets for reinforced flange supports, liquid gas chamber construction

Need help designing the perfect indicator for your tank? Download and complete a WIKAI WMI application datasheet from www.Lesman.com/datasheets/.

See Lesman's latest solutions for plant safety, pressure, temperature, level, or flow measurement, combustion and flame safeguard control, and industrial wireless, starting on page 57.



Load Cells for Level by Weight

Features

- Easy mounting
- Only 25/35 mm installation height
- Hermetically welded seal IP68 equivalent to NEMA 6
- Stainless steel construction
- Direct 4 to 20 mA output (LA)
- CENELEC Ex-version available (LE)
- Level control for liquid and bulk materials



This is the perfect solution to all your level control requirements: Sartorius' revolutionary PanCake® technology for level-by-weight applications. This system is extremely durable for the utmost precision in most applications. It works independent of material properties and the surrounding environment. Retrofitting is fast and easy. PanCake technology is tried and tested in many installations, and is available at an affordable price.

Conventional level control instrumentation can lead to errors of 5% and more. In extreme cases this could result in interruption of the associated process. New PanCake level-by-weight technology gives extremely accurate readings better than 1% in "real-life" applications over a complete range of capacities up to more than 35,000 pounds.

Exceptionally price competitive, the PanCake system offers not only great technical advantages, it also offers exceptional value for the money. Compared to ultrasonic or radar systems, savings of up to 50% are possible.

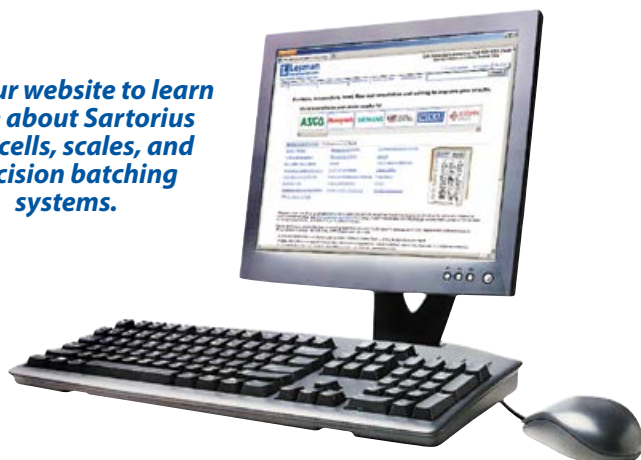
The extremely reliable, tough and durable design of sensors and the use of high quality materials lead to unequalled reliability, even under harsh industrial conditions. Maintenance or recalibration is rarely needed, except in case of mechanical changes to the tank.

The high quality sensor maintains calibration for years, without drift or creep. The stainless steel housing is hermetically sealed by welding and complies to the highest rating (IP68) for 10,000 hours at 1.5m (5'), equivalent to NEMA 6.

PanCake Capabilities

The model LA provides 4 to 20 mA output for direct connection to process instrumentation or PLCs/DCS. Models L and LE featuring mV/V output are connected via Sartorius transmitters and indicators. Usually only one PanCake is required (three legs). If two are used (four legs) you still require only one input channel in your PLC or Process Indicator by simply switching the two outputs in parallel.

Visit our website to learn more about Sartorius load cells, scales, and precision batching systems.



Ready to order a load cell?
Fill out the application datasheet at www.Lesman.com/datasheets/ and fax it back to Lesman.

Specifications

Load Cell Construction: Hermetically sealed, welded stainless steel construction, filled with Polyurethane

Material: 500kg; 10t: 1.4021 (DIN), 420 S 37 (B.S.); 16t: 1.4542 (DIN), S 604/S 622 (B.S.), 17 to 4 pH (Int.)

Protection: IP68, IEC 529, equivalent to NEMA 6. The load cell can be submerged in water to a depth of 1.5 m for 10,000 hours.

Cable: Robust, flexible, screened; **Sheath:** Thermopl, Elastomer; **Color:** gray (LE: blue, LA/LAC: green); **Diameter:** 5mm, wires 4 x 0.35 mm²; **Length:** 5 m; **Bending radius:** ≤ 50 mm

Certificate of Conformity: EEx ia IIC T6 (PTB Nr. Ex-00.E.2040, II 2G EEx ia II T6 (PBTB 00 ATEX 2039)

| Technical Data | L | LA/LAC | LE |
|------------------------------|---|---|---|
| Accuracy Class | 0.5% | | |
| Minimum Dead Load | 0%E _{max} | 5%E _{max} | 0%E _{max} |
| Safe Overload | 150%E _{max} | 100%E _{max} | 150%E _{max} |
| Destructive Load | 300%E _{max} | | |
| Rated Output | 2.0 | 16mA | 2.0 |
| Tolerance on Rated Output | < 4 | | |
| Tolerance on Zero Signal | < 4 | 4mA | < 4 |
| Repeatability Error | <0.1 | | |
| Creep During 30 Minutes | <0.1 | | |
| Non-Linearity | <0.25 | <0.25 | <0.25 |
| Hysteresis | <0.15 | | |
| Temperature Effect on Zero | <0.15%C _N /10K | | |
| Temperature Effect on Output | <0.1%C _N /10K | <0.1%C _N /10K | <0.1%C _N /10K |
| Input Impedance | 645±60Ω | | 645±60Ω |
| Output Impedance | 635±15Ω | | 635±15Ω |
| Insulation Impedance | >5000x10Ω | | >5000x10Ω |
| Recommended Supply Voltage | 4 to 21V | 20 to 28V | 4 to 24V |
| Maximum Supply Voltage | 32V | 28V | 25V |
| Ambient Temperature | -10° to 70° C (Nominal) -30° to 95° C (Usable) | -30° to 55° C (Nominal) -30° to 70° C (Usable) | -10° to 55° C (Nominal) -30° to 95° C (Usable) |
| Storage Temperature | -40° to 95° C | -40° to 80° C | -40° to 95° C |
| Permissible Eccentricity | 10 mm | | |
| Vibration Resistance | 20g, 100h, 10 to 150 Hz | | |
| Air Pressure Effects | ≤20g/kPa | | |
| Nominal Deflection | Up to 2t <0.1/16t <0.2 mm | | |

Precise for All Materials

The new PanCake level-by-weight technology determines the actual content of a vessel directly in kilograms or pounds. One sensor provides reliable readings for all measured materials.



Example 1: Formation of foam and bubbles, phase transition and evaporation may affect others, but not PanCake.



Example 2: Material sticking to the wall of a vessel, variable moisture content and deviations in particle size, but PanCake gets it right.



Example 3: Material comes from filling or discharging, but cannot comprise readings of PanCake.

Easy to Install

Just lift one leg of the vessel for a little more than an inch, slide the PanCake into the gap, setup is ready, in many instances without additional mounting kits, complicated mechanical conversion of the vessel, or changes to the pipework. Easy to start up. No calibration weights required.



Example 1: The vessel is lifted at one side only. The resulting inclination is small enough not to disturb the readings.



Example 2: One leg of the vessel is just shortened by an inch. No inclination occurs.



Example 3: The vessel is lifted leg-by-leg, one leg is supported by PanCake. Other legs are leveled out by adding shimming plates.

Why Use a Load Cell for Level?

Easy Start Up... Better Performance... Low Maintenance

Calibration without weights — Competitors calibration of 50,000lb vessel normally takes 4 to 6 hours. There are usually no weights available. Sartorius calibration time is less than 20 minutes.

No shimming or corner adjustments — Sartorius PanCake only takes 5 minutes, by hand rotating the load cell to determine whether or not there is a load. Only a minimal 1% of the load is required.

No resistors or trim pots in the junction box — Resistors and potentiometers tend to be temperature and moisture sensitive. This can affect system accuracy.

Matched load cells — All Sartorius load cells are totally matched and can be replaced without the need for re-calibration.

No influence from the effect of mixers (moving center of gravity) — Due to matched load cells and unique mounting design

No side load effects due to temperature expansion of the vessel — Side forces are taken by the mounting kits which have freedom for temperature expansion.

Load cells have lighting protection — Special strain gauge design in combination with our junction box makes it possible.

Stainless steel and hermetically sealed — The load cells can be submerged in water under 5 feet for 10,000 hours.

Special load cell cable for harsh environments — No PVC insulation, PTFE is used for high chemical resistance and a Kevlar fiber for "Pull Protection."

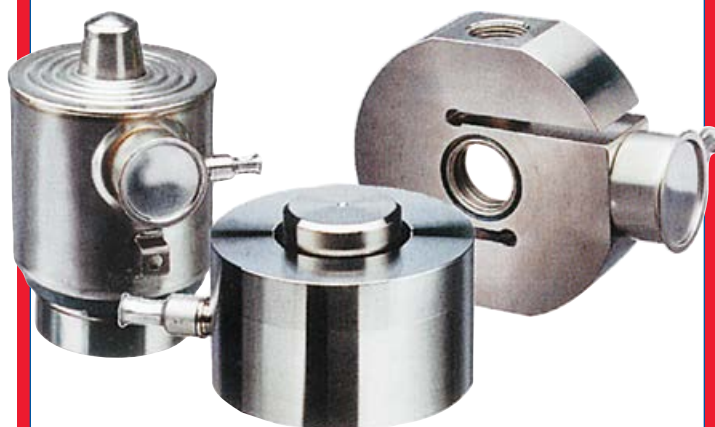
High Ω load cell design — 650 to 1200 Ω input resistance for minimizing the effect of cabling on accuracy and higher signal under intrinsically safe conditions

NOW limited LIFETIME WARRANTY on most STAR Line load cells

Load cells remain within all specifications up to a usable load of 150 to 200% of nominal

All controls are designed with a built-in test function and can be "calibrated without weights."

We offer a wide range of weighing and batching solutions, from simple indication to complex batching systems.



Sartorius Accuracy Class is calculated using these criteria: Hysteresis, linearity, temperature effects on zero and span, repeatability, and creep.

These compression load cells are available with several accuracies:

PR6201 (Left): 0.25% to 0.5%; 0.04% to 0.05%; or 0.015%

PR6211 (Center): 0.04% to 0.05%

PR6241 (Right): 0.04% to 0.05%; 0.015%; or 0.008%

Looking for a high accuracy load cell? Call Lesman!

**Such a small
solution to a
big problem!**



Contego® Hygienic Weighing System



Features

- For production, mixing, charging, and storage vessels where cleaning is critical
- For containers with total load of 100kg to 2t
- 6.6" diameter for installation in tight spaces
- Head and base plates made of AISI 316L stainless steel for corrosion-resistance and hygienic connections
- Accuracy classes D1 ($\pm 0.04\%$) and C3 ($\pm 0.015\%$)
- EHEDG-certified, FDA-compliant silicone cover, Weights and Measures approval to IOML R60



Food and pharmaceutical industries are known for high standards regarding hygiene in the production process. Many sensitive areas, from delivery to packaging and distribution are located next to one another, making it particularly challenging to combine precise measurement results with compliance to hygiene requirements.

The most critical requirements are those regarding components of machines and systems that come directly into contact with the product. They must have a high level of corrosion resistance, must not give off any chemical substances and will ideally have surfaces that have been optimized for ease of cleaning.

Depending on the contamination type (flour, cocoa, egg white, fat), system components must withstand cleaning methods like compressed air, suction, fluids or water, or steam blasting. High-quality materials, like stainless steel or highly resistant plastics offer effective protection against dust and moisture.

For small- to medium-size process vessels with total loads of 100kg to 8t or anywhere hygienic standards are important, Sartorius' Contego combines a load cell and mounting kit into a single hygienic system.

The stainless steel construction protects the central components from corrosion and the FDA-compliant silicone sleeve offers the highest level of hygienic security. The small diameter unit fits in tight spaces, and a built-in jack-up function makes it easy to lift and lower the process vessel during maintenance, without the need for additional tools.

The Contego module is easily installed under the foot of the container, so a separate structure isn't necessary. The head and base plates are made of stainless steel AISI 316 L (1.4404). They protect all central components against corrosion and offer an extremely hygienic and stable solution for attaching to the container and base element.

An integrated jack-up function provides simple and correct lifting or lowering of the container during maintenance work, without the need for additional tools. As a special element for stabilizing the container, Contego has an integrated lift-off protector and a constrainer. These ensure reliable stability of the container during operation. If the floor is sealed with silicone, an optional adapter plate is directly cast to prevent the risk of accumulating dirt.

The FDA-compliant silicone casing is also approved for the pharmaceutical industry, and offers the highest levels of hygienic security. It's securely connected to the head and base plates through a special geometric seal to avoid the formation of gaps that can cause contamination. This protective casing also has high chemical resistance to most cleaning agents.

Overall, the advantage of this weighing solution lies in its impressive hygienic properties, combined with significant cost savings in planning, design and operation. The Contego is available in two versions, with the cable outlet on the side or on the top, and has an appropriately hygienic cable connection. Both load cell models are naturally available as an explosion-proof version suitable for use in potentially explosive areas. An intrinsically safe load cell supply can be integrated for use in potentially explosive areas.

Specifications

Load Cell Construction: S-shaped version for torque-free load application. Pure stainless steel, hermetically sealed and filled with protective gas.

Material: Load cell: 1.4542 (AISI 630, 17-4PH) Mounting parts: 1.4404 (AISI 316L) Below: Silicone

Ingress Protection: Load cell: IP68 in accordance with IEC 60529: 1.5 m water column/10,000h. Weighing module: IP69K, according to DIN 40050: water under high pressure, steam cleaning

Cable: Robust, flexible, screened, Cable 4 + 0.35 mm²; Sheath: TPE thermoplastic elastomer; Diameter: 5 mm; Length: 5 m; Bending Radius: Fixed installation: >25 mm; Flexible installation: >75 mm

Certificates of Conformity: Ex Marking: II 1G EEx ia IIC T6, II 1D IP65 85° C

Registration number: PTB 02 ATEX 2059, TÜV 03 ATEX 2301x. Usable for explosion hazard subgroups IIA, IIB and III. IIC on request.

Technical Data

| Metrological | D1 | C3 | |
|----------------------------|---------|----------|------------------------|
| Accuracy Class | 0.04 | 0.015 | % E _{max} |
| Minimum LC Verification | 5,000 | 14,000 | |
| Deadload Output Return | 1,000 | 3,000 | |
| Tolerance on Rated Output | < 0.25 | < 0.07 | % C _N |
| Repeatability Error | < 0.01 | < 0.005 | % C _N |
| Creep (30 Minute Duration) | < 0.03 | < 0.015 | % C _N |
| Linearity | < 0.03 | < 0.01 | % C _N |
| Hysteresis | < 0.04 | < 0.015 | % C _N |
| Temperature Effect on Smin | < 0.028 | < 0.01 | % C _N /10 K |
| Temperature Effect on C | < 0.03 | < 0.01 | % C _N /10 K |
| Ambient Pressure Impact | ≤ 0.005 | ≤ 0.0025 | % C _N /kPa |

Nominal Deflection: < 0.5 mm

Minimal Dead Load: 0

Usable Load: 150% E_{max}

Destructive Load: > 300% E_{max}

Zero Output Signal: < 1.0 % C_N

Rated Output: 2 mV/V

Supply Voltage: 4–24 V

Ambient Temperature Range: -40°–203° F

Permissible Eccentricity: 5 mm

Vibration Resistance: 20 g, 100 h, 10–150 Hz

Mechanical

Permissible Horizontal Force: 7 kN; Destructive force: > 30 kN max.

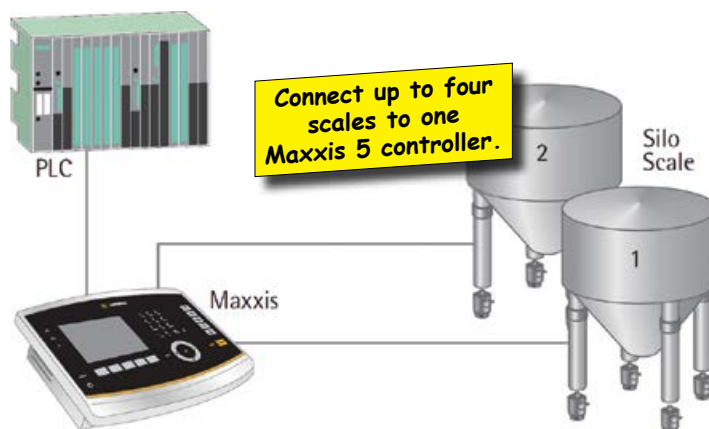
Permissible Vertical Load: 1.5 t max. without load cell

Permissible Lift-Off Force: 8 kN max.

Permissible Load for Jack-Up: 1.5 t max.

Call for pricing and delivery.

sartorius Maxxis 5 Process Vessel Weighing Controller



Sartorius Intec's Maxxis 5 combines accuracy, connectivity and functionality to provide a flexible process controller for vessel weighing applications.

The freely programmable process controller, designed for applications as diverse as Phase, Batching, Filling, IBC, Counting and Truck Weighing. Extensive connectivity options and compatibility with all analog load cells and the digital Pendeco® load cells as well as platform scales and many more weighing solutions.

Equipped with an internal web server, the Maxxis 5 can be controlled via any standard web browser, or a remote display with VNC capabilities. Additionally, a wide range of interface options, USB connections and an Ethernet Port ensure the Maxxis 5 is able to connect with any existing infrastructure.

Designed for harsh environments, the Maxxis 5 is made of high quality stainless steel with a wide surface area and bright backlit display to ensure inputting and readout accuracies in the toughest conditions. Automatic back-ups save data to SD cards providing full transparency and traceability, while specifically tailored reports and service reports track overload and user changes and deliver this data direct to users.

Maxxis 5 BASIC Functionality

The Maxxis 5 with BASIC application is equipped with interchange and weighing functions. Communication to a host PC or PLC combines both weighing and terminal control into a single unit. Up to four separate scales can be connected to a Maxxis 5 process controller:

- Two analog scales can be connected using analog inputs
- Two additional scales can be connected via different interfaces
- Three configurable limits per scale with conditions and actions

- Configurable digital inputs and outputs for using weighing information for actions like refilling the scale
- Values and signals can be read from, and written to the Maxxis 5 BASIC controller via OPC, over Ethernet, or via Modbus TCP. A PLC can integrate with the controller via a fieldbus, analog or serial communication.

The TFT color graphic display shows weight values of up to seven digits with decimal points and plus or minus signs. The displayed weight is shown as a bargraph in relation to the maximum capacity, for easy recognition of the content.

- Available mass units are t, kg, g, mg, lb and oz
- Includes preset tare values for selected weighing procedures
- Three different levels of user security rights, so critical calibration and setup information is saved and protected

Check Weighing can be used for easy +|0|- control. The integrated bargraph will show a product's weight in relation to pre-defined limits in yellow, green and red colors for easy readability.

The tilt correction allows for the minute adjustment of weighing information in line with other values, like the accurate adjustment of analog inputs. Tilt correction is not available in W&M approved applications.

The Maxxis 5 can be used as either an efficient remote terminal or as a remote controlled operation-dialog via a color display and a keypad. This means that messages can be displayed from a higher-level system, operation dialogs can be conducted, and texts or values can be edited.

FlexDetector™ Scintillating Radiometric Level Detector



- For solids and liquid measurement
- Ideal for horizontal, spherical, or irregular-shaped vessels, or limited spaces; Contours to the shape of the vessel
- Single detector has active length to 23 feet (7 meters); Combine outputs from up to six detectors into a single computer for overall continuous level measurements to 138 feet (42 meters)
- Non-hazardous, non-flammable scintillating fill fluid, encapsulated and protected by an outer sheath of armored conduit
- Measures 2.4 times greater output at low level exposure rates (0.05 to 0.9 mR/hour)
- Not affected by internal tank obstructions, extreme process temperatures, caustic processes, variable product flow
- Spring-tension PM tube maintains signal path integrity, even when detector is inverted
- Automatically compensates for vapor density changes, foam, gases, and process buildup
- Safe enough to ship by UPS (**No Hazmat transport fees and headaches!**)
- CSA Class I, Div 1 approved



SITRANS LC300 Capacitance Continuous Level Detector

SIEMENS

Features

- Shear- and abrasion-resistant probe
- Accurate level measurement
- Two-wire loop-powered isolated 4-20 mA
- Integrated local display and push-button calibration
- Current signaling per NAMUR NE 43
- Patented Active Shield capacitance technology
- Adjustable range: level, damping and diagnostics
- Corrosion-resistant construction and wetted parts
- 82 ft. (25 m) maximum insertion length; Sanitary rod optional



Ready to buy an LC300? Complete a Siemens capacitance level datasheet and include it with your order. Download from www.Lesman.com/datasheets/



Specifications

Media: Liquids, bulk solids, slurries with a 1.5 minimum dielectric constant

Range: 0-3300 pF; minimum span 3.3 pF

Measurement Frequency: 600 kHz maximum

Accuracy: <0.5% of actual measurement value

Temperature Stability: 0.25% of actual capacitance value

Nonlinearity/Reproducibility: <0.4% /full scale and actual value

Current Signaling: According to NAMUR NE 43, signal 3.8 to 20.5 mA, fault ≤ 3.6 or ≥ 21 mA (22mA)

Output Current Loop: Continuous signal 4 to 20mA/20 to 4mA

Probe Diameter: Rod Version: 0.75" with or without PFA jacket; Rope/Cable Version: 0.24" without PFA jacket, 0.35" with

Probe Lengths: Rod: 14" to 40"; Rope/Cable: 20" to 985"

Active Shield Length: Rod: 3.94"; Rope/Cable: 4.92"

Maximum Tensile Force: 1900kg (4188lbs); Horizontal: 30Nm (rod version)

E.S.D Probe Protection (kV): Protected to 55kV continuous discharge

Wetted Parts: AISI 316L/PFA/PEEK™

User Interface: Display local LCD, 4 digits capable of displaying numbers 0 to 9 and limited alpha characters

Wiring Connections: Maximum 2.5 mm² (PED/97/23/EC)

Process Connection: Threaded: 3/4" to 1 1/2" NPT; Flanges: 1" to 4" ANSI

Enclosure: Aluminum and epoxy coated construction; NEMA 4/Type 4/IP65; 2 x 1 1/2" NPT cable inlet

Process Conditions: -14.6 to 511 PSIG; -40° to 392° F

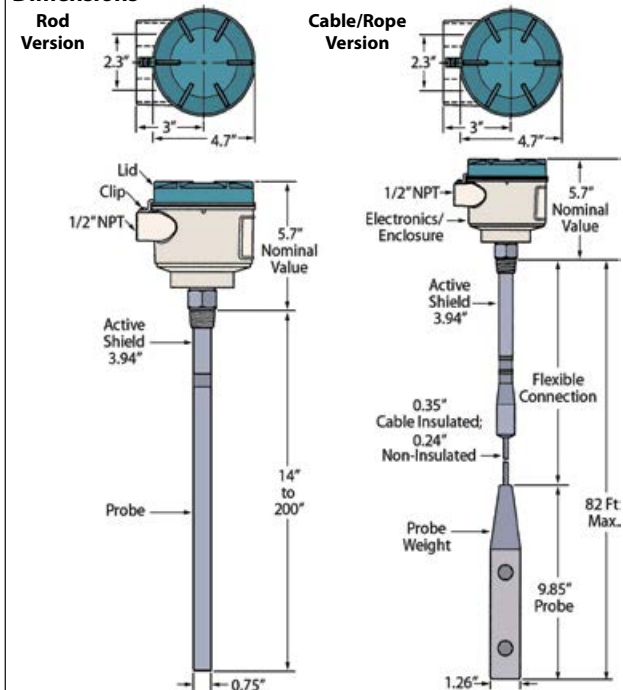
Supply Voltage: 9-32 VDC any polarity, 2-wire loop (9V @ 22mA)

Environmental: Indoor/outdoor location, 2000m max. altitude, -40° to 185° F, relative humidity suitable for outdoors (Type 4/NEMA 4/IP65 enclosure), installation category II, pollution degree 4

Approvals: CSA/FM Class I, Div. 1, Gr. A, B, C, D; CSA/FM Class II, Div. 1, Gr. E, F, G; CSA/FM Class III T4



Dimensions



Ordering Instructions

Make a selection from each table below. A complete catalog number looks like this: 7ML567 - - - - - . Siemens requires a completed application datasheet with any LC300 order. Visit www.Lesman.com/datasheets/.

Please submit orders to: Siemens Industry Inc, c/o Lesman Instrument Company.

Model Selection Guide

| Description | Catalog Number | Price | |
|---|--|------------|---------------|
| SITRANS LC300, rod version | 7ML5670 | \$1020.00 | — |
| SITRANS LC300, PFA coated cable version | 7ML5673 | — | 1178.00 |
| Process Connection Threaded, 316L SS | 3/4" NPT (Taper), ANSI/ASME B1.20.1 | 0A _ _ _ | 0.00 — |
| | 1" NPT (Taper), ANSI/ASME B1.20.1 | 0B _ _ _ | 45.00 — |
| | 1 1/4" NPT (Taper), ANSI/ASME B1.20.1 | 0C _ _ _ | 98.00 — |
| | 1 1/2" NPT (Taper), ANSI/ASME B1.20.1 | 0D _ _ _ | 98.00 98.00 |
| | 1 1/2" ASME, 150 lb | 5D _ _ _ | 389.00 389.00 |
| | 2" ASME, 150 lb | 5G _ _ _ | 461.00 461.00 |
| | 3" ASME, 150 lb | 5K _ _ _ | 552.00 552.00 |
| Probe | 4" ASME, 150 lb | 5N _ _ _ | 660.00 660.00 |
| | 300 to 1000 mm (11.81 to 39.37") | _ _ _ A0 _ | 169.00 — |
| | 1000 to 2000 mm (39.37 to 78.74") | _ _ _ A0 _ | — 110.00 |
| Cable Length | 2001 to 4000 mm (78.78 to 157.48") | _ _ _ B0 _ | — 216.00 |
| | | | |
| Wetted Seals | FKM | _ _ _ _ 0 | 0.00 0.00 |
| | FFKM (temperatures above -4° F) | _ _ _ _ 1 | 471.00 471.00 |
| Approvals Rod Version | General Safety | -0A _ _ | 0.00 — |
| | Explosion Proof Enclosure w/IS Probe | -0E _ _ | 169.00 — |
| Approvals Cable Version | General Safety | -1A _ _ | — 161.00 |
| | Explosion Proof Enclosure w/IS Probe | -1E _ _ | — 330.00 |
| Enclosure | Aluminum epoxy coated 2 x 1 1/2" NPT via adapter - cable inlet, IP65 | _ _ _ A0 | 0.00 0.00 |
| Insertion Length | Specify total length in mm in plain text: | ,Z-Y01 | 0.00 0.00 |
| Stainless Steel Tag | Specify tag in plain text (max. 27 characters): | ,Z-Y15 | 43.00 43.00 |

SITRANS LC500 Capacitance Continuous Level Detector



Features

- Two-wire analog 4-20/20-4 mA current loop output
- Measurement range of 3300 pF for high accuracy
- Rod probe versions to 5.5m (18 Ft), and cable probe versions to 35m (115 Ft)
- Patented spring package and cone construction in the process gland resist pressure and temperature changes for maximum safety
- Smart transmitter with built-in HART® communications — Fully potted integral transmitter is impervious to condensation, dust, and vibration
- Integrated local display and optional handheld communicator for easy on-site or remote commissioning and inspection
- One-point calibration for setup without shutting down production
- Pre-detection without using a PLC, allowing for corrections and moderations of the process before the trip point
- Output time delay and damping function for clearly defined, reliable readings of turbulent processes, like fraction levels in distillation column trays
- Local and remote diagnostics comply with NAMUR NE 43, showing all the relevant variables at the same instant
- Integrated zener safety barrier for intrinsically safe conditions



Specifications—Transmitter

Measurement range: 0 to 3300 pF with 3.3 pF minimum span

Measurement frequency: 420 kHz @ Cx=0 pF

Accuracy: ±0.1% actual value

Safety: ESD protected to 55 kV; Current signaling according to NAMUR NE 43; Galvanically isolated inputs/outputs; Polarity-insensitive current loop; Fully potted; Integrated safety barrier

Diagnostics: Primary variable (PV) out of limits; System failure measurement circuit; Deviation between A/D and D/A converter values; Check sum; Watchdog; Self-checking facility

Outputs (current loop): Galvanically isolated 4-20/20-4 mA; two-state functionality 4-20 or 20-4 mA, on or off; Solid state switch 40VDC/28VAC/100 mA at 2 VA max.; Time delay 1 to 100 sec. activating / de-activating; Adjustable hystereses (on / off) 0 to 100%, min. 1% range; Damping range 1 to 10,000

Supply power: max. 33 VDC (30 VDC for IS) min. 12 VDC @ 3.6 mA min. 9.5 VDC @ 22 mA

Loop current: 3.6 to 22 mA / 22 to 3.6 mA (2-wire current loop)

User interface: 4-1/2 digit LCD Integrated local display; Rotary switch; 16 menu items divided between two menu levels: 0 to 9, and A to F; Pushbuttons

Communications: HART® protocol; Profibus-PA (optional)

Environmental: Location: Indoor/outdoor; Altitude: 2000m (6562 Ft) max.; Ambient temperature: -40° to 185° F for standard and ATEX XP T5 to T1, -40° to 158° F for ATEX T6; Relative humidity: Suitable for outdoors (Type 4X/NEMA 4X/IP65 enclosure); Installation category: II; Pollution degree: 4

Process conditions: Temperature rating: -328° to 392° F standard, up to 752° F optional; Pressure rating: FV to 2920 psi standard, up to 7665 psi optional

Approvals: CE: Complies with requirements of ECC per EN 55011 and EN 61326; Dust-Ignition Proof: FM/CSA (CL. I, Div. 2, Grps. A-D T4/CL. II, III Div. 1 Grps. E-G T4); ATEX II 3 GD (EEx nA[ib] IIC T6...T4); Intrinsically Safe: FM/CSA (CL. I, Div. 1, Groups A-D T4); ATEX II 1 G (EEx ia IIC T6...T4); Explosion-proof Enclosure: FM/CSA (CL. I, Div. 1, Groups A-D T4); ATEX II 1/2 GD (EEx d [ia] IIC T6...T1); Marine: Lloyd's Register ENV1, ENV2, ENV3, ENV5; Sanitary: 3A



Standard Combinations of LC500 Probes

| Features | | Series S | Series D | Series SD | Series DD | Series HP | Interface | Sanitary |
|------------------------------|--|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------------|----------------------------------|----------------------------------|
| Process Connection | Threaded Flanged | ✓ ✓ | ✓ | ✓ | ✓ | ✓ | ✓ ✓ | |
| Types | Tri-Clamp Sanitary Thread | | | | | | | ✓ ✓ |
| Process Connection Materials | Stainless Steel AISI 316L Carbon Steel C22.8 N Duplex Steel Hastelloy ¹ B2 or C22 Monel 400 Tantalum | | | | | | ✓ | ✓ |
| Probe Insulations | PFA PE2 Ceramic | | | | | | ✓ | ✓ |
| Length Parameters | Max Rod Length Max Cable Length Max Pressure ³ Max Temperature ³ | 1378" 2900 PSI 392° F | 1378" 2175 PSI 392° F | 1378" 2175 PSI 392° F | 1378" 2175 PSI 392° F | 100" N/A 7613 PSI 842° F | N/A 1378" 73 PSI 212° F | 216" N/A 145 PSI 392° F |

Product Lifespan Announcement!
This model has been retired by Siemens and is no longer available for purchase.
Please see the MultiRanger 100/200 HMI and the LUT400 series for suitable replacements.

¹ Flange made of AISI-316L SS with a 0.19" welded Hastelloy plate. ² For general purpose applications only. ³ Depends on range.

Inventory Control by Servo Gauging

Honeywell Enraf

Safety, reliability, and efficiency are universal concerns in the world of tank and intermediate storage. As prices and performance demands increase, the concept of total cost of ownership grows in importance. Honeywell Enraf servo tank gauges offer optimized operations, enhanced safety, and a high degree of accuracy and reliability.

Honeywell Enraf servo systems deliver optimized measurement performance in any environment. Characteristic features are robust design and modular construction which let you add precisely those functionalities that your specific operating environment demands.

All Honeywell Enraf instruments and systems combine the latest technology with decades of experience reflected in user-friendly programmability for fast and simple startup.

Industry Approvals

Honeywell Enraf systems are approved worldwide by national weights and measures authorities and by customs and excise services. Honeywell Enraf servo tank gauging systems have set the standard for officially certified automatic tank gauging systems such as those approved by the American Petroleum Institute and International Standardization Organization for the installation and operation of automatic tank gauging systems, and the International Organization of Legal Metrology and the Netherlands Metrology Institute for the performance requirements relating to those systems.

Honeywell Enraf tank gauging systems receive type approval in conformity with national legislation and in accordance with the OIML recommendations. The automatic gauging systems and their accuracy are tested both before and after installation to ensure reliability, reproducibility, sensitivity and integrity of the instruments.

These instruments easily exceed the requirements for overfill protection equipment and therefore are approved to be used in any kind of safety system.

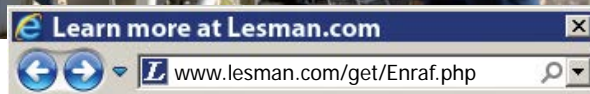


Reliable Measurement Principle

Honeywell Enraf servo tank gauging systems are based on a proven measurement concept. Level measurement is performed by a displacer, a strong and flexible measuring wire, a measuring drum, force transducer and servo motor.

The weight of the displacer ensures that the wire is constantly tensioned, even on turbulent liquid surfaces, avoiding measurement errors caused by displacer drift.

The level measurement is performed by lowering the displacer on the measurement wire down into the liquid. It will be partly immersed because the displacer has a greater density than the liquid. In accordance with Archimedes' principle, the weight of the displacer will diminish by the weight of displaced product. The weight of the displacer less the weight of displaced product — the apparent weight — then serves as unit of measurement to determine the displacer position, and measure the level of the liquid.



A highly accurate and advanced force transducer continuously measures the apparent weight of the displacer. That apparent weight can be simply programmed by software settings. In the equilibrium state, the weight of the partly immersed displacer will be in balance with the programmed weight as measured by the force transducer.

When the storage tank is emptied, as the liquid level starts to fall, the upward force on the displacer will decrease. The force transducer will actuate the servo controller so the measuring drum unwinds, allowing the displacer to descend until it again becomes partly immersed in the liquid and its apparent weight corresponds to the programmed weight.

Measuring Interface Levels

Besides measuring the liquid level, Honeywell Enraf's 854 XTG and 854 ATG gauges can also be used for measuring the interface level between two liquids. For this purpose, the servo motor, actuated by an interface command, lowers the displacer to the point where its apparent weight corresponds to the programmed interface setpoint of the second liquid. This functionality is particularly useful to determine the sediment level or the interface level between water and tank liquid or between two liquids.

Intelligent Software

Honeywell Enraf servo gauges are fully microprocessor controlled tank level gauges. All instrument functions are driven by means of intelligent software, which filters out possible imperfections thereby optimizing measurement accuracy.

In addition, the software compensates for hydrostatic deformation of the tank. This method, without a standpipe, ensures an extremely high degree of accuracy.

Simple Installation and Fast Startup

Honeywell Enraf servo gauging systems are designed for easy installation. Electrical cabling and mechanical installation are quick and simple to perform. The systems are attached by a 2" mounting flange.

In order to simplify the startup, calibration and servicing procedures as much as possible, the portable Honeywell Enraf terminal can be interfaced with an optical infrared port. This device enables these jobs to be performed quickly, while bypassing the central system.

Comparing Honeywell Enraf Servo Gauges

| | | |
|----------------------------|--|---|
| |  |  |
| Description | Servo Gauge 854 ATG As tank gauging has evolved, the series 854 ATG servo level gauge has become an industrial standard all over the world. Very reliable, versatile and accurate automatic tank gauge with a minimum of moving parts, meeting all international standards, regulations and recommendations. | Servo gauge 854 XTG Honeywell Enraf offers the 854XTGH servo gauge as a superior alternative to mechanical float and tape gauges or other low-cost level measuring devices. The 854XTG servo gauge offers the proven accuracies and performances of the 854 ATG, without the local display. |
| Measuring Range | Standard: 0–88 ft (0–27 m); Optional: 0–121 ft (37 m), 0–115 ft (0–35 m) with measuring wire up to 492 ft (150 m) | |
| Accuracy | Level: $\pm 0.016''$ (4 mm) Density: $\pm 0.19 \text{ Lb/Ft}^3$ (3 Kg/m ³) Interface: $\pm 0.08''$ (2 mm) Temperature: $\pm 0.18^\circ \text{ F}$ (0.1° C) Sensitivity/Repeatability: $\pm 0.004''$ (0.1 mm) | Level: $\pm 0.04''$ (1 mm) Density: $\pm 0.31 \text{ Lb/Ft}^3$ (5 Kg/m ³) Interface: $\pm 0.08''$ (2 mm) Temperature: $\pm 0.18^\circ \text{ F}$ (0.1° C) Sensitivity/Repeatability: $\pm 0.004''$ (0.1 mm) |
| Wave Integration | Programmable, three setpoints, between 0.5 s and 10 s | |
| Operating Pressure | M/C versions: Up to 90 PSI (6 bar) H version: Up to 600 PSI (40 bar) in accordance to PED | Up to 90 PSI (6 bar) |
| Ambient Temperature | -40° to 149° F (-40° to 65° C) | |
| Protection Class | NEMA 4/IP65 according to EN 60529 | |
| Safety Rating | FM: Class I, Div 1, Groups B-D in accordance to ANSI/NFPA 70 ATEX: II 1/2 G EEx d IIB T6, EEx de IIB T6, EEx d [ia/ib] IIB T6 or EEx de [ia/ib] IIB T6 | FM: Class I, Div 1, Groups B-D in accordance to ANSI/NFPA 70 ATEX: II 1/2 G EEx d IIB T6, or EEx d [ia/ib] IIB T6 |
| Materials | Housing: Chromatized-finish cast aluminum Drum Compartment: M Version: Cast aluminum; C/H Versions: Stainless steel; Magnet Cap: Stainless steel O-Rings: Drum cover Silicone FEP or NBR 70 | Housing: Chromatized-finish cast aluminum Measuring Drum/Shaft: Stainless steel O-Rings: Drum cover Silicone FEP or NBR 70 |
| Power Supply | 110/130/220 V (+10% to -20%) and 230 V ($\pm 15\%$), optional 65 V (+10% to -20%), also suitable for 240 V (+10% to -20%) Frequency Variation: 50/60 Hz (+10%); Power Ratings: 25 VA, I _{max} =2A | |
| Communications | Infrared transmission to portable Enraf terminal (PET), serial, ASCII coded, Bio-Phase Mark (BPM) modulated; Standard Enraf fieldbus (GPU) protocol; Two-wire twisted pair cabling, >1500V isolating rejection; Lightning protection via isolating transformers; >150 dB common mode rejection | |
| Options | Two SPDT 3-Amp alarm relay outputs; Density measurement; 4-20 mA level output (accuracy to $\pm 0.1\%$ full scale); Input boards for spot RTD, VITO probes for average temperature and/or water measurement, HART® devices (e.g., transmitters); Modbus RS-232 or RS-485 data transmission | |

To order a Honeywell Enraf servo gauging system, fill out the application datasheet from www.Lesman.com/datasheets/ and send it to Lesman for engineering review.

SmartRadar FlexLine for Precision Tank Gauging

The ever increasing requirements on tank gauging systems are placing a premium on flexibility, expandability and quality. Quick installation, seamless communication, reliable measuring under all conditions, trouble-free service and operation are concepts that are now being taken for granted. But how often does one tank level measuring system satisfy these requirements effectively and combine security, reliability and unprecedented levels of accuracy?

Honeywell Enraf's SmartRadar FlexLine tank gauging system successfully addresses all these requirements and guarantees cost control, smooth operation, environmental management and security.

SmartRadar FlexLine is a complete set of products and accessories for tank gauging that use cutting-edge radar and state-of-the-art signal processing technologies. Advanced digital signal processing technology, optimum connectivity and compact planar antennae make the SmartRadar FlexLine series the ultimate measuring system for tank gauging and custody transfer applications. It's an ideal solution for stock management and administration, customs transfer, quality control, processing and operation.

The SmartRadar FlexLine measuring system is airtight, and the integrated display is intrinsically safe. All basic functions are instantly available through the flip-top display. The display can show basic parameters and 24-hour trends. In addition to the standard display, an extra display can easily be connected to the SmartRadar FlexLine.

SmartRadar FlexLine tank gauging systems come in three versions:

- FlexLine XP for the strictest custody transfer requirements
- FlexLine HP for standard custody transfer
- FlexLine AP for transit and intermediate storage tanks

Complete digital signal processing technology

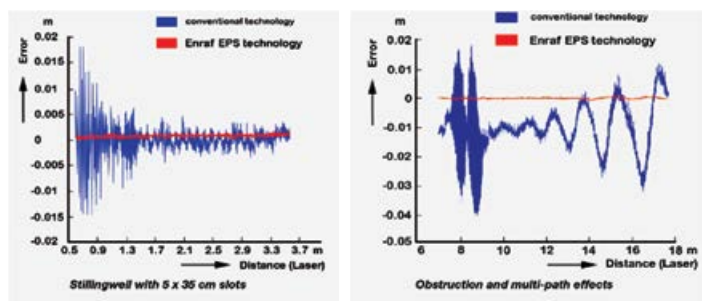
The SmartRadar FlexLine measuring system uses digital signal processing technology that eliminates the need for regular verification and calibration required by analog components.

Digital signal processing ensures that the highest levels of measuring quality and accuracy are attained from the date of installation, and maintained over long periods even under extreme conditions.

SmartRadar FlexLine's digital signal processing technology also offers advanced diagnostics, including storage of vital component trend information. Diagnostics take place at parameter level, and the electronics are continually monitored at component level. The diagnostic monitoring functions support a proactive maintenance strategy and contribute to a further simplification of remote service.

Enhanced signal processing capabilities

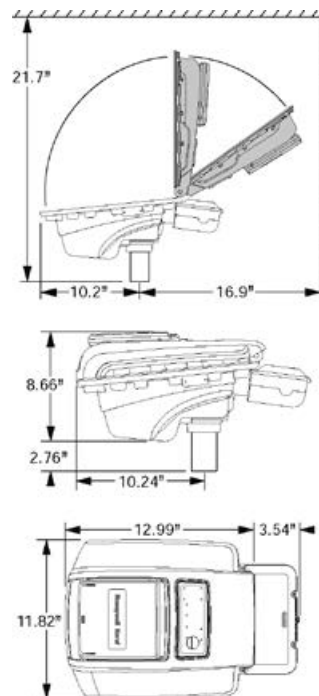
Honeywell Enraf's latest Enhanced Performance Signal (EPS) Processing makes it possible, even under the most difficult circumstances, to measure the level with extreme precision.



Enhanced functions include correction of the amplification factor, automatic amplification monitoring, zone-identification and ullage-correction. So, not only can the FlexLine be installed close to the tank wall, but objects and other elements that cause disturbances (like sealants) do not influence signal processing quality. Even a deviation in the diameter of the still-pipe length or clogging is compensated by EPS technology.

Maximizing tank measurement area

Traditional tank gauging systems require a minimum innage of 30 to 50 cm (12" to 20") for accurate measurement. The SmartRadar FlexLine possesses an accuracy down to levels of just 10 cm (4"). This high degree of accuracy also applies to measuring level in close proximity to the radar antenna. Traditional systems require ullage of 0.5 to 1 m (20" to 40"), SmartRadar FlexLine requires only 30 cm (12").



Open Communication

SmartRadar FlexLine systems are equipped with a broad set of communications protocols, including Honeywell Enraf's field-proven Bi-Phase Mark (BPM) communications, the de facto standard for field communications in tank terminals.

A comprehensive array of input/output (I/O) options also includes SPDT alarm outputs. Field equipment, like pressure transmitters, HART® instrumentation and VITO probes for temperature or spot measuring can be easily connected to the SmartRadar FlexLine.

Antennae for every field of application

In order to satisfy every application, the SmartRadar FlexLine series offers a wide range of antennae including traditional horn and rod antennae and flat or planar antennae for long term stability and excellent measuring performances.

The practical advantages of these multi-feeder antennae are their small size, the perfect control of the microwave indicator and the measurement of the antenna contamination. The ability to automatically recognize

Honeywell Enraf

Three SmartRadar FlexLine Models to Fit Your Application

SmartRadar FlexLine XP: Weights and Measures-Approved for Custody Transfer

With an accuracy of ± 0.4 mm (± 0.016 "), the FlexLine Xtreme Performance is the top of the range. FlexLine XL complies with all essential standards for tank level measurements, including API, ISO, OIML and NMI. The XL tank gauging system, with a measuring range up to 75 m (246 ft), lends itself to Weights-and-Measures regulated customs transfer.

SmartRadar FlexLine HP: API-Compliant for Custody Transfer

SmartRadar FlexLine High Performance offers all the necessary functions for tank gauging in large bulk storage tanks. The accuracy of ± 1 mm (± 0.04 ") makes the FlexLine HP ideal for custody transfer. It has a measuring range of 75 m (246 ft) and satisfies all essential standards for tank level measuring, including API, ISO, and IML.

SmartRadar FlexLine AP: API-Compliant for Intermediate Storage

With an accuracy of ± 3 mm (± 0.12 "), the SmartRadar FlexLine Advanced Performance is the right choice for transit and shipment tanks. The AP system satisfies OIML R85 and API's recommended practices. Depending on the antenna type, the measuring range of the FlexLine AP is 75 m (246 ft).

antenna contamination is essential toward trusting the maximum reliability of the measuring equipment at all times.

The antennae are further enhanced by the absence of mechanical alignment equipment, standard on parabola or horn antennae. The result is a reflection signal that ensures a higher degree of accuracy.

Planar antennae can be used on tanks for level measuring free space or measuring on still pipes. A special hinged antenna allows assembly through a 6" opening, so you can measure close to the tank wall without losing reliability and accuracy. Honeywell Enraf's tank separator enables easy installation of all antennae.

SmartRadar components and accessories also include antennae for applications in open spaces, still pipes and in areas of high pressure and high temperatures.

Antenna Types

Free space antennae: Planar free space antennae can be mounted on a roof nozzle or manhole for most applications.

Still pipe antennae: For stilling well applications. Performs reliably, even on rusty and contaminated stilling wells. No cone adapters needed.

Free space wide array linear planar (WALP) antennae: For applications where the antenna position is close to the tank shell. The hinged construction of the T06 enables mounting through a standard 6" nozzle.

Measuring Range: 131 feet (40 m)

Temperature Range: -40° to 212° F (-40° to 100° C)

Operating Pressure: To 87 PSI (6 Bar)

Wetted Parts: AISI 316 stainless steel and FEP

High temperature antennae: For free space applications at high temperatures and aggressive chemical elements.

Measuring Range: 59 feet (18 m)

Temperature Range: -40° to 446° F (-40° to 230° C)

Operating Pressure: To 87 PSI (6 Bar)

Wetted Parts: AISI 316 stainless steel, and reinforced TFM

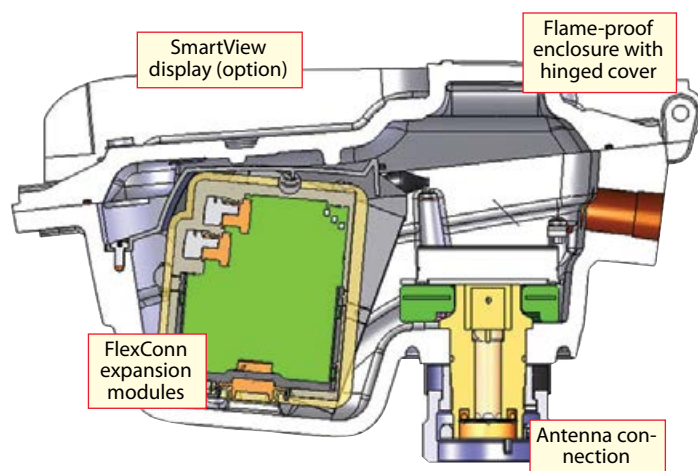
High pressure cone antennae: For use in spheres and bullet tanks at high pressures. The reference pin function allows safe verification without opening the tank. The tank separation provides an approved and safe process seal. A 1" or 4" optional full bore ball valve can also be included.

Measuring Range: 131 feet (40 m)

Temperature Range: -330° to 482° F (-200° to 250° C)

Operating Pressure: To 580 PSI (40 Bar)

Wetted Parts: AISI 316 stainless steel, PTFE, and CF8M for optional ball valve



Condensed Specifications

Measuring Range: Up to 75 m (246 ft); Resolution: 0.1 mm (0.001 ft)

Accuracy: *FlexLine XP:* ± 0.4 mm (0.016"); *FlexLine HP:* ± 1 mm (0.04"); *FlexLine AP:* ± 3 mm (0.12")

Measuring Method: FMCW Synthesized Pulse Reflectometer, X-band (9.538 GHz) R&TTE FCC compliant

Ambient Temperature: -40° to 149° F (-40° to 65° C)

Safety Approvals: ATEX, CD, IECEx, OIML, CB Scheme, FM, CSA, FCC, API, NMI, TÜV certified Overfill Protection

Explosion Proof: FM/CSA: Class I, Div 1, Groups C-D according to ANSI/NFPA 70; ATEX: II 1/2 G Ex d IIB T6 or Ex d [ia] IIB T6 or Ex de IIB t6 or Ex de [ia] IIB T6; IEC: EX ZONE 0/1, Ex d IIB T6 or Ex d [ia] IIB T6 or Ex de IIB t6 or Ex de [ia] IIB T6

Materials: IP66/IP67, NEMA 4X hard anodized aluminum alloy housing, NBR 70 O-rings and 3/4" NPT cable entries


Power Supply: Autoselect 65–240 VAC (+10% to -15%) 50/60 Hz, or 24–65 VDC (+10% to -15%), Rated 15W max typical (23W with options)

Expansion Modules: Five module slots available. Interfaces for VITO temperature/water sensor, HART communications, HART communications with density calculation, and SPDT alarm contact outputs



To order a Honeywell Enraf precision tank gauging system, fill out the application datasheet from www.Lesman.com/datasheets/ and send it to Lesman for engineering review.

Honeywell Enraf SmartRadar for Storage Tank Measurement

| | | | |
|-----------------------------|---|---|---|
| |  |  |  |
| | SmartRadar 970 ATI High precision radar for custody transfer tank level gauging under Weights and Measures regulations | SmartRadar 971 LTi Advanced radar for tank level gauging with custody transfer accuracy | SmartRadar 973 LT For radar tank gauging in intermediate liquid storage applications |
| Accuracy | ±0.016" (±0.4 mm) | ±0.04" (±1 mm) | ±0.12" (±3 mm) |
| Signal Processing | Advanced digital signal processing (ADSP) | Advanced digital signal processing (ADSP) | Digital signal processing (DSP) |
| Output | Modbus or GPU via RS-232C or RS-485, 4-20 mA with HART®, (analog signal accuracy 0.1% full scale), Foundation Fieldbus | Standard Modbus via RS-232C or RS-485, 4-20 mA with HART, (accuracy of analog level signal 0.1% full scale) | RS-232C or RS-485 for indoor use or radio modem connection, 4-20 mA with HART, (analog signal accuracy 0.1% full scale) |
| Input | VITO probes for average temperature, HART devices (e.g., pressure transmitters) | VITO probes for average temperature or water bottom measurement, HART devices | — |
| Range | 0-131 ft (0-40 m) | | |
| Resolution | 0.004" (0.1 mm) | | |
| Measuring Principle | FMCW synthesized pulse radar, 9.25 GHz to 10.75 GHz (X-band) | | |
| Ambient Temperature | -40° to 140° F (-40° to 60° C) | | |
| Approvals | FM/CSA: Explosion proof Class I, Div 1, Groups B-D (per ANSI/NFPA 70); ATEX explosion proof also available. | | |
| Construction | Chromatized, polyurethane-coated aluminum alloy housing, rated NEMA 4/IP67. FPM (Viton) wetted O-rings, Buna-N non-wetted O-rings, three 3/4" NPT cable entries | | |
| Power Supply | 110- 240 VAC 45/65 Hz or 24-64 VDC; Autoselect -20% to +10% | | |
| Lightning Protection | Full galvanic isolation | | |
| Communication | Serial ASCII coded, BiPhase Mark modulated (BPM) standard Enraf fieldbus (GPU protocol) | | |
| Alarm Relay Output | Two SPDT, galvanically isolated | | |
| Infrared Connector | Serial communication with Portable Enraf Terminal (PET) | | |



Compatible Antenna Types

Planar free space antennae: Can be mounted on a roof nozzle or manhole for most applications.

Still pipe antennae: For stilling well applications. Performs reliably, even on rusty and contaminated stilling wells. No cone adapters needed.

Free space wide array linear planar (WALP) antennae: For applications where the antenna position is close to the tank shell. The hinged construction of the T06 enables mounting through a standard 6" nozzle.

Measuring Range: 131 feet (40 m)
Temperature Range: -40° to 212° F (-40° to 100° C)
Operating Pressure: To 87 PSI (6 Bar)
Wetted Parts: AISI 316 stainless steel and FEP

High temperature antennae: For free space applications at high temperatures and aggressive chemical elements.

Measuring Range: 59 feet (18 m)
Temperature Range: -40° to 446° F (-40° to 230° C)
Operating Pressure: To 87 PSI (6 Bar)
Wetted Parts: AISI 316 stainless steel, reinforced TFM

High pressure cone antennae: For use in spheres and bullet tanks at high pressures. The reference pin function allows safe verification without opening the tank. The tank separation provides an approved and safe process seal. A 1" or 4" optional full bore ball valve can also be included.

Measuring Range: 131 feet (40 m)
Temperature Range: -330° to 482° F (-200° to 250° C)
Operating Pressure: To 580 PSI (40 Bar)
Wetted Parts: AISI 316 stainless steel, PTFE, and CF8M for optional ball valve

To order a Honeywell Enraf tank gauging system, fill out the application datasheet from www.Lesman.com/datasheets/ and send it to Lesman for engineering review.

Stop Nuisance Switching

Liquids sloshing around can cause a float to bob up and down rapidly, if the liquid surface is in contact with the float. This creates nuisance switching, an off/on condition that wears on your patience and your reed switch. A slosh shield creates a pocket of calm liquid, so the switch can operate as designed.

Construction: Wetted materials: Stainless steel, beryllium copper, nickel, Buna-N. Slosh shield: Lucite

Environment: Operating temperature: -40° to 140° F; Liquid specific gravity: 0.55 min.; Pressure: 150 PSI max.

Switch: SPST, 20 VA

Model Selection Guide

| Shielded Switch | Catalog Number | Price |
|-----------------|----------------|----------|
| Normally Open | 43765 | \$140.00 |
| Normally Closed | 43760 | 140.00 |



Tethered Float Switches for Liquid Level

- For all liquid types
- SPDT mercury switch
- Polyethylene, Teflon, or 316 Ti stainless steel float
- Temperatures to 320° F, Pressures to 30 PSIG

Need a float switch in polypropylene? Call us.

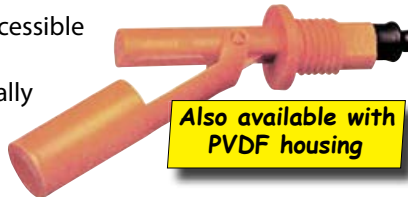


Model Selection Guide

| Material | | Maximum | | Catalog Number | Price |
|--------------|--------------------|----------|--------|----------------|----------|
| Float | Cable Cladding | Pressure | Temp. | | |
| Polyethylene | PVC | 30 PSIG | 190° F | NSP-5101 | \$243.00 |
| Teflon | Teflon | 15 PSIG | 320° F | NST-5101 | 888.00 |
| 316 SS | Silicone, SS Braid | 90 PSIG | 320° F | NSE-5101 | 1229.00 |
| 316 SS | Silicone, SS Braid | 220 PSIG | 320° F | NSE-5201 | 1117.00 |

Chemical-Resistant Level Switch

- Ideal for tanks with inaccessible tops or bottoms
- Normally open or normally closed switch contact
- Polypropylene housing with NEMA 6 protection rating provides great chemical resistance
- Maintenance-free, easy to install



Specifications

Maximum Operating Conditions: Temperature: 175° F; Pressure: 145 PSIG; Fluid Density: 0.6 g/ml

Materials: Float, housing: Polypropylene; Fittings: 1/2" NPT or bulkhead; Orientation: Horizontal ±30°; Cable: 3 ft. PVC, AWG 20/2

Reed Switch: Gas encapsulated; Normally open or normally closed operation; Voltage: 250 VAC max.; Current: 1.5A max.; Power: 50 watts max.

Model Selection Guide

| Housing | Fittings | Catalog Number | Price |
|---------------|-------------------|----------------|---------|
| Polypropylene | 1/2" NPT Bulkhead | NKP-2401 | \$37.00 |
| | | NKP-6401 | 37.00 |

Float-Type Level Switches



Heavy Duty Float Switch

- Temperatures to 480° F, Pressures to 360 PSIG
- High capacity 10 Amp switch
- All 316 stainless steel wetted parts
- All-metal design ideal for harsh environments

Specifications

Operating Conditions: Media temperature: 480° F; Pressure: 360 PSIG max

Process Medium: Specific gravity 0.7 minimum

Construction: NEMA 4/IP65 epoxy-coated aluminum housing, 316SS wetted materials with square flange or 2" NPT fitting; optional 1/2" NPT conduit

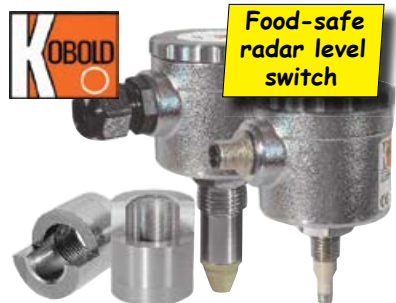
Switch: SPDT microswitch, 10 Amp @ 250 VAC, 0.6 Amp @ 220 VDC, 3/4" switch hysteresis

Model Selection Guide

| Fitting Style | | Catalog Number | Price |
|---|--|----------------|----------|
| NGS float switch with square flange fitting | | NGS-2100 | \$659.00 |
| NGS float switch with 2" NPT fitting | | NGS-2200 | 659.00 |
| Options | 1/2" NPT electrical conduit connection | -C | 21.00 |
| | NGS-2100 Carbon steel mating flange | NGS-MFF1 | 158.00 |
| | NGS-2100 316 stainless steel mating flange | NGS-MFF2 | 331.00 |

Microwave Level Switch

- Good to 212° F (to 302° F for 30 minutes for CIP applications)
- EHEDG approved for use in food applications
- For conductive and non-conductive media
- Level measurement, even with foam or deposits



Specifications

Operating Conditions: Process temperature: 32° to 212° F (302° F for 30 minutes for Clean-in-Place use); Ambient temperature: 150° F max; Working pressure: 145 PSI

Construction: Stainless steel head and thread supports, PEEK coupler, hygienic weld-in sleeves, IP67 protection rating

Connections: Process: G1/2, M12x1.5; Cable: M16x15 threaded connection

Output: Open collector, PNP, 50 mA

Switch Delay: 0.2 seconds standard, 0.3–1.0s available on request

Power Supply: 18-36 VDC, <50 mA without load

Dielectric Constant: >20

Call Lesman for pricing and delivery.

SITRANS LPS200 Rotary Paddle Switch for Bulk Solids



- Proven mechanical paddle switch for bulk solids level
- Switch-selectable power
- Unique friction clutch mechanism prevents damage caused by falling materials
- Stainless steel 1-1/4" NPT or 1-1/2" BSP threaded connection
- Hinged paddle option for use with low-density materials
- Paddle fits into a small threaded nozzle, where other manufacturer's models won't
- High temperature model and optional extension kit available



How It Works:

- Motorized paddle rotates in free air
- Material contact stops rotation
- Transferred torque activates switch
- Clutch avoids gear failure/replacement

Extended design and cable extension models also available. Call for current pricing and model selection options.

Siemens SITRANS LPS200 rotary paddle switch detects full, empty, or demand conditions on materials like grain, feed, cement, plastic granulate, and wood chips. The LPS paddle switch can handle bulk densities as low as 100 g/l with the standard measuring vane, or 35g/l with the hinged vane.

A low revolution geared motor with slip clutch drives a rotating vane that senses the presence of material at the LPS mounted level. As material comes into contact with the rotating paddle, rotation stops, which changes the microswitch state. When the paddle is no longer covered, rotation resumes and the relay reverts to its normal condition.

The LPS200 comes in a variety of configurations, including compact, extended, and cable extension. The LPS200 standard vane is effective in most applications, or it can be configured with a hinged vane for increased sensitivity for light materials.

Specifications

Temperature: -4° to 176° F (-20° to 80° C); *Optional:* -4° to 662° F (-20° to 350° C)

Pressure: 7 PSI (0.5 bar) max.; *Optional:* 145 PSI (10 bar)

Minimum Material Density: *Standard Vane:* Down to 100 g/l; *Hinged Vane:* Down to 15 g/l; (depends on shaft/vane coverage)

Power: Jumper selectable; 115 VAC, ±15%, 50-60 Hz, 4 VA, 230 VAC, ±15%, 50 Hz, 6 VA, or 24 VDC, ±15%, 2.5 W

Alarm Output: Relay 5A at 250 VAC, noninductive

Material: *Enclosure:* Epoxy coated aluminum, Type 4/NEMA 4/IP65; *Process connection:* 1-1/4" NPT, stainless steel; *Conduit entry:* 2 x 1/2" NPT; *Measuring shaft and vane:* Stainless steel

Approvals: FM/CSA Class II, Div. 2, Groups E-G; ATEX II 1/2 D (dust explosion); CE



Accessories

| Description | Catalog Number | Price |
|--|-------------------------------------|--------------------|
| SITRANS LPS200 Instruction Manual | 7ML1998-5FS62 | \$41.00 |
| Replacement Vane, Boot Shape, 35 x 106 mm | 7ML1830-1KH | 37.00 |
| Hinged Vane, 65 x 210 mm | 7ML1830-1KJ | 76.00 |
| Rigid Extension Kit: Spring coupling, rigid tube extension, and required pins. | | |
| Length | 500, 400, and 300 mm | 7ML5711-0AA 50.00 |
| | 1000, 900, 800, 700, and 600 mm | 7ML5711-1AA 76.00 |
| | 1500, 1400, 1300, 1200, and 1100 mm | 7ML5711-2AA 127.00 |
| | | |

SIEMENS

Ordering Instructions

Make one selection from each table section below. Check the availability column to be sure the unit you need is available. A finished catalog number looks like this: 7ML5725-5EE11-2AC0

Model Selection Guide

Please submit orders to: Siemens Industry Inc, c/o Lesman Instrument Company.

| Description | Model | Price |
|---|--------------------------------------|--------------------|
| LPS200 compact version with 1.25" NPT threaded connection, Process pressure to 7.25 psi (0.5 bar), measuring vane 1.38" x 4.17" | | |
| Process Temperature | Up to 176° F (80° C) | 7ML5725-1 \$377.00 |
| | Up to 302° F (150° C) | 7ML5725-2 541.00 |
| | Up to 482° F (250° C) | 7ML5725-3 635.00 |
| | Up to 662° F (350° C) | 7ML5725-4 758.00 |
| Power | 115 VAC, 1 Rev/Min | _E_ _ _ 0.00 |
| | Switch Selectable, 1 Rev/Min | _ZJ2A_ _ _ 83.00 |
| | Switch Selectable, 5 Rev/Min | _ZJ2C_ _ _ 96.00 |
| Connection Material | Aluminum | _ _ E11- 0.00 |
| | 303 Stainless Steel | _ _ E12- 42.00 |
| Extension Length | 3.94" (100 mm) with Boot-Shaped Vane | 1A _ _ 0.00 |
| | 5.91" (150 mm) with Boot-Shaped Vane | 2A _ _ 0.00 |
| Agency Approvals | CSA/FM Dust Ignition Proof | _ _ A0 116.00 |
| | CSA/FM General Purpose | _ _ C0 0.00 |

Quick Ship Models

(Two week standard delivery)

| | | |
|--|-----------------------|----------|
| Compact LPS200, aluminum, 115 VAC power, 1 rev/min, 1.25" NPT thread, 7.25 PSI max pressure, 3.94" extension, 1.38" x 4.17" boot shaped vane, CSA/FM General Purpose approval | | |
| LPS200 compact aluminum model | 7ML5725-5EE11-2AC0 | \$298.00 |
| Compact LPS200, stainless steel, switch-selectable power, 1 rev/min, 1.25" NPT thread, 7.25 PSI max pressure, 5.91" extension, 1.38" x 4.17" boot shaped vane, CSA/FM Dust Ignition Proof approval | | |
| LPS200 compact stainless steel model | 7ML5725-6ZJ2AE12-2AA0 | 446.00 |
| Extended design LPS200, 303 stainless steel, switch-selectable power, 1 rev/min, 1.25" NPT thread, 7.25 PSI max pressure, 7.87" extension, 1.38" x 4.17" boot shaped vane, CSA/FM Dust Ignition Proof approval | | |
| LPS200 extended stainless steel model | 7ML5726-5ZJ2AC12-2BA1 | 482.00 |

SITRANS LVS200 Vibrating Fork Switch for Bulk Solids



**LVS200 with pipe extensions
start at \$815.00**

**LVS200 with cable
extensions start at \$764.00**

- High resistance to mechanical forces
- Suitable for low density materials: standard version 20 g/l (1.3 PCF), liquids/solids interface version 60 g/l (3 PCF)
- Extension lengths to 4000 mm (157")
- Low frequency, low energy operation
- Best self-cleaning properties
- Won't burrow into the material
- High or low level alarm in solids — Simple failsafe high/low selection

Vibrating Fork Technology

As soon as you apply power, the LVS200 forks vibrate. The forks are very active and sensitive at the tip — not at the base — to help resist detecting material buildup between the forks.

A dual crystal pack is directly coupled to the vibrating legs to generate high amplitude, low frequency (125 Hz) vibration, providing optimum self-cleaning characteristics during operation.

A third passive crystal senses the fork vibration. Relays activate when fork vibration is damped by

material contact, and the resulting signal falls below the sensitivity threshold.

The forks vibrate at a high amplitude, but with low energy. This ensures reliable detection of even the lightest material, and avoids the tendency to burrow and lose contact.

Factory sensitivity setting fits most applications, especially for light materials. For higher density materials, operating sensitivity can be switched lower to avoid some material adhesion.

The SITRANS LVS200 is an electromechanical vibratory switch for level detection of powder and granular solids.

The SITRANS LVS200 is an excellent solution for low bulk density, low humidity/adhesion, and free flowing applications. This unit is ideal for new installations or for replacing:

- Diaphragm-based switches subject to rupture
- Problematic rotating paddle switches
- Electrostatic discharge sensitive switches
- Material dielectric sensitive switches
- Switches that require special application configuration

The standard LVS200 detects high or low levels of dry bulk solids in bins, silos, or hoppers. The liquid/solid interface version can also detect settled solids within liquids or solids in confined spaces, like feed pipes. It is designed to ignore liquids in order to detect the interface between a solid and a liquid. A pipe extension version is available with either the standard or liquid/solid interface electronics and fork, separated by a customer-supplied 1" pipe.

The LVS has a compact design, and can be top- or side-mounted. The vibrating fork design ensures the lines are kept clean. The unique design of the fork and crystal assembly eliminates false high level readings.

Specifications

Material Density: 20 g/l (1.3 lb/ft³) min.; *Liquid/Solid interface version:* 60 g/l (3 lb/ft³)

Process Temperature: -40° to 302° F (-40° to 150° C); *CSA Class II, Group G:* -40° to 284° F (-40° to 140° C), CSA temperature code T3B

Pressure: 145 PSI maximum

Sensitivity: High or low, switch selectable

Measuring Frequency: 125 Hz; *Liquid/Solid interface version:* 350 Hz

Power: 19-230 VAC, ±10%, 50-60 Hz, 8 VA or 19-55 VDC, ±10%, 1.5 W

Alarm Output: *Relay delay:* Approx. 1 second from loss of vibration; Approx. 1 to 2 seconds from resumption of vibration; *Relay failsafe:* High or low, switch selectable; Relay 8A at 250 VAC, noninductive

Material: *Enclosure:* Epoxy coated aluminum, NEMA 4/Type 4/IP65; *Process connection:* 1.5" NPT; *Sensor:* Stainless steel; *Conduit entry:* 1/2" NPT

Approvals: FM/CSA Class II, Div. 1, Groups E-G, Class III; ATEX II 1/2 D (Dust Explosion Proof); CE



Ordering Instructions

Make one selection from each table section below. Check the availability column to be sure the unit you need is available. A finished catalog number looks like this: 7ML5731-7AB11-1AA0

Model Selection Guide

Please submit orders to: Siemens Industry Inc, c/o Lesman Instrument Company.

Basic LVS200, 19-230 VAC/19-55 VDC, one SPDT relay output, no temperature isolator, 1.5" NPT threaded process connection, 304SS standard extension, with CSA/FM dust-ignition proof approval 7ML5731-7AB11-1AA0 \$552.00

| Description | Model | Price |
|---|---|--|
| LVS200 standard vibrating point level switch for high or low levels of bulk solids. | | |
| 19-230 VAC, 19-55 VDC, One Relay Output (SPDT) | 7ML5731-1 | \$534.00 |
| 19-230 VAC, 19-55 VDC, Two Relay Outputs (DPDT) | 7ML5731-2 | 588.00 |
| Process Temperature | No Temperature Isolator Temperature Isolator | _ A _ _ _ - 0.00 _ B _ _ _ - 144.00 |
| Process Connection | 1.5" NPT Threaded (ANSI/ASME B1.20.1) 2" NPT Threaded, Sliding Sleeve 2" ASME Flange 150 Lb 3" ASME Flange 150 Lb 4" ASME Flange 150 Lb | _ _ B _ _ - 0.00 _ _ D _ _ - 216.00 _ _ G _ _ - 254.00 _ _ H _ _ - 333.00 _ _ J _ _ - 435.00 |
| Extension Length | Standard Length, 230 mm (9.06") 300-500 mm (11.81"-19.69") 501-750 mm (19.72"-29.53") | _ _ _ 31- 0.00 _ _ _ 32- 248.00 _ _ _ 33- 295.00 |
| [Note 1] | 751-1000 mm (29.57"-39.37") 1001-1250 mm (39.41"-49.21") 1251-1500 mm (49.25"-59.06") | _ _ _ 34- 327.00 _ _ _ 35- 358.00 _ _ _ 36- 390.00 |
| Material | 316 SS Ti (1.4571) Connection, Extension | 2 _ _ _ 52.00 |
| Approvals | CSA/FM General Service CSA/FM Dust-Ignition Proof CSA/FM Intrinsically Safe | _ CA0 0.00 _ AA0 108.00 _ EA0 108.00 |
| SITRANS LVS200 User Manual | | 7ML1998-5FT63 \$50.00 |
| Replacement Electronics Module (125Hz) | | 7ML1830-1KL 305.00 |
| 2" NPT Sliding Sleeve | | 7ML1830-1JN 295.00 |

Note 1: For extensions other than 230 mm standard length (Code 31), add the following to your model number: Y01: Insertion Length ____ mm

Call for remote enclosure and cable lengths to 4000 mm.

Pointek ULS200: Ultrasonic Point Level Detection Sensor



Features

- Non-contacting point level detection for bulk solids (0.8 to 9.8 ft.), liquids and slurries (0.8 to 16.4 ft.)
- Type 6, NEMA 6/IP67 polycarbonate or aluminum enclosure
- Built-in temperature compensation
- Two-button setup, simple cable-entry wiring, and a self-cleaning sensor
- AC or DC power supply
- Sanitary version available, with an industry standard flange

In Case of Emergency...

You can use your Pointek ULS200 as a high-level emergency shutoff switch!

It's a good engineering practice to have a backup high-level switch that uses a different technology than your continuous level devices.

Look at all the ULS200 offers...

- Two independent settings that allow for high- and low- level switch points from a single unit
- Noncontacting, self-cleaning sensor, made of Tefzel® or Kynar-Flex®
- Polycarbonate or epoxy enclosure available

The perfect point level backup device for your capacitance applications.

Specifications

Detection Range: Liquids: 0.8 to 16.4 ft. Solids: 0.8 to 9.8 ft.

Operating Modes: High, low, high-high, high-low, low-low level indication

Repeatability: 0.25% of full range

Resolution: 0.1"

Echo Processing: Patented Sonic Intelligence® software

Memory: Nonvolatile EEPROM

Operating Pressure: 30 PSI

Beam Angle: 10° at 3db boundary

Ambient/Process Temperature:
-40° to 140° F. Metal mounting: -5° to 140° F

Outputs: AC Version: Two Form C SPDT contacts, rated 5A at 250 VAC non-inductive; DC Version: Two nonpolarized transistor switches rated 48 VDC, 100 mA max. or two Form C SPDT contacts, rated 5A at 48 VDC

LCD Display: Displays three 0.35" digits for programming distance between sensor face and material. Multi-segment graphic for operation status.

Programming: Two keys

Power Supply: 18 to 30 VDC, 3W max. or 100 to 230 VAC max.

Terminal Block Wiring: 14 gauge solid/16 gauge stranded max.

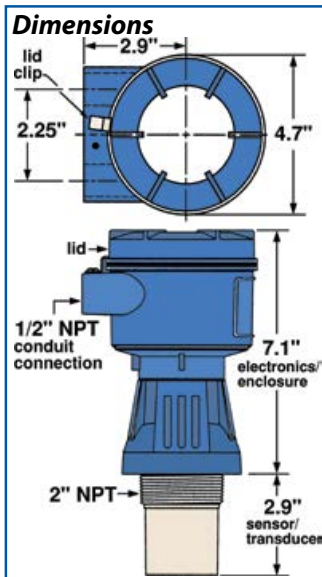
Cable Entry (2 connections): Polycarbonate enclosure: PG 13.5 or 1/2" NPT. Aluminum enclosure: 1/2" NPT or PG 13.5

Sensor Mounting: Threaded: 2" NPT, 2" BSP or PF2.

Electronics Enclosure: Material: Polycarbonate or Epoxy coated aluminum with gasket. Ingress protection: Type 6/NEMA 6/IP67. Sensor: ETFE or PVDF

Environmental : Location: Indoor/outdoor; Altitude: 6562 ft. max.; Installation category: II; Pollution degree: 4

Approvals: CE, CSA/FM Class I, II, III, Div 1, Gr A-G T4, ATEX II, C-TIC, INMETRO



Note: The ultrasonic Pointek ULS200 is intended to be a primary measurement and control device. For overflow or level safe protection, Siemens advises using Pointek contacting technology, like the **CLS200** on pages 52 to 53.



Ordering Instructions

Select one option from each table following. A complete catalog number looks like this: 7ML1510 - _____

Model Selection Guide

Please submit orders to: Siemens Industry Inc, c/o Lesman Instrument Company.

| Description | | Catalog Number | Price |
|---|---|----------------|----------|
| ULS200: Ultrasonic Point Level Detection Sensor | | 7ML1510 - | \$988.00 |
| Power | 24 VDC, Relay Output | 1 _ _ _ _ | 0.00 |
| | 24 VDC, Transistor Output | 2 _ _ _ _ | 0.00 |
| | 100 to 230 VAC, Relay Output | 3 _ _ _ _ | 137.00 |
| Approvals | CE, CSA, CI I Div 2, Zone 2, CI 2 Div 2 | _ J _ _ _ | 0.00 |
| | CE, C-TICK, CSA, FM, GP | _ K _ _ _ | 0.00 |
| Process Connection | 2" NPT ETFE | _ _ A _ _ | 50.00 |
| | 2" NPT PVDF Copolymer | _ _ E _ _ | 0.00 |
| Housing/ Cable Entry | Polycarbonate, 1/2" NPT | _ _ _ _ 02 | 0.00 |
| | Aluminum, 1/2" NPT | _ _ _ _ 04 | 168.00 |
| Parts and Accessories | FMS200 Universal Box Bracket | 7ML1830-1BK | 148.00 |
| | Universal Adaptor, 2" NPT | 7ML1830-1BT | 145.00 |
| | Polycarbonate Lid | 7ML1830-1LG | 22.00 |
| | Aluminum Lid | 7ML1830-1LH | 46.00 |



SIEMENS Pointek CLS100 Capacitance Point Level Switch



Features

- Very short (4") insertion length
- Suitable for use with both conductive and nonconductive process media
- Accurate, repeatable switchpoint due to advanced tip-sensing technology
- Extremely high chemical resistance
- Level detection independent of tank wall or pipe system
- Simple setup procedure, verification with built-in LEDs
- Precision 20-turn potentiometer for adjustable sensitivity
- Two level outputs: Two-wire current loop detection and solid-state transistor relay
- Low maintenance costs — no moving parts
- Can be connected directly to most PLCs
- Intrinsically safe and dust/ignition-proof models

Specifications

Models: Standard, intrinsically safe

Modes of Operation: High/low

Switchpoint Repeatability: 0.08"

Operating Frequency: 5.5 MHz

Dielectric Constant: 1.5 min.

Temperature Range: -40° to 257° F

Pressure (Vessel) Range: 0 absolute to 2500 kPa (25 bar or 365 PSI) gauge

Adjustment Potentiometer: 20-turn

Current Output: 0/4-20 mA loop supplied;
Current Reversible: By polarity change
power supply; *Load:* 600Ω max. @ 24VDC

Solid-State Switch: *Output:* Galvanically isolated, 100 mA max. load current;
Switch voltage: 28 VAC/40 VDC max.

Integrated Enclosure: *Housing (Electronics)/Connection:* AISI 316L stainless steel;
Ingress Protection: Type 4X/NEMA 4X/
IP65; *Connection:* 4 conductor, 22 AWG,
shielded, 3.3 ft. black polyester cable

Signal Indicators: LEDs for adjustment control, output status, and power

Power: *Standard Model:* 10-33 VDC; *Intrinsically Safe Model:* 10-30 VDC

Sensor Probe: PVDF Kynar®, 4" insertion, 3/4" NPT process connection

Approvals: *Standard Model:* CE/KEMA/FM. CSA approvals (Class II, III, Div. 1, Groups E, F, G); *Intrinsically Safe Model:* CE/CENELEC/FM. CSA approvals (Class I, Div. 1, Groups A-D)

SensGuard Chemical-Resistant Probe Cover

Pressure Range: Full vacuum to 365 PSI (FV to 25 bar)

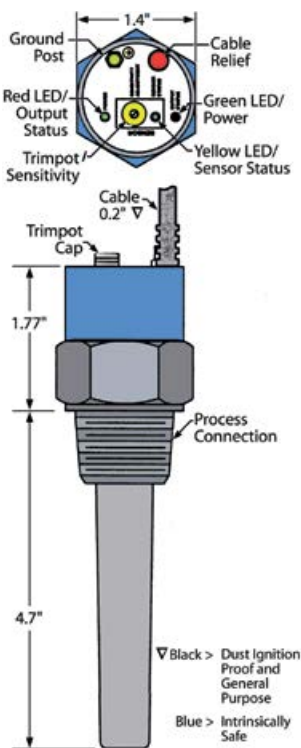
Temperature Range: -40° to 257° F (-40° to 125° C)

Construction: Polyphenylene Sulfide, fiberglass filled

Process Connections: *External:* 3/4" NPT; *Internal:* 3/4" NPT

Insert Length: 2.75"

Flexural Strength: 315 lbs.



CLS100 Through the "Site Glass"



CLS100 has been field-tested in many applications. It's sensitive enough to measure levels accurately through tank windows and site glasses made of plastic, glass, or fiberglass.

It works with a heavy material buildup on the sensor (like chocolate or dust), and even in sludge interfaces. Want a demo? Call us!

Ordering Instructions

Select one option from each table section below. A completed catalog number looks like this: 7ML5501 - _____

Model Selection Guide

Please submit orders to: Siemens Industry Inc,
c/o Lesman Instrument Company.

| Description | | Catalog Number | Price Each |
|--|--|------------------------------|------------------------------------|
| CLS100: Capacitance Point Level Detection Sensor, 3/4" NPT Thread | | 7ML5501 - | \$243.00 |
| Approvals | General Purpose | 0AA __ | 0.00 |
| | Intrinsically Safe | 0AC __ | 66.00 |
| Versions Options | Standard Integrated Cable | ___10 | 0.00 |
| | ABS Enclosure, 1/2" NPT Conduit | ___30 | 50.00 |
| | Integrated Cable, Kynar Probe Body | ___50 | 94.00 |
| | ABS Enclosure, Kynar Probe Body | ___60 | 129.00 |
| Accessories | | | |
| SensGuard 3/4" NPT Chem-Resistant Probe Cover | | 7ML1830-1DL | 83.00 |
| Stainless Steel Tag (Single Text Line) | | 7ML1930-1AC | 53.00 |
| CLS Flange, 3/4" Thread for Mounting any 3/4" NPT Pointek CLS Level Switch | | 7ML1500-0__0 | 0.00 |
| Flanged Process Connection Size | 1" (A _) 1.5" (B _) 2" (C _) 3" (D _) 4" (E _) | Pressure Rating (ANSI B16.5) | |
| | | 150 Lbs. (_ A) | 300 Lbs. (_ B) 600 Lbs. (_ C) |
| | | \$249.00 | \$300.00 \$318.00 |
| | | 296.00 | 347.00 377.00 |
| | | 352.00 | 396.00 458.00 |
| | | 421.00 | 513.00 555.00 |
| 506.00 | 650.00 770.00 | | |

Pointek CLS200: Capacitance Point Level Detection Sensors

SIEMENS

Probe buildup affecting level readings? Not with Siemens CLS sensors.

Visit www.Lesman.com/train/ to watch the video demo!



Pointek CLS capacitance point level detection switches...

- Work accurately without a reference electrode
- Detect a single, high, or low level for liquids, solids, slurries, or foam (material with a dielectric constant >1.5)
- Work in vessels of any shape, made of conductive or nonconductive material
- Operate in temperatures to 257° F
- Accept voltage from 12 to 250 VAC/DC, without jumpers

How is our capacitance offering different?

- Compact design and 3.9" insertion length, so you can use more of your tank for product
- Adjustable insertion lengths: Slide coupling lets you put more probe into the process
- Mounting options: 3/4", 1", 1.5" NPT, 3A sanitary, and flanges
- Electronics tested to 4G vibration levels in three dimensions
- Flame-, explosion-, and dust/ignition-proof approvals

Models

Choose from standard, rigid, sanitary or cable sensors. While the base unit remains constant, each model can have a different process connection, extension, or approval. Both standard and extended length units are designed for clean-in-place (CIP) applications in the food industry.

Standard Models: Suitable for use in virtually any point level detection application. With a minimum insertion length of just 4 inches compared with 14 inches on competitive products, the standard model can be easily installed in small diameter pipes. In tank applications, content capacity can be maximized.

Sanitary Models: Meet industry requirements for temperatures exceeding 212° F. The process connection is a sanitary standard tri-clamp. Wetted parts of 316L stainless steel and PVDF (Kynar®) are 3A compliant and food-grade safe.

Extended Models: Available in both cable and rigid versions. When it is not possible to penetrate the tank wall near the bottom, Pointek CLS cable versions provide excellent application flexibility through the use of cable extension, protected by a PVDF jacket.

Effective in both liquids and solids, these versatile units can also be used for level detection and for interface detection (e.g. oil/water) in large storage tanks. Cable can be supplied at lengths up to 115 feet to meet specific application requirements.

Rigid versions have short or extended rod lengths up to 18 feet. An adjustable sliding process mount is available.

Options

Thermal Isolator (Thermopart): In applications where the ambient temperature of the transmitter can exceed 185° F due to hot processes. The isolator extension raises the enclosure approximately 4" above the process fitting.

Process Connections: Process connection sizes range from 3/4" to 1.5 NPT and 1" to 3" sanitary flange.

Adjustable Sliding Process Mount: For applications where the exact level sensing point is in doubt, a sliding process sealing gland is available to provide exact adjustment of the sensor's position.

See what makes Pointek different.

NEMA 4/IP65 Aluminum Enclosure

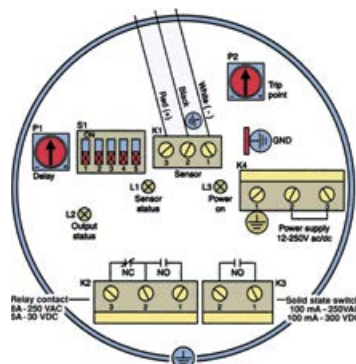
The cast aluminum enclosure is epoxy coated to provide additional chemical resistance. Remove the lid to gain access to wiring, dip switch settings, and LED functions.

Alarm/Control Functions and Failsafe Operation

The SPDT relay provides normally open and normally closed contacts. You can use the failsafe relay operation for alarm purposes to alarm on material detection or instrument power interruption.

The solid-state relay (300 VDC or 250 VAC) is polarity insensitive for simplified wiring, and galvanically isolated for circuit protection.

You can add a relay across the power source to generate a two-wire output based on the drawn power supply current.



Material Sensitivity Adjustment Reduces Spare Parts

When you're detecting a sticky conductive material, you can easily adjust the level detection switchpoint using either the range selection switch or potentiometer.

No Relay Chatter!

An adjustable output delay prevents chatter when material is at the critical detection level. It is adjusted by a single potentiometer and applied to both the SPDT relay and transistor outputs.

It can also be applied when entering or leaving alarm. The delay can be temporarily disabled to confirm output operation, without readjusting the delay setting.

LED Indicators

The Power On, Sensor Status, and Output Status LED indicators provide a simple way to verify performance during installation.

Power On confirms that power is supplied to the unit. Sensor Status indicates that material has been detected. Output Status shows the change in output state.

Illinois, Indiana, Missouri, and Iowa
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman Instrument Company
www.lesman.com
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

V 01.2019

**CAPACITANCE
POINT LEVEL**

53



Common Specifications

Supply Voltage: 12 to 260 VAC/DC, any polarity, galvanically isolated

Power Consumption: 2VA/2 Watts

Signal Indicators: 3 LEDs provide adjustment, output status, and power

Adjustment: *Potentiometers:* 2, for adjustment of time delay and sensitivity;
Switches: 1 SPST dip switch for time delay select. Failsafe high/low, and time delay test/adjust, high low sensitivity

Temperature Range: -40° to 185° F operation and storage

Materials: *Process Connection:* 316L Stainless Steel; *Probe:* PPS (Ryton);
Enclosure: Epoxy Coated Aluminum (NEMA 4X, 7/9, IP65)

Switch Point Repeatability: 0.08"; *Hysteresis:* 0.08"

Dielectric Constant: 1.5 minimum

Operating Frequency: 5 MHz maximum

Cable Entry: 1/2" NPT; *Cable Gland:* PG 13.5 (available)

Output Functions

Relay Contact: Form C SPDT, NC or NO contact selectable

Contact Load: 10 mA/50 VDC min., 50A/30 VDC max.; 8A/250 VAC max.

Switching Capacity: 2000VA/150 Watt max.

Solid-State Switch: Galvanically isolated, with sensor failure detection

Safety: Non-polarity sensitive (no wiring errors)

Switch Voltage: 250 VAC/300 VDC max.; *Voltage Drop:* <1 Volt

Load: 2 Watt max. *Load Current:* 100 mA max.

Time Delay: (On/Off) 1-60 seconds

Approvals: General Purpose; *Dust/Ignition-Proof*
worth IS Probe: CSA/FM Class II, Div. 1, Group E-G,
Class III T4; *Explosion-Proof:* CSA Class I, Div. 1,
Groups A-D



Standard Model

Process Connections: 3/4" NPT

Maximum Length: 4"

Resistance: 365 PSI maximum

Sanitary Model

Process Connections: 1", 1.5" or 2"
Tri-Clamp

Maximum Length: 4"

Resistance: 365 PSI maximum

Extended Rigid Model

Process Connections: 3/4" NPT

Maximum Length: 216"

Resistance: 365 PSI maximum

Extended Cable Model

Process Connections: 3/4" NPT

Maximum Length: 1,378"

Tensile Strength: 396 Lbs. max

Resistance: 150 PSI maximum

Use the CLS in More Applications than Ever Before

**With the SensGuard abrasive- and chemical-
resistant cover for the CLS standard probe.**

- NPT threaded process connection sizes
- Handles pressure ranges from full vacuum to 365 PSIG, temperatures from -40° to 257° F



Ordering Instructions

Select one option from each table section below. A complete catalog number looks like this: 7ML5630-_____-_____-_____

Please submit orders to: **Siemens Industry Inc.**
c/o Lesman Instrument Company.

Model Selection Guide

| Catalog Description | | Price Number | Each |
|--|--|------------------------------|-----------------------------------|
| CLS200 Capacitance Point Level Detection Sensor | | 7ML5630 - | \$576.00 |
| 316L SS Process Connection | Threaded, 3/4" NPT | 0A_ _ _ | 0.00 |
| | Threaded, 1" NPT | 0B_ _ _ | 39.00 |
| | Threaded, 1.25" NPT | 0C_ _ _ | 51.00 |
| | Threaded, 1.5" NPT | 0D_ _ _ | 86.00 |
| | 1" ASME, 150 Lb Welded Flange | 5A_ _ _ | 281.00 |
| | 1.5" ASME, 150 Lb Welded Flange | 5D_ _ _ | 340.00 |
| | 2" ASME, 150 Lb Welded Flange | 5G_ _ _ | 405.00 |
| | 3" ASME, 150 Lb Welded Flange | 5K_ _ _ | 483.00 |
| | 4" ASME, 150 Lb Welded Flange | 5N_ _ _ | 577.00 |
| Standard Insertion Lengths (No Y01 code needed.) Length from flange face. Threaded lengths include process connection | | | |
| Standard Compact (Threaded 120 mm, Flanged 98 mm) | | _ _ _ A _ _ | 0.00 |
| Standard Extended Rod 250 mm 9.84" | | _ _ _ B _ _ | 85.00 |
| Standard Extended Rod 350 mm 13.78" | | _ _ _ C _ _ | 168.00 |
| Standard Extended Rod 500 mm 19.69" | | _ _ _ D _ _ | 195.00 |
| Standard Extended Rod 750 mm 29.53" | | _ _ _ E _ _ | 250.00 |
| Standard Extended Rod 1000 mm 39.37" | | _ _ _ F _ _ | 265.00 |
| Standard Extended Rod 1250 mm 49.21" | | _ _ _ G _ _ | 278.00 |
| Standard Extended Rod 1350 mm 53.15" | | _ _ _ H _ _ | 292.00 |
| Standard Extended Rod 1500 mm 59.06" | | _ _ _ J _ _ | 306.00 |
| Standard Extended Rod 1750 mm 68.09" | | _ _ _ K _ _ | 321.00 |
| Standard Extended Rod 2000 mm 78.74" | | _ _ _ L _ _ | 333.00 |
| Temp/ Electronics | No Thermal Isolator | _ _ _ 0 _ | 0.00 |
| | Thermal Isolator (Process Temps >185° F) | _ _ _ 1 _ | 58.00 |
| | Remote Mount Electronics, 2 m Cable | _ _ _ 2 _ | 322.00 |
| | Remote Mount Electronics, 5 m Cable | _ _ _ 3 _ | 340.00 |
| Wetted Materials | FKM | _ _ _ 0 - | 0.00 |
| | FFKM (Process Temps > -47° F) | _ _ _ 1 - | 141.00 |
| Probe Material | 316L SS with PPS Probe Body | 0 _ _ _ | 0.00 |
| | 316L SS with PVDF Probe Body | 1 _ _ _ | 58.00 |
| Approvals | CSA/FM/CE General Service | _ H _ _ | 0.00 |
| | CSA/FM Dust-Ignition Proof, IS Probe | _ F _ _ | 58.00 |
| | CSA/FM Explosion Proof, IS Probe | _ G _ _ | 132.00 |
| Enclosure | IP65 Rating | _ _ A0 | 0.00 |
| | IP68 Rating | _ _ C0 | 51.00 |
| CLS Flange, 3/4" Thread for Mounting any 3/4" NPT Pointek CLS Level Switch | | | 7ML1500-0_ _ 0 0.00 |
| | | Pressure Rating (ANSI B16.5) | |
| | | 150 Lbs. (_ A) | 300 Lbs. (_ B) 600 Lbs. (_ C) |
| Flanged Process Connection Size | 1" (A _) | \$249.00 | \$300.00 \$318.00 |
| | 1.5" (B _) | 296.00 | 347.00 377.00 |
| | 2" (C _) | 352.00 | 396.00 458.00 |
| | 3" (D _) | 421.00 | 513.00 555.00 |
| | 4" (E _) | 506.00 | 650.00 770.00 |
| Spare Parts and Accessories | | | |
| 1/2" HF Cable Gland (GP, Dust/Ignition-Proof) | | 7ML1830-1JA | \$33.00 |
| 1/2" HF Cable Gland (Explosion-Proof) | | 7ML1830-1JB | 38.00 |
| 3/4" NPT Ryton SensGuard (PPS) Cover | | 7ML1830-1DL | 83.00 |

Need a custom probe length? Call Lesman. Custom extended rods available up to 18.04' (5500 mm).

Welded flange process connections also available in ASME 300 and 600 lb versions. Call for pricing.

Pointek CLS300: Capacitance Point Level Detection Sensors

SIEMENS

Buildup on the probe affecting your level readings? Not with Siemens CLS sensors. Visit Lesman.com/train/ to watch the video demonstration.



Features

- One design fits all, even in harsh and heavy duty environments; suitable for high pressures and high temperatures in liquids, solids, slurries, and interfaces
- All wetted parts made of stainless steel and PFA, Teflon, or ceramics for high-chemical resistance
- High-sensitivity probe provides accurate level detection without the effects of conductive material buildup. Works equally well in wood chips or tomato sauce!
- Patented LC500 active technology for reliable point level detection, unaffected by vapor concentration, product deposits, dust, and condensation
- Simple threshold/air calibration for rapid, cost-effective setup with LED verification
- Universal galvanically isolated power supply and one universal transmitter provide low cost of ownership and minimal requirements for stocking spare parts
- Multiple switch outputs provide relay, solid state (transistor), or two-wire point detection with one design, including time delays for on/off

The Pointek CLS300 offers accurate, reliable level detection even in harsh, heavy duty industrial applications with high pressures and high temperatures.

It's effective in liquids, solids, slurries, interfaces, and applications involving viscous (conductive and nonconductive) materials. The fully potted transmitter is unaffected by condensation, dust, or vibration.

All metal parts are made of stainless steel, with a PFA Teflon shield section for high chemical resistance. For higher temperature applications, ceramics can be supplied. Materials with low or high dielectric properties are accurately detected, and the unique active shield helps in ignoring the effects of buildup.

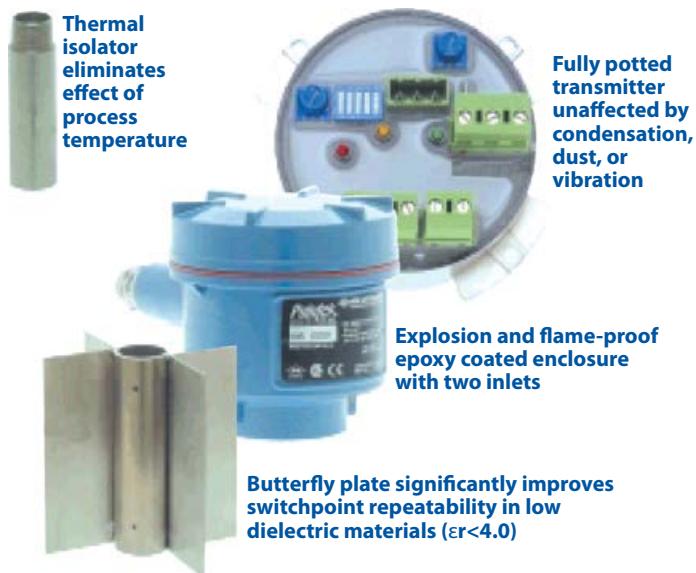
Its unique modular design provides for a wide range of configurations, process connections, extensions, and approvals to meet the precise temperature and pressure requirements of specific applications. The modular design makes it easy to specify and reduces stocking requirements. A wide range of probe configurations is available, including rod and cable/rope models.

The Technology Behind the Performance

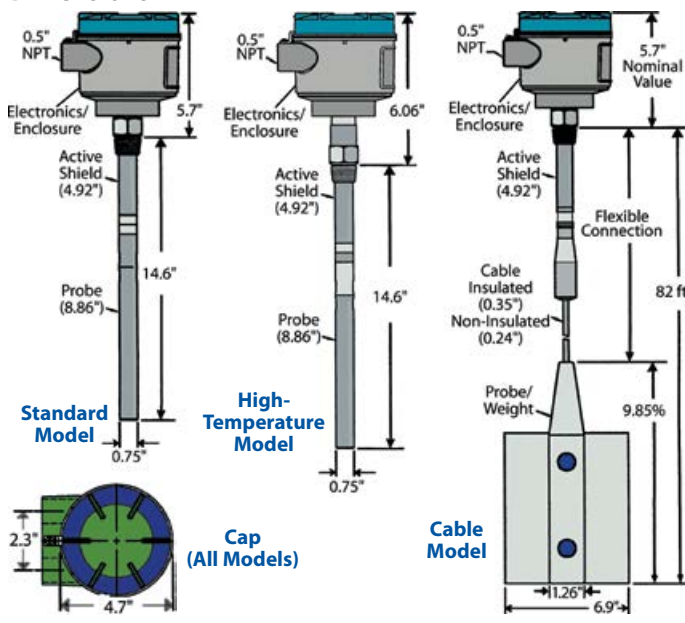
The Pointek CLS300 is based on the patented, field-proven LC500 level measurement technology. It combines active shield technology with a wide input range, temperature stability, and inverse frequency operation. The active shield is electrically isolated from an active measurement section. The active measurement section becomes the frequency-determining component for the triangular wave oscillator in the transmitter.

When the capacitance increases or decreases with the level of material, the measuring frequency changes inversely. The same signal is also connected to the active shield portion of the probe, effectively eliminating the electrical potential difference between the shield and the measurement section. The probe will not be affected by changes in vapor concentration, dust, or condensation.

The CLS300 will provide accurate level detection even in highly conductive materials with build-up on the probe.



Dimensions



Illinois, Indiana, Missouri, and Iowa
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman Instrument Company
www.lesman.com
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

V 01.2019

**CAPACITANCE
POINT LEVEL**

55 L

Specifications

Dielectric Constant: 1.5 minimum

Temperature Range: -40° to 398° F; *High-temperature version:* -40° to 752° F

Pressure Range: 511 PSIG

Probe Lengths: *Rod version:* 14" to 40"; *Rope/cable version:* 20" to 985"

Tensile Force: 4,188 lbs. maximum

Wetted Parts: AISI 316L/PFA/Peek; *High-temperature version:* AISI 316L/ ceramics Al₂O₃ (99.7%)

Enclosure: Epoxy coated, NEMA 4/Type 4/IP65 with NPT, BSPT, or JIS process connections

Approvals: FM/CSA Class I, Div. 1, Groups A-D, Class II/III, Div. 1 Grps E-G (Dust/Ignition Proof), CE, NRTL/C, CENELEC EEx d [ia] IIC, T6.T4



Power Supply and Transmitter

Supply Voltage: 12-250 VAC/VDC any polarity galvanically isolated

Power Consumption: 2 VA/2 Watt

Wiring Connections: Max. 0.009"; *Temperature range:* -40° to 185° F

Signal Indicators: 3 LEDs for adjustment control, output status and power

Adjustment Potentiometers: 2 PCS, for time delay and sensitivity

Adjustment Switches: 5 PST dip switch for time delay select. Failsafe high/low and time delay test/adjust, high/low sensitivity

Sensitivity: 1% max. change in actual capacitance

Temperature Drift: 0.2% max. of actual capacitance value

Measurement Frequency: 600 kHz max.

E.S.D. Protection (kV): Protected to 55 kV continuous discharge

Output Functions

Relay Contact (with Signal Failure Detection): Form C SPDT (selectable NC or NO contact); *Max. contact load:* DC: 5A/30VDC; AC: 8A/250VAC (cosφ=1); *Max. switching capacity:* 150 Watt/2000VA; *Min. contact load:* 10 mA/5VDC; *Time delay (on and/or off):* 1-60 seconds

Solid-State Switch (with Signal Failure Detection): *Output:* Galvanically isolated; *Safety:* Non-polarity sensitive transmitter; *Max. load:* 2 Watt; *Max. switch voltage:* 250 VAC/300VDC; *Max. load current:* 100 mA; *Voltage drop:* Below 1 Volt typical at 50 mA; *Time delay (on and/off):* 1-60 seconds.

Two-Wire Switch: With customer-supplied external trip devices

Technical Tips Blog

On the Lesman blog, our technical team covers everything from industry standards and basic technical tips to the tricks that will save you hours in the field making that one instrument work as expected.

Field problems solved, and "So What?" reviews

When our technicians run into a situation in the field, they write a quick post for the blog, so you can learn from their experiences, like where to properly install an ultrasonic transducer for best level measurement results, or what to do if you misplace your Siemens handheld programmer.

Our "So What?" reviews hit the heart of what matters most to you: How new products improve configuration, make installation and maintenance easier, and help solve common problems.

Get all the tips delivered straight to your PC, phone, or tablet. Subscribe at blog.Lesman.com! Click [Sign me up!].

Ordering Instructions

Select one option from each table section below. A complete catalog number looks like this: 7ML5650-_____-_____-Z

Model Selection Guide

Please submit orders to: Siemens Industry Inc,
c/o Lesman Instrument Company.

| Catalog Description | | Price Number | Each |
|---|---------------------------------|--------------|----------|
| CLS300 Capacitance Point Level Detection Sensor | | 7ML5650- | \$810.00 |
| 316L SS Process Connection | Threaded, 3/4" NPT | 0A_ _ _ | 0.00 |
| | Threaded, 1" NPT | 0B_ _ _ | 40.00 |
| | Threaded, 1.25" NPT | 0C_ _ _ | 54.00 |
| | Threaded, 1.5" NPT | 0D_ _ _ | 90.00 |
| | 1" ASME, 150 Lb Welded Flange | 5A_ _ _ | 289.00 |
| | 1" ASME, 300 Lb Welded Flange | 5B_ _ _ | 353.00 |
| | 1.5" ASME, 150 Lb Welded Flange | 5D_ _ _ | 350.00 |
| | 1.5" ASME, 300 Lb Welded Flange | 5E_ _ _ | 410.00 |
| | 2" ASME, 150 Lb Welded Flange | 5G_ _ _ | 416.00 |
| | 2" ASME, 300 Lb Welded Flange | 5H_ _ _ | 465.00 |
| | 3" ASME, 150 Lb Welded Flange | 5K_ _ _ | 495.00 |
| | 3" ASME, 300 Lb Welded Flange | 5L_ _ _ | 602.00 |
| | 4" ASME, 150 Lb Welded Flange | 5N_ _ _ | 594.00 |
| | 4" ASME, 300 Lb Welded Flange | 5P_ _ _ | 762.00 |

Standard Probe Lengths (No Y01 code needed.) Length from flange face.

Threaded lengths include process connection

| | | | | |
|-----------------------|---------|--------|-----------|--------|
| Standard Extended Rod | 350 mm | 13.78" | _ _ A _ _ | 0.00 |
| Standard Extended Rod | 500 mm | 19.69" | _ _ B _ _ | 51.00 |
| Standard Extended Rod | 750 mm | 29.53" | _ _ C _ _ | 98.00 |
| Standard Extended Rod | 1000 mm | 39.37" | _ _ D _ _ | 124.00 |

| | | | |
|---------------|---|-----------|-------|
| Temp. Options | No Thermal Isolator | _ _ _ 0 _ | 0.00 |
| | Thermal Isolator (Process Temps > 185° F) | _ _ _ 1 _ | 83.00 |

| | | | |
|--------------|-------------------------------|-------------|--------|
| Wetted Seals | FKM | _ _ _ _ 0 - | 0.00 |
| | FFKM (Process Temps > -47° F) | _ _ _ _ 1 - | 449.00 |

| | | | |
|-------|-------------------------------------|---------|------|
| Probe | 316L SS, PFA Lining, PEEK Isolators | 0 _ _ _ | 0.00 |
|-------|-------------------------------------|---------|------|

| | | | |
|-----------|--------------------------------------|---------|-------|
| Approvals | CSA/FM/CE General Service | _ H _ _ | 0.00 |
| | CSA/FM Dust-Ignition Proof, IS Probe | _ F _ _ | 47.00 |
| | CSA/FM Explosion Proof, IS Probe | _ G _ _ | 62.00 |

| | | | |
|-----------|-------------|---------|-------|
| Enclosure | IP65 Rating | _ _ A _ | 0.00 |
| | IP68 Rating | _ _ C _ | 54.00 |

| | | | |
|----------------------|------------------------------------|---------|--------|
| Active Shield Length | 125 mm Threaded, 105 mm Flanged | _ _ _ 0 | 0.00 |
| | 250 mm Threaded, 230 mm Flanged ** | _ _ _ 1 | 306.00 |
| | 400 mm Threaded, 380 mm Flanged ** | _ _ _ 2 | 329.00 |

| | | | |
|--|--|-----------------|------|
| CLS Flange, 3/4" Thread for Mounting any 3/4" NPT Pointek CLS Level Switch | | 7ML1500-0 _ _ 0 | 0.00 |
|--|--|-----------------|------|

| | | | | |
|------------|----------------|------------------------------|------------------|------------------|
| | | Pressure Rating (ANSI B16.5) | | |
| | | 150 Lbs. (_ A) | 300 Lbs. (_ B) | 600 Lbs. (_ C) |
| Flanged | 1" (_ A _) | \$249.00 | \$300.00 | \$318.00 |
| Process | 1.5" (_ B _) | 296.00 | 347.00 | 377.00 |
| Connection | 2" (_ C _) | 352.00 | 396.00 | 458.00 |
| Size | 3" (_ D _) | 421.00 | 513.00 | 555.00 |
| | 4" (_ E _) | 506.00 | 650.00 | 770.00 |

Spare Parts and Accessories

| | | |
|---|-------------|---------|
| 1/2" HF Cable Gland (GP, Dust/Ignition-Proof) | 7ML1830-1JA | \$33.00 |
| 1/2" HF Cable Gland (Explosion-Proof) | 7ML1830-1JB | 38.00 |
| 3/4" NPT Ryton SensGuard (PPS) Cover | 7ML1830-1DL | 83.00 |

** 250 mm Extended shield available only on probe lengths >500 mm.
400 mm Extended shield available only on probe lengths >750 mm.

Need a probe length that's not shown here? Call Lesman for custom probes from 9.8" to 39.3" (250 to 998 mm)

Need 600 lb ASME flanges? Call for pricing.

Pointek CLS500 Point Level Switch for Extreme Conditions

Features

- Wide range of applications in high pressure and temperature, chemically aggressive, and other extreme process environments
- Viscous, conductive and non-conductive liquids, solids, slurries, and interfaces
- Integrated local display for service and commissioning or remote adjustable programming and control via HART®
- Two-wire analog mA output with two-state functionality (4–20 mA or 20–4 mA)
- Adjustable hysteresis on/off for solid-state output and for current signal; Damping function
- Signal current compliant to NAMUR NE 43
- Full range of local/remote diagnostics
- Pre-detection of trip point for high safety requirements
- Polarity-insensitive current loop
- General purpose, dust/ignition-proof, explosion-proof, and intrinsically safe approved models



Specifications

Measurement Range: 0 to 330 pF; *Span:* Minimum 1 pF

Measurement Frequency: 420 kHz

Accuracy: Deviation <0.1% of actual measurement value; *Non-Linearity and Reproducibility:* 0.1% full scale and actual measurement respectively

Temperature Stability: Greater of 0.15 pF (0 pF) or <0.25% (typical <0.1%) actual measurement value over full temperature range

Process Connection: NPT thread; ANSI, DIN flat-faced flanges

Process Material: AISI 316 L standard; C 22.8 N, Monel 400, Hastelloy C22, Duplex optional

Safety: Current signaling according to NAMUR NE 43; 3.6 or 22 mA, probe input ESD protected to 55 kV, inputs/outputs fully galvanically isolated, polarity-insensitive current loop, fully potted, integrated safety barrier

Diagnostics: Includes fault alarm when primary variable (PV) out of limits, system failure in measurement circuit, deviation between A/D and D/A converter, checksum, watch dog and self-checking facility probe

Probe Length: *Rod version:* Up to 1000 mm (216") with 16 or 24 mm diameter probe; *Diameter:* 16 mm (0.63") or 24 mm (0.95") rod

Probe Installation: PFA, Enamel

Function Rotary Switch: Positions 0 to 9, A to F

Remote Communication: HART® Foundation

Pressure Rating: FV to 50 bar (725 PSI), up to 525 bar (7665 PSI) optional

Enclosure: Aluminum, epoxy coated Type 4X/NEMA 4X/IP65; 2 x 1/2" NPT cable entry

Temperature Rating: -328° to 392° F, up to 752° F optional

Supply Voltage: 12 to 33 VDC (30 VDC for IS model)

Loop Current: 3.6 to 22 mA / 22 to 3.6 mA (2-wire current loop)

Environmental: *Location:* indoor/outdoor; *Altitude:* 2000 m maximum; *Ambient Temperature:* -40° to 185° F standard and for T5 to T1 ATEX explosion proof, -40° to 158° F for T6; *Installation category:* II; *Pollution degree:* 4

Approvals: CE; FM/CSA: Class I, II & III, Div. 1 Groups A-D (Intrinsically Safe), Class I, Div. 2, Class II, Div. 2, Class III, Div. 1 & 2 (Hazardous Locations); FM: Class I, II & III, Div. 1 Groups A-D (Explosion Proof); 3A Sanitary



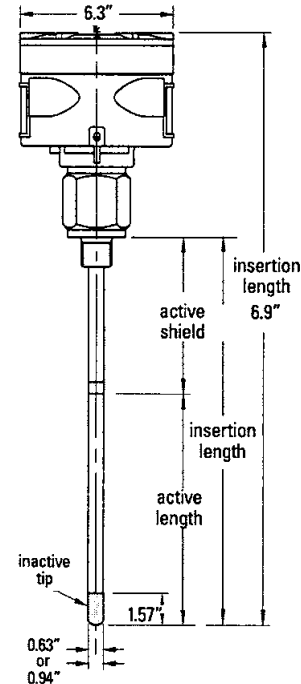
Siemens Pointek CLS500 is a two-wire capacitance point level switch for detecting interface solids, liquids, slurries, and viscous materials in critical conditions of extreme pressure. It uses a unique, frequency-based measurement system and patented Active-Shield technology to deliver highly accurate, repeatable results.

Measurement is unaffected by moisture, vapors, foam, temperature and pressure variations, or material build-up around the mounting glands.

The CLS500 combines a sophisticated, easy-to-adjust transmitter (MSP-2002-1) with a measurement electrode and process seal designed to accommodate numerous configurations. The advanced electronics and integrated local display provide for one-point calibration without interrupting the process, and the probe shield design eliminates the need for frequent recalibration.

Pointek CLS500 can be used as a pump controller, by connecting the 2-state mA output and/or the solid state switch to a relay, and activating a pump via an auxiliary power circuit.

Standard S-Series (Threaded)



Call for pricing on welded flange, single piece flange, and high-temperature configurations.



Ordering Instructions

Make one selection from each table below. A complete catalog number looks like this: 7ML5601-____-__AO_Z

Model Selection Guide

Please submit orders to: Siemens Industry Inc, c/o Lesman Instrument Company.

| Description | Catalog Number | Price |
|--|-------------------------------------|-----------------|
| Pointek CLS 500, S-series, threaded Two-Wire capacitance point level detection device, PFA probe insulation, 316LSS connection | 7ML5601- | \$864.00 |
| Electronic Transmitter | None | 0.00 |
| | MSP2002-1 (330 pF) | 1375.00 |
| Process Connection | 1" Threaded NPT | _BA1 _ - 0.00 |
| | 1 1/2" Threaded NPT | _DA1 _ - 0.00 |
| | 2" Threaded NPT | _EA1 _ - 0.00 |
| Approvals | General Purpose | ____1- 0.00 |
| | FM/CSA Approved | ____2- 114.00 |
| Probe/Electrode Diameter | 16 mm Rigid Rod, 1000 mm max length | 1____ _ 147.00 |
| | Rigid Thermal Isolator | _AA0 171.00 |
| Options | Total Insertion Length | Z-Y01 ____ 0.00 |
| | Active Shield Length (50 mm Min.) | Z-Y02 ____ 0.00 |
| MSP 2002-1 Transmitter, 330 PF | 7ML1830-1JP | 1376.00 |

Products to Make Your Plant Safer

Learn more at
Lesman.com



Reliable Solid State Technology Replaces Your Old Mechanical Switches

- Transmitter-only, switch-only and hybrid transmitter-switch models available — Switch-only model drops in to replace mechanical switches for upgrades with no re-wiring costs
- Digital process display — know what's happening in your process at a glance
- NAMUR standard and HART®-enabled transmitter 4-20 mA output + programmable switch for process monitoring, alarm, and shutdown
- Programmable setpoint and deadband provides accurate and fast cycling for rotating equipment
- Configurable IAW™ self-diagnostics make sure the instrument is functioning properly by communicating with the control system using a dedicated discrete output
- Plugged port detection: Detects clogged pressure sensors to help avoid potentially dangerous process conditions
- Trip counter records trips for up to two relays, nuisance trip filtering eliminates unwanted trips and unnecessary alarms
- Programmable trip delay holds off the trip decision for tenths of seconds to several minutes
- Worldwide hazardous location approvals



UE Safety Transmitter for SIL 2 Safety Systems

Simplify installation, improve productivity, and eliminate nuisance trips.

- Certified for use in SIL 2 safety systems as a single sensor (HFT=0), FMEDA report available
- Self-contained sensor, logic solver, and final element (ability to control externally) for a complete safety system capable of SIL 2 without additional SIF components; Safety relay output (SRO) as a final element
- Hazardous location approvals for Class I, Div 1-2 (Zones 1, 2)
- Industry-leading safe failure fraction (SFF) and a high risk-reduction factor (RRF)
- Large digital display provides process variable, status, self-diagnostics and field programming information
- 4-20 mA analog output with field scaling capability
- 100% programmable high-capacity safety relay (switch setpoint and deadband)
- Effectively replaces a gauge, a transmitter, and a switch to reduce potential leak paths

Honeywell HC900 SIL2 Safety Control Systems

- Process control and safety on one platform — reduces operator training, hardware, and inventory costs
- Certified for use in SIL2 applications
- Redundant CPU, power supply, communications, and network
- Complies with CSA/FM Class I, Div 2, ATEX, ABS, UL and CE
- Single HMI or operator interface with enhanced diagnostics to view process and safety control operations
- Integrates burner management system solutions, process controllers, flame scanners, SIL2 transmitters, and safety shutoff valves



- Integrates with Experion HS software for HMI and SCADA, and HC900 OPC server for real-time access between HC900 and OPC-enabled applications — historians, HMIs, and SCADA



Flow Measurement Products

Learn more at
Lesman.com

Now available for
custody transfer
applications (per
OIML R117)



SIEMENS SITRANS FC430 Coriolis Mass Flowmeters

- Install anywhere, fit multiple units into tight spaces; Sizes available from 1.2" to 3"
- 0.1% accuracy, 0.05% repeatability
- 4-20 mA analog output with HART® 7.2
- HemiShape flow manifold for low pressure loss; Avoids cavitation and separation of fragile fluids
- Remote FCS400 model's digital sensor link guarantees high-speed data transfer, even at distances up to 200 meters
- Flange, pipe thread, hygienic thread and hygienic clamp connections available
- MicroSD card stores user and factory settings, calibration data and certificates
- IECEx, ATEX, and FM hazardous area approved
- Can be validated for SIL2 or SIL3 operation
- Ideal for hygienic use (EHEDG/3A approved)

Need pharmaceutical-grade
electropolishing? Call for details.

Need FM Class I, Div 1 meters?
MAGFLO models are available for harsh
environments. Call Lesman for help.



Why Do So Many Engineers Choose MAGFLO?

- Mag 5100W doesn't need grounding rings.
- One transmitter fits all sensor tubes, so one universal spare covers all applications.
- Easy transmitter configuration with the keypad — contractors and technicians love them!
- Owners can schedule on-site verification service from Siemens, or do their own verification with a MAGFLO Verificator unit.
- SensorPROM makes replacement server a quick swap-out.
- With the universal communication modules, it's easy to get data onto the plant network.
- They can produce a traceable record of reliability, with calibration data and verification test results.



Don't guess how much money's flowing
through your pipe. Clamp-on and know!

- Measure practically any liquid and gas
- Install on pipe sizes up to DN9140 (360")
- Transducers have both Doppler and WideBeam transit time technology
- Performance unaffected by viscosity, flow rate, pipe size, solids and aeration content
- High accuracy and repeatability through automatic temperature compensation and zero drift correction
- Siemens ultrasonic flowmeter configuration tool available in IOS App Store



Honeywell SMV800 SmartLine Multivariable Transmitters

- For use with air, gases, steam, and liquids
- Measures differential pressure across a primary flow element (averaging pitot tube, venturi, flow nozzle, orifice plate, V-Cone®, wafer cone, or wedge); static process pressure from a single sensor; and process temperature from thermocouple or RTD inputs
- Calculates mass or volume, compensated for static pressure, temperature, viscosity, discharge coefficient, gas or thermal expansion factor, and velocity of approach factor
- Accuracy up to $\pm 0.04\%$ for differential pressure, up to $\pm 0.0375\%$ for static pressure, and up to 0.1°C for temperature with mass flow accuracy up to $\pm 0.6\%$
- Rangeability up to 400:1
- Compensated flow response up to 2x/second
- Modular design and universal transmitter wiring
- Built-in fail-safe feature for flow measurement
- HART 7/DE protocol support plus digital integration with Honeywell control systems



Replaces
retired
Honeywell
SMV3000

Measuring Process Pressure

Learn more at
Lesman.com



Visit page 32 for
flange-mount liquid
level transmitter.

New Honeywell SmartLine Improves Transmitter Performance!

- Fully modular! Alphanumeric display can be added or removed in the field, no need to remove the transmitter from service to swap modules or replace parts
- Stabilities to $\pm 0.01\%$ upper range limit per year for 5 or 10 years (series-dependent)
- Standard accuracies improved to $\pm 0.0375\%$
- Speed of response three times faster than retired ST3000 series transmitters — As fast as 80 mSec
- Display PV, bargraphs, trend lines, and text messages for diagnostics and maintenance
- Automatic static pressure and temperature compensation
- Maximum turndown ratio to 400:1
- External zero, span, and configuration capability
- World class overpressure protection
- Compliant to SIL 2/3 requirements
- Honeywell DE, HART v7.0 and Foundation Fieldbus communications



Protect your
mechanical
pressure
instrumentation
with chemical
seals.

Chemical Seal Assemblies Built Here!

No delays on in-stock instruments!
No rush delivery charges! No expedite fees!

- Design the exact assembly you need: Pick your instrument, seal, fill fluid, capillary, or manifold
- Instruments, seals, fills, and accessories all available from Lesman stock, so there's no wait!
- Lesman's team builds the assembly to meet your specification
- Fill fluids in stock for general service, low temperature, high temperature, high vacuum, oxygen or chlorine service, or food and beverage applications
- Vacuum chamber technology ensures proper seal and best-in-class accuracy

Learn more at www.Lesman.com

Normally In Stock at Lesman, Ready to Ship Within 24 Hours!



SmartLine Gauge Pressure Smart Transmitters

All models shown here feature in-line mount and 0.05% span accuracy, digital display with external zero/span/configuration buttons, 4-20 mA and HART® output, and FM explosion-proof approved enclosures for use in Class I, Div 1 environments.

| | | |
|---------------------------|---|----------|
| 5 to 500 PSI range..... | STG74L-E1G000-1-A-AHC-11S-A-10A0-00-0000..... | 2,137.00 |
| 30 to 3000 PSI range..... | STG77L-E1G000-1-A-AHC-11S-A-10A0-00-0000..... | 2,302.00 |

This model features dual-head gauge mount and 0.05% span accuracy, digital display with external zero/span/configuration buttons, 4-20 mA and HART® output, and FM explosion-proof approved enclosures for use in Class I, Div 1 environments. It has carbon steel bolts and nuts, dual-ended head with standard side/end vent and plug with glass-filled PTFE gasket.

| | | |
|-------------------------|---|------------|
| 5 to 500 PSI range..... | STG740-E1GC6A-1-A-AHC-11C-A-10A0-00-0000..... | \$2,379.00 |
|-------------------------|---|------------|

This model features dual-head gauge mount and 0.05% span accuracy, basic digital display, 4-20 mA and Honeywell DE output, and FM explosion-proof approved enclosure for use in Class I, Div 1 environments. It has no zero/span/configuration buttons.

| | | |
|-------------------------|---|------------|
| 5 to 500 PSI range..... | STG740-E1DC1A-1-A-ADB-11S-A-10A0-00-0000..... | \$2,469.00 |
|-------------------------|---|------------|

SmartLine Differential Pressure Smart Transmitters

All models shown here achieve 0.05% span accuracy (0.0375% span for draft range) and include digital display with external zero/span/configuration buttons, 4-20 mA and HART® output, and FM explosion-proof approved enclosures for use in Class I, Div 1 environments.

| | | |
|---------------------------|--|------------|
| 4" to 400" WC range | STD720-E1HC6AS-1-A-AHC-11S-A-10A0-00-0000..... | \$2,406.00 |
|---------------------------|--|------------|

This model features 0.05% span accuracy with 4-20 mA and Honeywell DE output, and FM explosion-proof approved enclosure for use in Class I, Div 1 environments. It has no local digital display or external zero/span/configuration buttons

| | | |
|---------------------------|---|------------|
| 4" to 400" WC range | STD720-E1HC6AS-1-A-CD0-11S-A-10A0-00-000..... | \$2,388.00 |
|---------------------------|---|------------|

Temperature Measurement Systems

Learn more at
Lesman.com



Modular Smart Temperature Transmitters

Honeywell SmartLine STT850

- Accepts thermocouple types B, E, J, K, N, R, S, T, plus platinum RTDs and linear (mV and Ω) input signals
- Digital accuracy up to $\pm 0.08^\circ\text{C}$ for RTDs, to $\pm 0.2^\circ\text{C}$ for thermocouples with stability up to $\pm 0.01\%$ URL per year for 10 years
- 125 mSec update time for single input models, 250 mSec update time for dual input models
- Comprehensive on-board diagnostics
- Polarity insensitive loop wiring
- 4-20 mA DC and HART®, Foundation Fieldbus or Honeywell DE output and communications options
- External zero/span and configuration capabilities
- FM, CSA, and ATEX hazardous area approvals
- Full compliance to SIL2/3 requirements

Temperature Sensors from WIKA/Gayesco

Tubeskin Sensors for Furnace Applications

- Increase furnace tube life, safeguard heater operations, and increase production
- Withstand harsh firebox environments for prolonged periods — at least of one complete turnaround cycle
- Fast, easy installation and quick replacement gets you back online faster after unplanned downtimes
- Detect early overheating caused by coke formations
- Monitor temperature and provide alarms where high temperatures are reducing remnant life or exceeding maximum allowable limits



Multipoint Sensors for Refining and Petrochemical Use

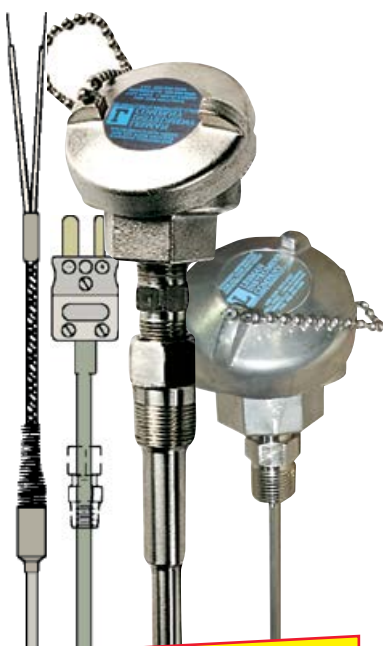
- For hydroprocessing units, column, fractionators, and contactors, continuous catalytic reformers, and fluid catalytic cracking units
- Flex-R® flexible multipoint thermometry: Standard flanged assemblies, specialty connections (like Radial Tap and Radial Tap Next Gen), and hybrid solutions
- Linear multipoints: Flexible, drawn, and stuffed
- Pipewell multipoints: Tube bimetallic designs, heat transfer block, free-hanging, and spring-loaded



Custom temperature assemblies without the custom prices.

If you can design, describe or draw the temperature assembly you need, we can supply it — without the premium charges for “special” orders. All Lesman thermocouples and RTDs are made to your exact specifications. And, since we start from scratch with your design, you don’t have to worry about any add-on charges for modifications to the manufacturer’s product.

Visit www.lesman.com/datasheets/ for our temperature sensor datasheet. You answer a series of questions to specify all the parts you need. We’ll quote you a price, and let you know when you can expect delivery. It’s that simple!



Build the custom sensors you need.

Configuration datasheet available online at
www.Lesman.com/datasheets/

- RTDs for general service applications
- 3A sanitary RTDs for the food and pharmaceutical industries, including clean-in-place and HTST application assemblies
- RTDs with threaded thermowells
- RTD and transmitter assemblies
- Thermocouple and well assemblies for general service applications
- Thermocouple assemblies with quick-disconnect plugs
- Industrial thermocouples with termination heads
- Metal protection tube thermocouples
- MgO insulated thermocouples

Thermocouples don’t last forever. In most industrial applications, they fail at a predictable interval, one that’s affected by temperature, exposure to corrosive gases or liquids, and environmental conditions.

Talk to your Lesman account manager about implementing a replacement and calibration program to meet ISO compliance standards, reduce downtime, increase process quality, and decrease the risk and frequency of accidents.

Recommended T/C Replacement Schedule

| T/C Type | Temperature | Time Frame |
|------------|------------------|-----------------------|
| J or K | 400° F and Below | Every 5 Years or More |
| K | 900° to 1200° F | Every 1 or 2 Years |
| K | 1200° to 1800° F | Every 6 to 12 Months |
| K | 1800° to 2200° F | Every 3 Months |
| R, S, or B | 1800° and Above | Only as Needed |

Illinois, Indiana, Missouri, and Iowa
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman Instrument Company
www.lesman.com
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

**COMBUSTION
SYSTEMS**

61

L

Flame Safety and Combustion Control

Learn more at
Lesman.com



Slate Integrated Combustion Management System from Honeywell

Honeywell Slate combines configurable flame safety and programmable logic into a single DIN-rail mounted platform.

It's designed for single and multi-burner control in makeup air, process heating, kilns, ovens, paint booths, and commercial or industrial boiler applications.

Slate includes these plug-in modules:

- Base unit and burner control
- Flame amplifier
- Fuel-air ratio control
- Analog and digital I/O
- Limit control
- Alarm annunciator

Upgrade to Honeywell 7800 enhanced burner controls

Honeywell 7800 series burner controls are available for programming and on/off primary control, with selectable pre-purge timing, air flow checks, valve proving, shutter drive, and programmable post purge. Enhanced 7800 models offer several added features at a lower price:

- Expanded cycle counter
- Standard run/test switch
- Jumper for intermittent or interrupted pilot
- Valve proving functionality
- Pre-ignition interlock (for proof of closure)



Flame detectors for every application!

Honeywell

- Flame rods and thermocouples for gas-fired intermittent or standing pilot-type burners
- Rectification and ultraviolet detectors for coal, gas, or oil-fired intermittent or interrupted pilots
- Compatible with 7800 series burner controls and amplifiers

Iris Systems

- Infrared or ultraviolet detectors for single burner applications
- Infrared, UV, or combination detectors for multi-burner and multi-fuel applications
- Ultraviolet detector for flare stack monitoring

Fireye

- Ultraviolet, infrared, or combination detectors with 4–20 mA and relay outputs
- Flame scanners with built-in amplifiers for accurate flame detection and discrimination
- Insight II UV/IR integrated scanner, UL certified to SIL3



See our combustion system offering at Lesman.com.

Safety Shutoff Valves from Lesman Stock!

- Provides closure in less than one second
- Rotatable top assemblies in 90° increments
- Comes standard with visual position indication
- Manual reset or automatic reset operators
- FM, CSA, UL, and CE approved; Available for non-incendive Class I, Div 2 areas; Full assessment to IEC 61508 as SIL 3 capable; Meets FCI 70-2 standard for Class VI seat leakage



Model Selection Guide

Maxon 5000 Series: Normally closed automatic gas shutoff valve, cast iron body. Six-second timing. Trim: 400 series stainless steel seat, hardened ductile iron disc, PEEK follower ring. BUNA N o-rings/bumper, 115 VAC, 60 Hz, NEMA 4 enclosure.

| Process Conn. | Valve Size | Catalog Number | Price |
|--|------------|----------------------|-------------|
| One proof of open switch, one proof of closure switch. | | | |
| Thread | 3" | 300SMA11-AA11-BB21A0 | \$ 2,579.20 |
| Flange | 4" | 400CMA11-BA11-BB21A0 | 3,315.00 |
| Two proof of open switches, two proof of closure switches. | | | |
| Thread | 1.5" | 150SMA11-AA11-BB22A0 | 2,059.70 |
| | 2" | 200SMA11-AA11-BB22A0 | 2,388.90 |
| | 2.5" | 250CMA11-AA11-BB22A0 | 3,392.20 |
| | 3" | 300CMA11-AA11-BB22A0 | 3,578.40 |
| Flange | 4" | 400CMA11-BA11-BB22A0 | 4,239.80 |



Kromschroder Burner Controls

If Kromschroder is your preferred brand for flame safeguard control systems and valve train components, Lesman can help. Call us for:

- Automatic burner controls for gas burners and industrial forced-draught burners
- Flame relays for multi-burner control applications
- Ultraviolet flame detectors
- Safety shutoff solenoid valves
- Actuated butterfly valves for gas flow control
- Pressure switches for gas applications

Lesman's Process Valve Offering

Learn more at
Lesman.com

From basic hand-operated ball valves to control valves with integrated positioners, and everything in between. Lesman has the process valving you need.

Delivery in 5 days or faster!

Don't let a shutdown ruin your production schedules.

Quick Delivery on Sliding Gate Pneumatic Control Valves

- Sliding gate offers shorter stroke length than globe or cage designs for faster response to input signal changes, tighter control and metering accuracy
- Wafer design virtually eliminates body wear issues caused by steam, flashing, and cavitation
- Straight-through flow reduces turbulence, noise, and erosion
- Up to 600 Cv linear on 8" valves
- Turndown ratio capability 100:1
- Side-mount HART® positioner



Cv = 0.00001

When you're working with ultra-low flow rates, we have your valve!

LowFlow Series 708 control valves are the perfect solution for pilot plant applications and more, with Cv ranges from 0.00001 to 4.0.

Need a butterfly valve?

Resilient seated
High performance
Manual or automated

Get 2" to 24" valves from
factory stock!

(Larger sizes also available.)



Learn about control valves, pressure and back pressure regulators, tank blanketing systems, and steam traps at
www.Lesman.com/train/

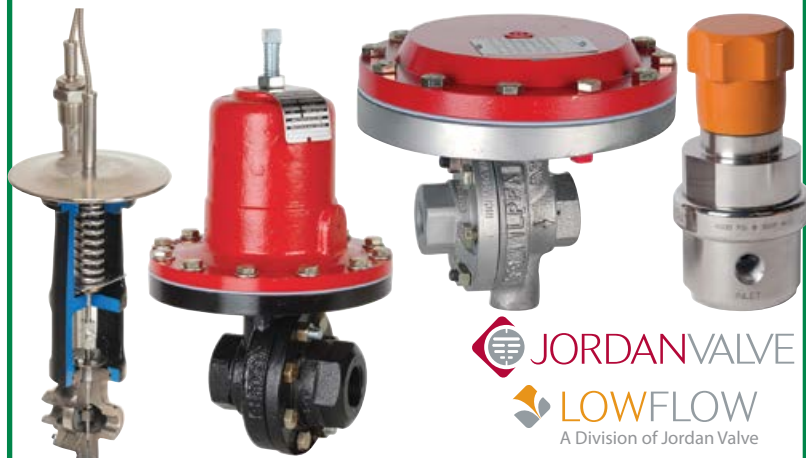


Process valves and accessories for hygienic and sanitary applications

- FDA and USP-compliant control valves and regulators
- Ball valves and check valves
- Sight glasses, sample chillers, and steam traps

Regulators Reduce Control Loop Costs

Properly used, regulators could replace control valves in at least 25% of all control loops.



 JORDAN VALVE
 LOWFLOW
A Division of Jordan Valve

Illinois, Indiana, Missouri, and Iowa
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman Instrument Company
www.lesman.com
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

V01.2019

**INDUSTRIAL
WIRELESS**

63

L

Learn more at
Lesman.com

We Make Wireless Work!



Honeywell

ISA100.11a Compliant Wireless Mesh Networks!

- Collect and use information previously inaccessible due to high wiring cost or hazardous locations
- Battery-powered transmitter models available for analog and discrete inputs, universal multiple I/O, temperature, pressure, and corrosion monitoring, plus units for valve positioning, wireless gauge reading, and more
- Monitor processes that have no access to power, that are hard to reach, require frequent reconfiguration, or where manual readings were done in the past
- Improve process efficiency
- Wireless Device Manager, a network appliance with integrated web server, so you can monitor and manage all your wireless network devices from your desktop, using a standard web browser
- Field device access point provides wireless coverage for up to 80 field transmitters, available for Class I, Div 1, or Class I, Div 2 areas
- Add legacy HART® wired field devices with OneWireless adapter



Industrial Wireless I/O Networks

- Battery, solar, or line powered wireless field I/O devices — with 1-watt RF power for long shots
- Pre-mapped electrician's I/O radio kits
- Intrinsically safe field I/O devices for Class I, Div 1, and ATEX Zone 0 environments
- Performance 150 mW field nodes that provides loop power to Honeywell and Siemens wired 4–20 mA pressure and level transmitters



Wireless Ethernet Radios

- 900 MHz, 2.4 GHz, and 5 GHz frequencies

Wireless power for your level transmitter!

Banner Engineering's DX80 Performance D5 node radio powers a loop powered 4–20mA transmitter from the radio's battery on a scheduled, periodic, or intermittent basis for true wireless performance. An ultrasonic unit can sample 3x per hour with a 3 month battery life.

The D5 is a 150 mW node radio in the metal enclosure and comes with a dome antenna. It is intrinsically safe when used with an approved I/S transmitter, certified for use in Class I, Div 1, Groups A–D; Class II, Div 1, Groups E–G; Class III, Div 1; Zone 0 (Group IIC) and Zone 20 (Group II) locations.

For more on Banner wireless I/O systems, visit www.Lesman.com.

WirelessHART Gateways, Adapters, and Field Transmitters



- WirelessHART Gateway for connecting WirelessHART field instruments to your existing Ethernet plant network
- Field transmitters for pressure and temperature monitoring
- Adapters to connect legacy wired HART field units to a wireless network

Unlock Stranded HART® Diagnostics!

- Connect HART devices to an ISA100.11a-compliant Honeywell OneWireless network
- Transmit diagnostics and process variable data
- FM, CSA, IEC, and ATEX approvals



**ISA100
Wireless
COMPLIANT**

DX80 D5 Performance Node Radio

| Description | Catalog Number | Price |
|---|----------------|-----------|
| DX80 D5 120mW node radio, internal battery | 20178 | \$1549.00 |
| Direct mounting hardware | | |
| 1/2" NPT SS Hex nipple for close coupling | 122SS8 | 6.50 |
| 3/4"x 1/2" NPT SS reducer for threaded port | 110SS12x8 | 5.95 |
| For remote antenna connection | | |
| 1/2" NPT feedthrough, RPSMA-F connector | 11835 | 69.00 |
| 3/4" NPT feedthrough, RPSMA-F connector | 11834 | 65.00 |
| 18" 5 dBi antenna, RPSMA-M connector | HG905RD-RSP | 49.00 |
| 18" 5 dBi antenna, RPSMA-M swivel connector | 17721 | 63.00 |
| 0.5 m (20") RPSMA x N-male adapter cable | 77486 | 42.00 |

Prices for reference only. Call Lesman sales or visit Lesman.com for current pricing.



135 Bernice Drive • Bensenville, IL 60106-3366

PRSR STD
US POSTAGE PAID
PERMIT 38
WHEELING IL

Contact Us!

Toll Free
Local Phone
Fax
E-Mail

Bensenville IL

800-953-7626
630-595-8400
630-595-2386
sales@lesman.com

Butler WI

800-837-1700
262-923-1790
262-923-1797
wisales@lesman.com

Order by phone, fax, or e-mail for fast, friendly service.

Prices are current as of publication date, and are subject to change without notice. Visit www.Lesman.com/catalog for current updates.

Due to contractual agreements with our manufacturers, some items in this catalog may not be available in all geographic areas or markets.



Xtreme Accuracy
Honeywell Enraf
SmartRadar FlexLine for
W&M and API-Compliant
Custody Transfer

See page 44.

Got Buildup?

No problem! Siemens
CLS capacitance
point level
sensors work
even
with
buildup
on the
probe.



Learn more on page 52.

We Measure Level Anywhere



Piles



Tanks



Flumes



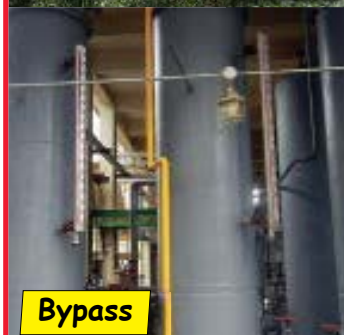
Ponds



Terminals



Bins



Bypass



Silos



Clarifiers

Find your ideal level measurement solution inside.