

Level instruments

Continuous level measurement - Ultrasonic controllers

SITRANS LU01 and LU02

Overview



The SITRANS LU01 is an ultrasonic long-range level controller for liquids and solids in a single vessel up to 60 m (200 ft).

Handheld programmer shown is an accessory and must be ordered separately.

Benefits

- Single point, long-range level monitoring
- Easy to install; easy to program using removable infrared keypad (optional)
- Compatible with all Echomax[®] transducers
- Backlit LCD display with reading in standard engineering units
- Automatic level-to-volume conversion for standard or custom tank shapes
- Dolphin Plus and SmartLinX compatible
- High/low alarms

Application

The system consists of a SITRANS LU01 monitor linked to a non-contacting ultrasonic transducer that can be mounted up to 365 m (1200 ft) away. The SITRANS LU01 will measure distance, level or volume, and it features patented Sonic Intelligence[®] echo processing software for superior reliability.

Readings are displayed in user-selectable linear engineering units on the backlit LCD.

An on-board communications port automatically configures for RS-232, RS-485 or bi-polar current loop. The SITRANS LU01 will connect to a DCS or PLC using Siemens SmartLinX[®] interface modules, giving you remote 2-way communication and full parameter access. Modules for popular industrial buses can be factory installed or added later to meet changing needs. No external gateway is required, reducing hardware and cabling costs.

- Key Applications: chemical storage, liquid storage, bulk solids storage (gravel, flour bins, grains, cereals), plastic pellets

Overview



The SITRANS LU02 is a dual point ultrasonic long-range level controller for liquids and solids in one or two vessels up to 60 m (200 ft).

Handheld programmer shown is an accessory and must be ordered separately.

Benefits

- Dual point, long-range level monitoring
- Easy to install; easy to program using removable infrared keypad (optional)
- Compatible with all Echomax[®] transducers
- Backlit LCD display with reading in standard engineering units
- Automatic level-to-volume conversion for standard or custom tank shapes
- Dolphin Plus and SmartLinX compatible
- High/low alarms

Application

SITRANS LU02 will measure liquids, solids or a combination of both in one or two vessels of different sizes, shapes and configurations up to 60 m (200 ft).

The system uses ultrasonic technology to measure level, space, distance, volume or average/differential. It features patented Sonic Intelligence[®] echo processing software for superior reliability. Transducers can be mounted up to 365 m (1200 ft) from the monitor.

Readings are displayed in user-selectable linear engineering units on the backlit LCD.

It features an onboard communications port that automatically configures for RS-232, RS-485 or bi-polar current loop. It will connect to a DCS or PLC using Siemens SmartLinX[®] interface modules, giving you remote 2-way communication and full parameter access. Modules for popular industrial buses can be factory installed or added later to meet changing needs. No external gateway is required, reducing hardware and cabling costs.

- Key Applications: chemical storage, liquid storage, bulk solids storage (gravel, flour bins, grains, cereals), plastic pellets, tripper car

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Technical specifications

Mode of operation		Power supply	
<ul style="list-style-type: none"> Measuring principle Measuring range Measuring points 	Ultrasonic level measurement 0.3 to 60 m (1 to 200 ft) SITRANS LU01: Max. one point; SITRANS LU02 Max. two points	AC model DC model	100/115/200/230 V AC \pm 15%, 50/60 Hz, 31 VA 18 to 30 V DC, 25 W
Output signal		Displays and controls	
<ul style="list-style-type: none"> Ultrasonic transducer Relays mA output <ul style="list-style-type: none"> Max. load Resolution Outputs 	Echomax series, ST-H transducers 4 SPDT Form C relays, rated at 5 A at 250 V AC, resistive load 0/4 to 20 mA, optically isolated 750 Ω , isolated, 30 V 0.1 % of range SITRANS LU01: Max. one mA output SITRANS LU02: Max. two mA outputs	<ul style="list-style-type: none"> Memory Programming 	51 x 127 mm (2 x 5") graphics LCD with backlighting EEPROM (non-volatile), no backup battery required Using removable programmer (ordered separately) or Dolphin Plus (option)
Accuracy		Certificates and approvals	
<ul style="list-style-type: none"> Error in measurement Resolution Temperature compensation 	0.25% of range or 6 mm (0.24"), whichever is greater 0.1% of measuring range or 2 mm (0.08"), whichever is greater -50 to +150 °C (-58 to +302 °F) <ul style="list-style-type: none"> Integral temperature sensor External TS-3 temperature sensor (optional) Programmable fixed temperature 	CE, CSA _{US/CA} , FM, ATEX II 3D	
Rated operating conditions		Options	
<u>Ambient conditions</u>		<ul style="list-style-type: none"> External temperature sensor Communications 	
Ambient temperature for enclosure		TS-3 <ul style="list-style-type: none"> SmartLinX: protocol-specific modules as interface for popular industrial fieldbus systems Dolphin Plus: Siemens Windows[®]-compatible interface and ComVerter link (infrared) 	
Design			
Weight			
Material (enclosure)			
Degree of protection (wall mount)			
Electrical connection			
<ul style="list-style-type: none"> Ultrasonic transducer cable extension mA output signal Electrical connection and relay connection Synchronization 	RG62-A/U coaxial cable with low capacitance 2-core copper conductor, twisted, shielded, 0.5 to 0.75 mm ² (22 to 18 AWG), Belden [®] 8760 or equivalent is acceptable Copper conductor according to local requirements, rated 250 V 5 A Up to 16 LU01/LU02 units can be synchronized together		

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Selection and Ordering data	Order No.
SITRANS LU01/LU02 Single or dual point ultrasonic long-range level monitoring system for liquids and solids, and ranges up to 60 m (200 ft).	C) 7ML5004-
Number of measuring points LU01 version, 1 point LU02 version, 2 points	1 2
Input voltage 100/115/200/230 V AC, voltage selector switch 18 to 30 V DC	A B
Feature software Standard	A
Application software Standard	1
Data communications No module (SmartLinX ready) SmartLinX Allen-Bradley® Remote I/O module SmartLinX PROFIBUS DP module SmartLinX Modbus® RTU module	0 1 2 3
Enclosure Wall mount Wall mount, drilled, 6 x M20x1.5	1 3
Approvals CE, CSA _{US/C} , FM ¹⁾ CE ²⁾ ATEX II 3D ¹⁾	A B C
Further designs Please add "-Z" to Order No. and specify Order code(s). Stainless steel tag [69 x 50 mm (2.71 x 1.97")]: Measuring-point number/identification (max. 16 characters) specify in plain text	Order code Y15

Selection and Ordering data	Order No.
SITRANS LU01/LU02 Single or dual point ultrasonic long-range level monitoring system for liquids and solids, and ranges up to 60 m (200 ft).	C) 7ML5004-
Instruction manual SITRANS LU01, English SITRANS LU01, French SITRANS LU01, German SITRANS LU02, English SITRANS LU02, French SITRANS LU02, German Note: The instruction manual should be ordered as a separate line item. This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and instruction manual library.	C) 7ML1998-5BE02 C) 7ML1998-5BE12 C) 7ML1998-5BE32 C) 7ML1998-5BD02 C) 7ML1998-5BD12 C) 7ML1998-5BD32
Other instruction manuals SmartLinX Allen-Bradley Remote I/O, English SmartLinX PROFIBUS DP, English SmartLinX PROFIBUS DP, German SmartLinX PROFIBUS DP, French SmartLinX Modbus, English SmartLinX Modbus, German Note: The appropriate SmartLinX instruction manual should be ordered as a separate line on the order.	C) 7ML1998-1AP03 C) 7ML1998-1AQ03 C) 7ML1998-1AQ33 C) 7ML1998-1AQ12 C) 7ML1998-1BF01 C) 7ML1998-1BF31
Accessories Handheld programmer Tag, stainless steel, 12 x 45 mm (0.47 x 1.77"), one text line, suitable for enclosures M20 cable gland kit (6 M20 cable glands, 6 M20 nuts, 3 stop plugs) TS-3 Temperature Sensor - see TS-3 on page 5/186	7ML1830-2AN 7ML1830-1AC 7ML1830-1GM
Spare parts Card, LU01 mother main, comm ready Card, LU02 mother main, comm ready Card, LU02 daughter, comm ready Card, LU01 daughter, comm ready Card, display See SmartLinX product page 5/301 for more information.	C) 7ML1830-1KX C) 7ML1830-1MA C) 7ML1830-1LP C) 7ML1830-1LN 7ML1830-1LQ

- 1) Available with enclosure option 1 only
2) Available with enclosure option 3 only

C) Subject to export regulations AL: N, ECCN: EAR99

®Modbus is a registered trademark of Schneider Electric.

®Allen-Bradley is a registered trademark of Rockwell Automation.

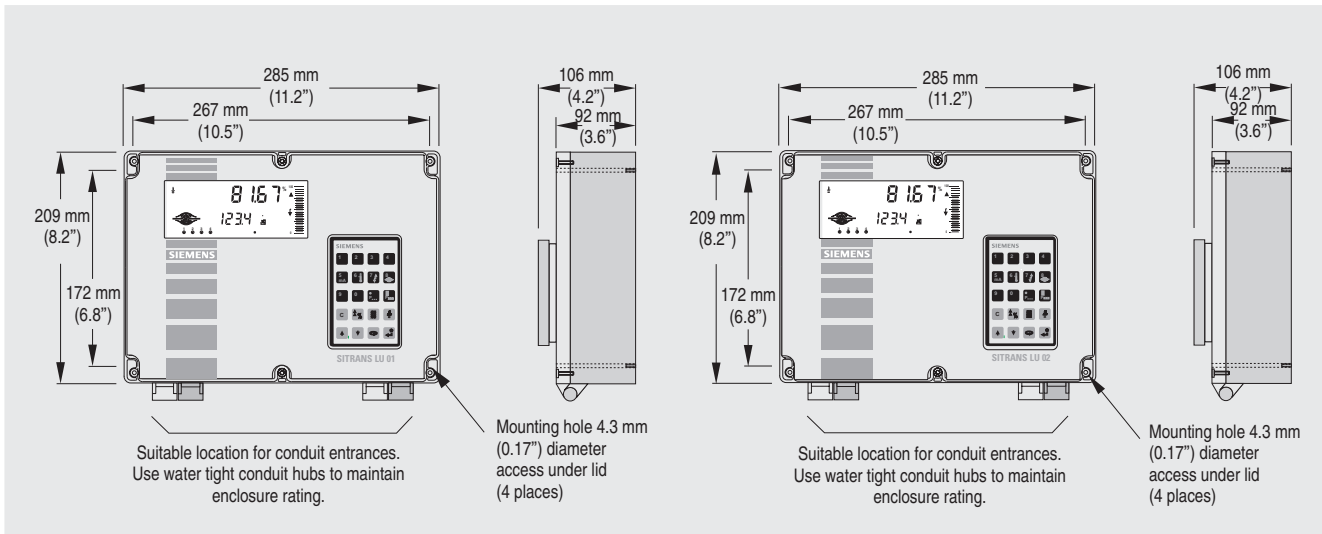
™DeviceNet is a trademark of Open DeviceNet Vendor Association (ODVA).

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Dimensional drawings



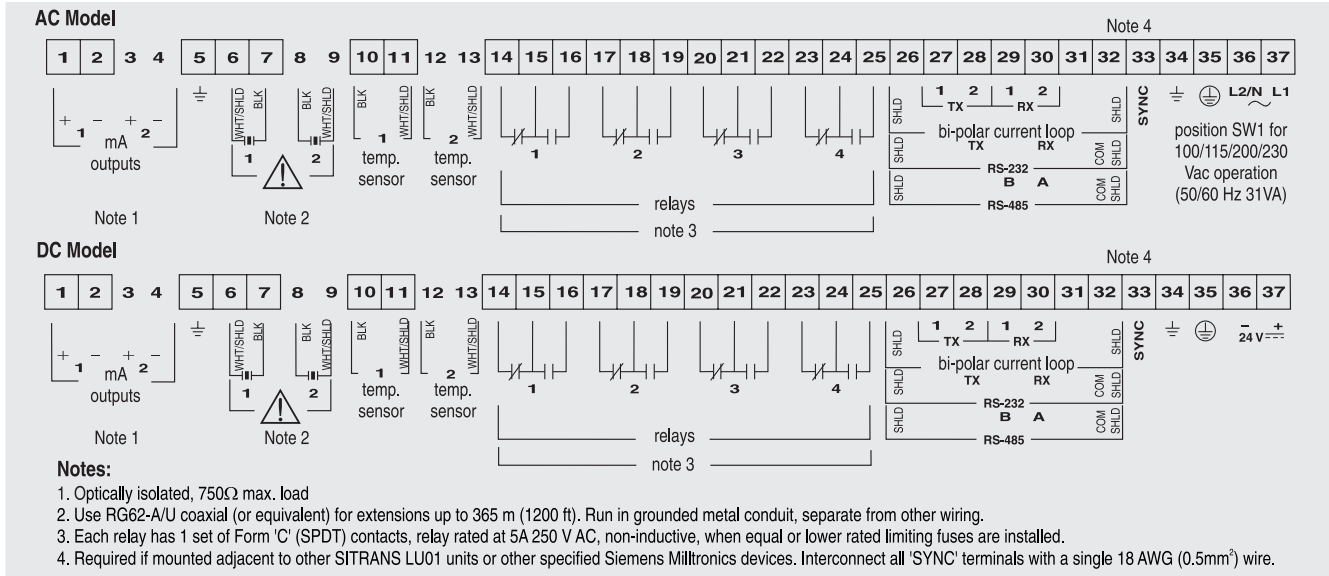
Dimensional drawings for SITRANS LU01 (left) and SITRANS LU02 (right)

Level instruments

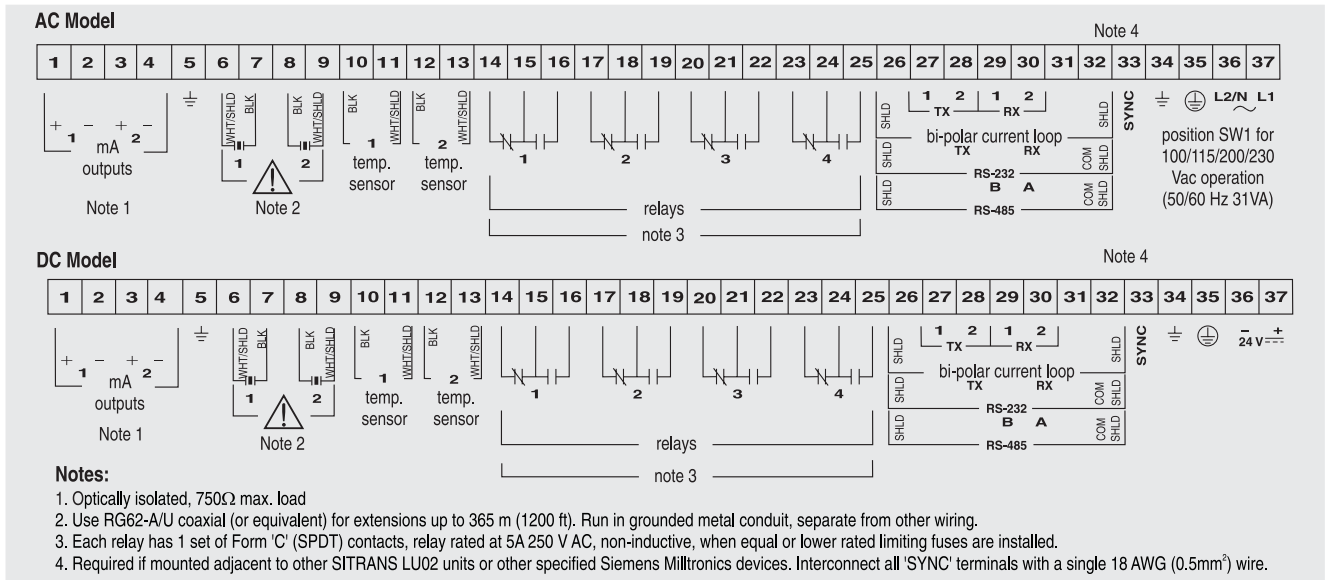
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Schematics



SITRANS LU01 connections



SITRANS LU02 connections

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