

Level Measurement

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 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 (1 200 ft) away. The SITRANS LU01 will measure distance, level or volume, and it features Sonic Intelligence echo processing software for superior reliability.

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

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 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 Sonic Intelligence echo processing software for superior reliability. Transducers can be mounted up to 365 m (1 200 ft) from the monitor.

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

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

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Technical specifications		Selection and Ordering data	Article No.
Mode of operation		SITRANS LU01/LU02	7ML5004-
Measuring principle	Ultrasonic level measurement	Single or dual point ultrasonic long-range level monitoring system for liquids and solids, and ranges up to 60 m (200 ft).	
Measuring range	0.3 ... 60 m (1 ... 200 ft)	Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Measuring points	SITRANS LU01: Max. one point; SITRANS LU02: Max. two points	Number of measuring points	
Output signal		LU01 version, 1 point LU02 version, 2 points	1 2
Ultrasonic transducer	EchoMax series, ST-H transducers	Input voltage	A B
Relays	4 SPDT Form C relays, rated at 5 A at 250 V AC, resistive load	100/115/200/230 V AC, voltage selector switch 18 ... 30 V DC	
mA output	0/4 ... 20 mA, optically isolated	Feature software	A
• Max. load	750 Ω, isolated, 30 V	Standard	
• Resolution	0.1 % of range	Application software	1
• Outputs	SITRANS LU01: Max. one mA output SITRANS LU02: Max. two mA outputs	Standard	0
Accuracy		Data communications	
Error in measurement	0.25 % of range or 6 mm (0.24 inch), whichever is greater	No module (SmartLinX ready)	
Resolution	0.1 % of measuring range or 2 mm (0.08 inch), whichever is greater	Enclosure	1 3
Temperature compensation	-50 ... +150 °C (-58 ... +302 °F) • Integral temperature sensor • External TS-3 temperature sensor (optional) • Programmable fixed temperature	Wall mount Wall mount, drilled, 6 x M20 Note: Cable glands are not included and should be ordered as a separate line on the order.	
Rated operating conditions		Approvals	A B C
Ambient conditions		CE, CSA _{US/C} , FM ¹⁾	
• Ambient temperature for enclosure	-20 ... +50 °C (-4 ... +122 °F)	CE ATEX II 3D ²⁾	
Design		¹⁾ Available with enclosure option 1 only	
Weight	2.7 kg (6 lb)	²⁾ Available with enclosure option 3 only	
Material (enclosure)	Polycarbonate		
Degree of protection (wall mount)	IP65		
Electrical connection			
Ultrasonic transducer cable extension	RG62-A/U coaxial cable with low capacitance		
mA output signal	2-core copper conductor, twisted, shielded, 0.5 ... 0.75 mm ² (22 ... 18 AWG), Belden 8 760 or equivalent is acceptable		
Electrical connection and relay connection	Copper conductor according to local requirements, rated 250 V 5 A		
Synchronization	Up to 16 LU01/LU02 units can be synchronized together		
Power supply			
AC model	100/115/200/230 V AC ± 15 %, 50/60 Hz, 31 VA		
DC model	18 ... 30 V DC, 25 W		
Displays and controls			
Memory	51 x 127 mm (2 x 5 inch) graphics LCD with backlighting		
Programming	EEPROM (non-volatile), no backup battery required		
	Using removable programmer (ordered separately) or Dolphin Plus (option)		
Certificates and approvals			
	CE, CSA _{US/C} , FM, ATEX II 3D Lloyd's register of Shipping (Categories ENV1, ENV2, ENV3 and ENV5)		
Options			
External temperature sensor	TS-3		
Communications	Dolphin Plus: Siemens Windows-compatible interface and ComVerter link (infrared)		

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Selection and Ordering data

Order code

Further designs

Please add "-Z" to Article No. and specify Order code(s).

Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]:
Measuring-point number/identification
(max. 27 characters) specify in plain text

Y15

Operating Instructions

SITRANS LU01

English

French

German

SITRANS LU02

English

French

German

Note: The Operating Instructions should be ordered as a separate line item.

This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Quick Start and Operating Instructions library.

Article No.

7ML1998-5BE02

7ML1998-5BE12

7ML1998-5BE32

7ML1998-5BD02

7ML1998-5BD12

7ML1998-5BD32

Selection and Ordering data

Article No.

Accessories

Handheld programmer

7ML1830-2AN

Tag, stainless steel, 12 x 45 mm (0.47 x 1.77 inch), one text line, suitable for enclosures

7ML1930-1AC

M20 cable gland kit (6 M20 cable glands, 6 M20 nuts, 3 stop plugs)

7ML1830-1GM

M20 cable gland kit (4 M20 cable glands, 4 M20 nuts, 4 washers)

7ML1930-1FV

TS-3 Temperature Sensor - see TS-3 on page 4/189

7ML1830-2AN

Sunshield kit, 304 stainless steel

7ML1930-1GA

Spare parts

Card, LU01 mother main, AC, comm ready

7ML1830-1KX

Card, LU02 mother main, AC, comm ready

7ML1830-1MA

Card, LU02 daughter, comm ready

7ML1830-1LP

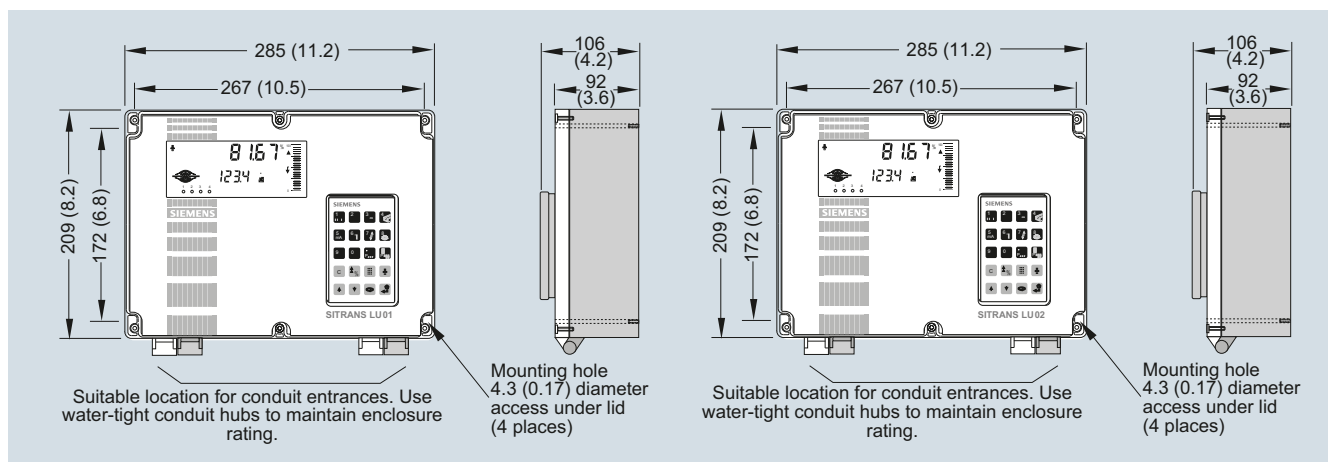
Card, LU01 daughter, comm ready

7ML1830-1LN

Card, display
See SmartLinx product page 4/362 for more information.

7ML1830-1LQ

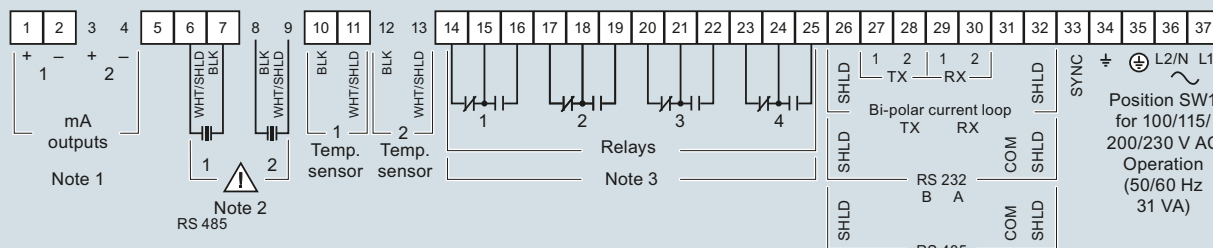
Dimensional drawings



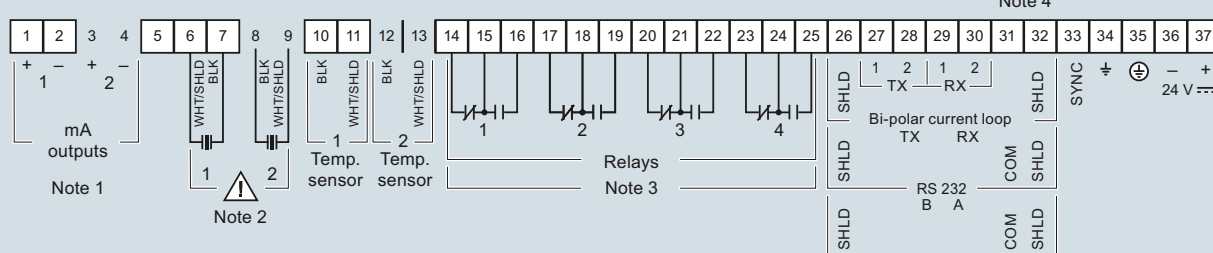
Dimensional drawings for SITRANS LU01 (left) and SITRANS LU02 (right), dimensions in mm (inch)

Schematics

AC model



DC model

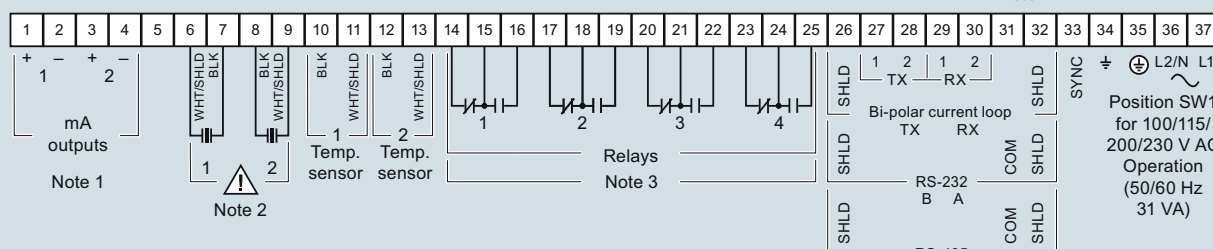


Notes:

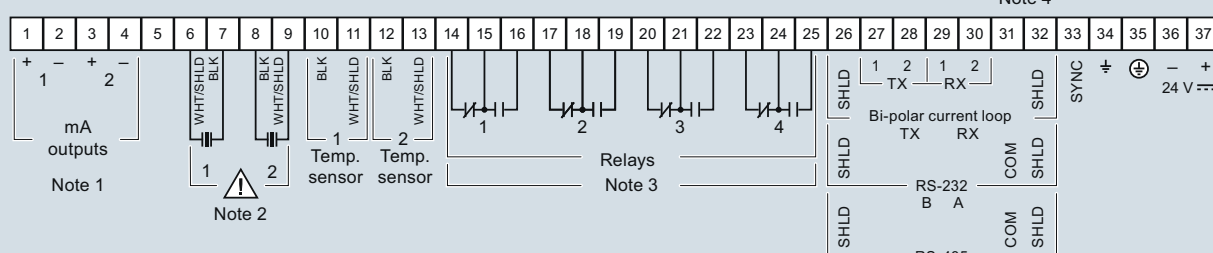
1. Optically isolated, 750 Ω max. load
2. Use RG62-A/U coaxial (or equivalent) for extensions up to 365 m (1 200 ft). Run in grounded metal conduit, separate from other wiring.
3. Each relay has 1 set of Form 'C' (SPDT) contacts, relay rated at 5 A 250 V AC, non-inductive, when equal or lower rated limiting fuses are installed.
4. Required if mounted adjacent to other SITRANS LU01 units or other specified Siemens Milltronics devices. Interconnect all 'SYNC' terminals with a single 18 AWG (0.5 mm²) wire.

SITRANS LU01 connections

AC model



DC model



Notes:

1. Optically isolated, 750 Ω max. load
2. Use RG62-A/U coaxial (or equivalent) for extensions up to 365 m (1 200 ft). Run in grounded metal conduit, separate from other wiring.
3. Each relay has 1 set of Form 'C' (SPDT) contacts, relay rated at 5 A 250 V AC, non-inductive, when equal or lower rated limiting fuses are installed.
4. Required if mounted adjacent to other SITRANS LU01 units or other specified Siemens Milltronics devices. Interconnect all 'SYNC' terminals with a single 18 AWG (0.5 mm²) wire.

SITRANS LU02 connections