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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 (1 200 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 (1 200 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	
Measuring principle	Ultrasonic level measurement
Measuring range	0.3 ... 60 m (1 ... 200 ft)
Measuring points	SITRANS LU01: Max. one point; SITRANS LU02: Max. two points
Output signal	
Ultrasonic transducer	EchoMax series, ST-H transducers
Relays	4 SPDT Form C relays, rated at 5 A at 250 V AC, resistive load
mA output	0/4 ... 20 mA, optically isolated
• Max. load	750 Ω, isolated, 30 V
• Resolution	0.1 % of range
• Outputs	SITRANS LU01: Max. one mA output SITRANS LU02: Max. two mA outputs
Accuracy	
Error in measurement	0.25 % of range or 6 mm (0.24 inch), whichever is greater
Resolution	0.1 % of measuring range or 2 mm (0.08 inch), whichever is greater
Temperature compensation	-50 ... +150 °C (-58 ... +302 °F) • Integral temperature sensor • External TS-3 temperature sensor (optional) • Programmable fixed temperature
Rated operating conditions	
Ambient conditions	
Ambient temperature for enclosure	-20 ... +50 °C (-4 ... +122 °F)
Design	
Weight	2.7 kg (6 lb)
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 mm² (22 ... 18 AWG), Belden 8760 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	51 x 127 mm (2 x 5 inch) graphics LCD with backlighting
Memory	EEPROM (non-volatile), no backup battery required
Programming	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	• SmartLinx: protocol-specific modules as interface for popular industrial fieldbus systems • Dolphin Plus: Siemens Windows-compatible interface and ComVerter link (infrared)

Selection and Ordering data	Article No.
SITRANS LU01/LU02	**7ML5004-**
Single or dual point ultrasonic long-range level monitoring system for liquids and solids, and ranges up to 60 m (200 ft).	☐☐☐☐☐ - ☐☐
Number of measuring points	
LU01 version, 1 point	1
LU02 version, 2 points	2
Input voltage	
100/115/200/230 V AC, voltage selector switch	A
18 ... 30 V DC	B
Feature software	
Standard	A
Application software	
Standard	1
Data communications	
No module (SmartLinx ready)	0
SmartLinx Allen-Bradley Remote I/O module	1
SmartLinx PROFIBUS DP module	2
SmartLinx Modbus RTU module	3
Enclosure	
Wall mount	1
Wall mount, drilled, 6 x M20 Note: Cable glands are not included and should be ordered as a separate line on the order.	3
Approvals	
CE, $CSA_{US/C}$, FM[1]	A
CE	B
ATEX II 3D[2]	C

[1] Available with enclosure option 1 only

[2] Available with enclosure option 3 only

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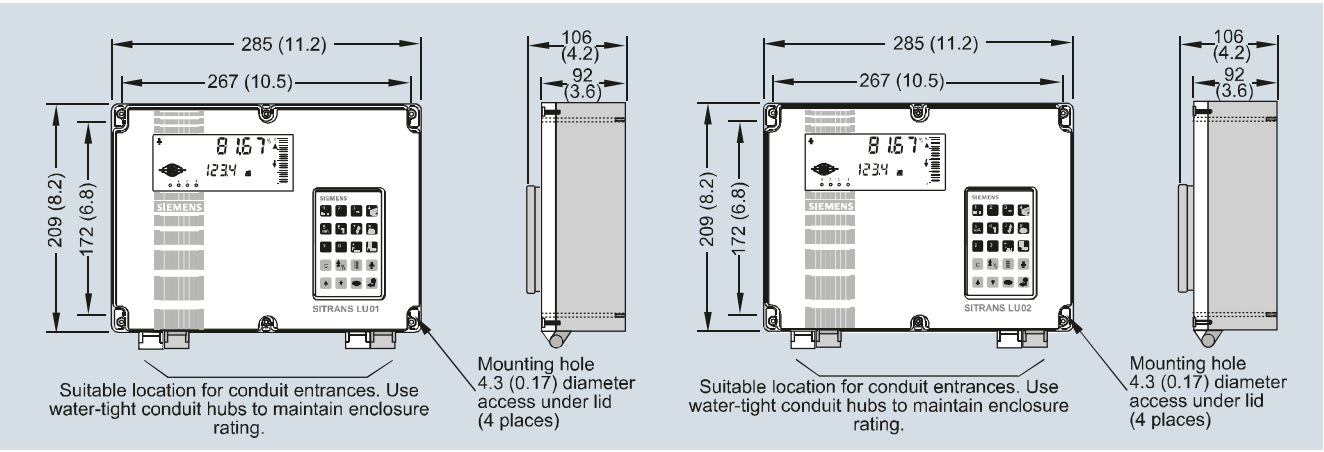
SITRANS LU01 and LU02

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	Article No.
SITRANS LU01	
English	**7ML1998-5BE02**
French	**7ML1998-5BE12**
German	**7ML1998-5BE32**
SITRANS LU02	
English	**7ML1998-5BD02**
French	**7ML1998-5BD12**
German	**7ML1998-5BD32**
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.	
Other Operating Instructions	
SmartLinx Allen-Bradley Remote I/O, English	**7ML1998-1AP03**
SmartLinx PROFIBUS DP, English	**7ML1998-1AQ03**
SmartLinx PROFIBUS DP, German	**7ML1998-1AQ33**
SmartLinx PROFIBUS DP, French	**7ML1998-1AQ13**
SmartLinx Modbus, English	**7ML1998-1BF01**
SmartLinx Modbus, German	**7ML1998-1BF31**
SmartLinx Modbus, French	**7ML1998-1BF11**
SmartLinx Modem, English Note: The appropriate SmartLinx Operating Instructions should be ordered as a separate line on the order.	**7ML1998-1BG01**

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 4/190	**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 4/337 for more information.	**7ML1830-1LQ**

Dimensional drawings



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

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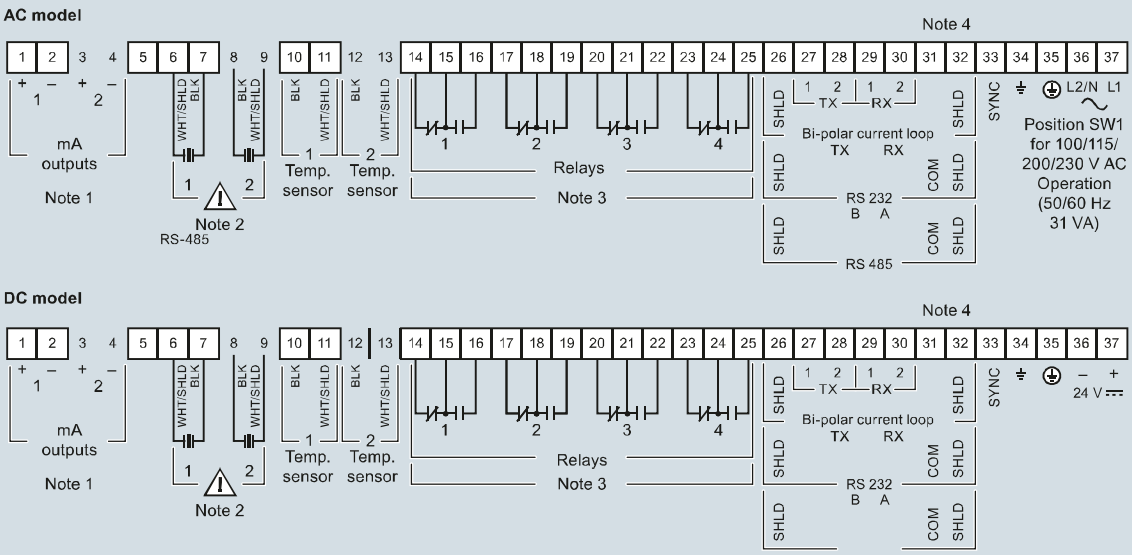
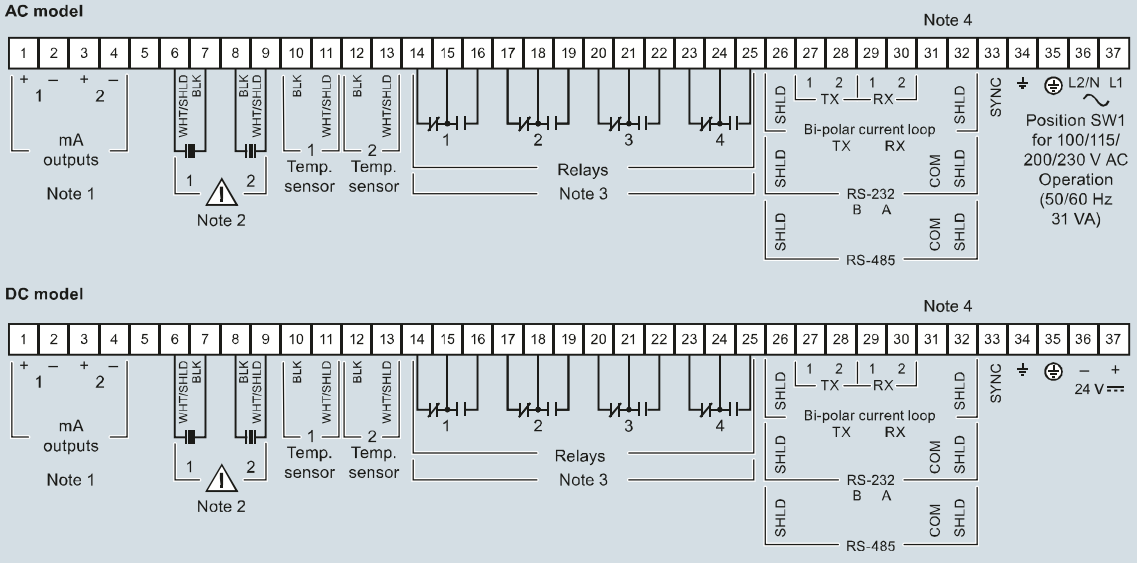
Schematics



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 (0.5mm²) wire.

SITRANS LU01 connections



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