

SITRANS L Level instruments

Continuous measurement - Ultrasonic controllers

SITRANS LU 01 and LU 02

Overview



The SITRANS LU 01 is an ultrasonic long-range level monitor for liquids and solids in a single vessel up to 60 m (200 ft).

Hand Programmer shown is an accessory and must be ordered separately.

Benefits

- Single point, long-range level monitoring
- Easy to install and 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 LU 01 monitor linked to a non-contacting ultrasonic transducer that can be mounted up to 365 m (1200 ft) away. The SITRANS LU 01 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 LU 01 will connect to a DCS or PLC using Siemens Milltronics 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 LU 02 is a dual point ultrasonic long-range level monitor for liquids and solids in one or two vessels up to 60 m (200 ft).

Hand 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

It will scan 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 Milltronics 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 to 60 m (1 to 200 ft) |
| • Measuring points | |
| - SITRANS LU 01 | Max. one point |
| - SITRANS LU 02 | 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 to 20 mA, optically isolated |
| - Max. load | 750 Ω , isolated, 30 V |
| - Resolution | 0.1% of range |
| - Outputs LU 01 | Max. one mA output |
| - Outputs LU 02 | Max. two mA outputs |

Accuracy

| | |
|----------------------------|--|
| • Error in measurement | 0.25% of range or 6 mm (0.24"), whichever is greater |
| • Resolution | 0.1% of measuring range or 2 mm (0.8"), whichever is greater |
| • Temperature compensation | -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 |

Rated operating conditions

Ambient conditions

| | |
|-----------------------------------|-------------------------------|
| Ambient temperature for enclosure | -20 to +50 °C (-5 to +122 °F) |
|-----------------------------------|-------------------------------|

Design

| | |
|-----------------------------------|-----------------|
| Weight | 2.7 kg (6 lbs.) |
| 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 to 0.75 mm ² (22 to 18 AWG), Belden [®] 8760 or equivalent is acceptable |
| • Electrical connection and relay connection | Copper conductor according to local requirements, rated 250 V 5A |
| • Synchronization | Up to 16 LU01/LU 02 units can be synchronized together |

Power supply

| | |
|----------|---|
| AC model | 100/115/200/230 V AC \pm 15%, 50/60 Hz, 31 VA |
| DC model | 18 to 30 V DC, 25 W |

Displays and controls

| | |
|---------------|--|
| | 51 x 127 mm (2 x 5") 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_{NRTL/C}, FM
SITRANS LU 02 only:
Lloyd's Register of Shipping
(Categories ENV1, ENV2, ENV3
and ENV5)

Options

| | |
|-------------------------------|---|
| • External temperature sensor | TS-3 |
| • Communications | <ul style="list-style-type: none"> • SmartLinX: protocol-specific modules as interface for popular industrial fieldbus systems • Dolphin Plus: Siemens Milltronics Windows[®]-compatible interface and ComVerter link (infrared) |

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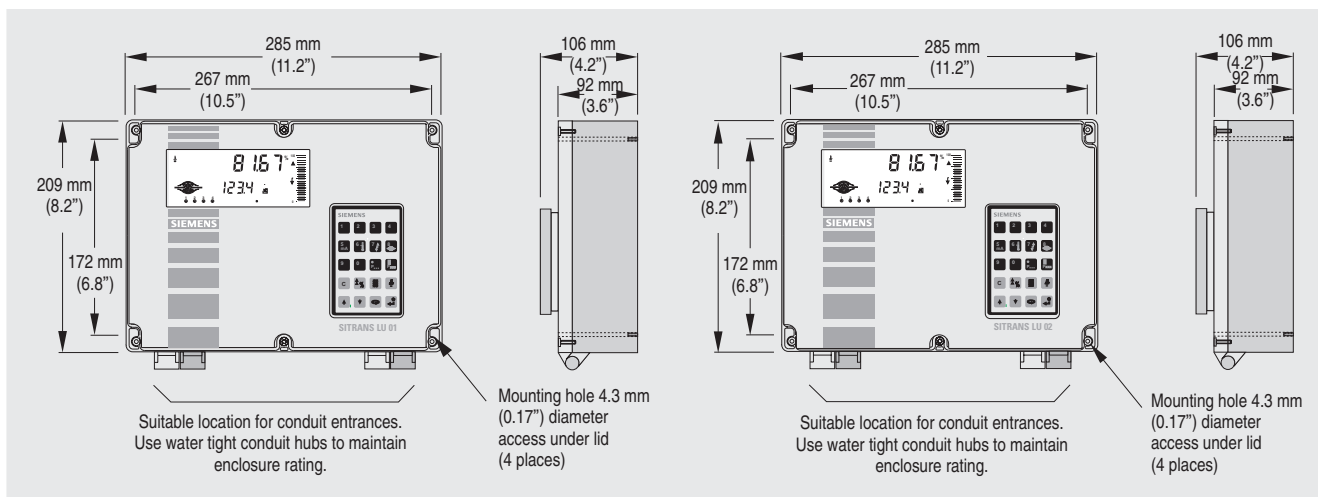
SITRANS LU 01 and LU 02

| Selection and Ordering data | Order No. |
|--|-------------|
| SITRANS LU 01/LU 02 | C) 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 | |
| LU 01 version, 1 point | 1 |
| LU 02 version, 2 points | 2 |
| Input voltage | |
| 100/115/200/230 V AC, voltage selector switch | A |
| 18 to 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 |
| SmartLinx DeviceNet™ module | 4 |
| SmartLinx modem module (for European countries only) | 5 |
| SmartLinx modem module (for Canada, USA only) | 6 |
| Enclosure | |
| Wall mount | 1 |
| Wall mount, drilled, 6 x M20x1.5 | 3 |
| Approvals | |
| CE, CSANRTL/C, FM ¹⁾ | A |
| CE ²⁾ | B |
| Further designs | |
| Please add "-Z" to Order No. and specify Order code(s). | Order code |
| Stainless steel tag [69 mm x 50 mm (2.71 x 1.97")]: Measuring-point number/identification (max. 16 characters) specify in plain text | Y15 |

| Selection and Ordering data | Order No. |
|---|------------------|
| Instruction manual | |
| SITRANS LU 02, English | C) 7ML1998-5BD02 |
| SITRANS LU 02, French | C) 7ML1998-5BD12 |
| SITRANS LU 02, German | C) 7ML1998-5BD32 |
| SITRANS LU 01, English | C) 7ML1998-5BE02 |
| SITRANS LU 01, French | C) 7ML1998-5BE12 |
| SITRANS LU 01, German | C) 7ML1998-5BE32 |
| 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 instruction manual library. | |
| Other instruction manuals | |
| SmartLinx Allen-Bradley Remote I/O, English | C) 7ML1998-1AP03 |
| SmartLinx PROFIBUS DP, English | C) 7ML1998-1AQ03 |
| SmartLinx PROFIBUS DP, German | C) 7ML1998-1AQ32 |
| SmartLinx PROFIBUS DP, French | C) 7ML1998-1AQ12 |
| SmartLinx DeviceNet, English | C) 7ML1998-1BH02 |
| SmartLinx Modbus, English | C) 7ML1998-1BF01 |
| SmartLinx Modbus, German | C) 7ML1998-1BF31 |
| SmartLinx Modem, English | C) 7ML1998-1BG01 |
| Note: The appropriate SmartLinx instruction manual should be ordered as a separate line on the order. | |
| Accessories | |
| Handheld programmer | 7ML1830-2AN |
| Tag, stainless steel, 12 x 45 mm (0.47 x 1.77"), one text line, suitable for enclosures | 7ML1930-1AC |
| M20 cable gland kit (6 M20 cable glands, 6 M20 nuts, 3 stop plugs) | 7ML1830-1GM |
| TS-3 Temperature Sensor - see TS-3 on page 5/119 | |
| Spare parts | |
| Card, LU 01 mother main, comm ready | C) 7ML1830-1KX |
| Card, LU 02 mother main, comm ready | C) 7ML1830-1MA |
| Card, LU 02 daughter, comm ready | C) 7ML1830-1LP |
| Card, LU 01 daughter, comm ready | C) 7ML1830-1LN |
| Card, display | 7ML1830-1LQ |
| See SmartLinx product page on page 5/179 for more information. | |

- 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).

Dimensional drawings



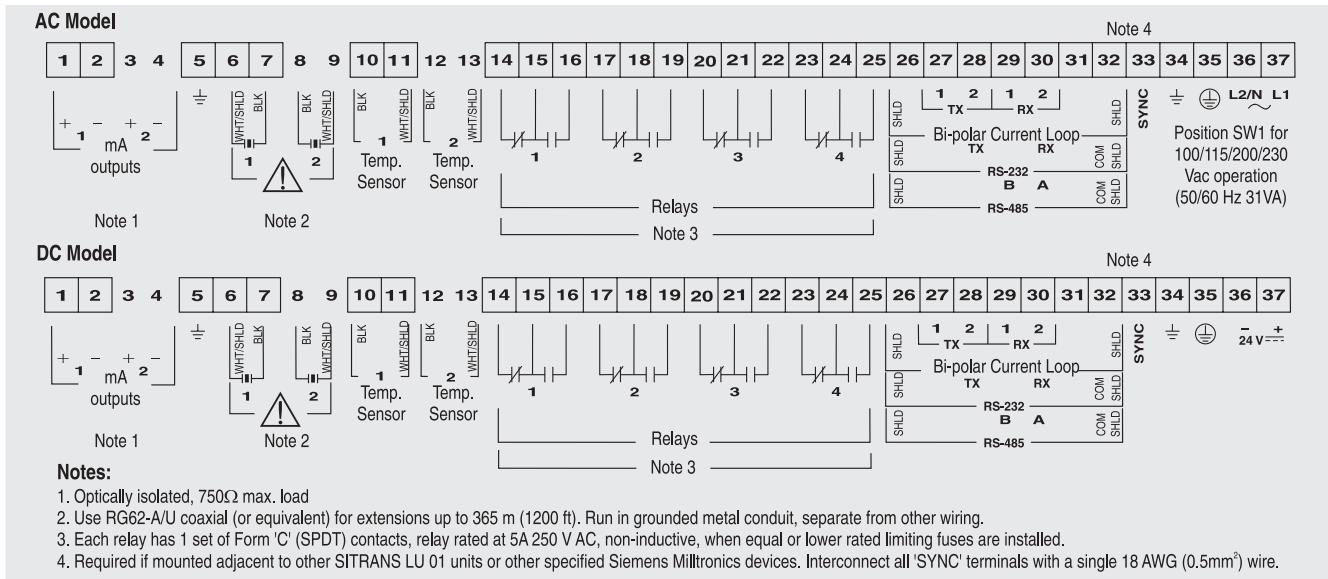
Dimensional drawings for SITRANS LU 01 (left) and SITRANS LU 02 (right)

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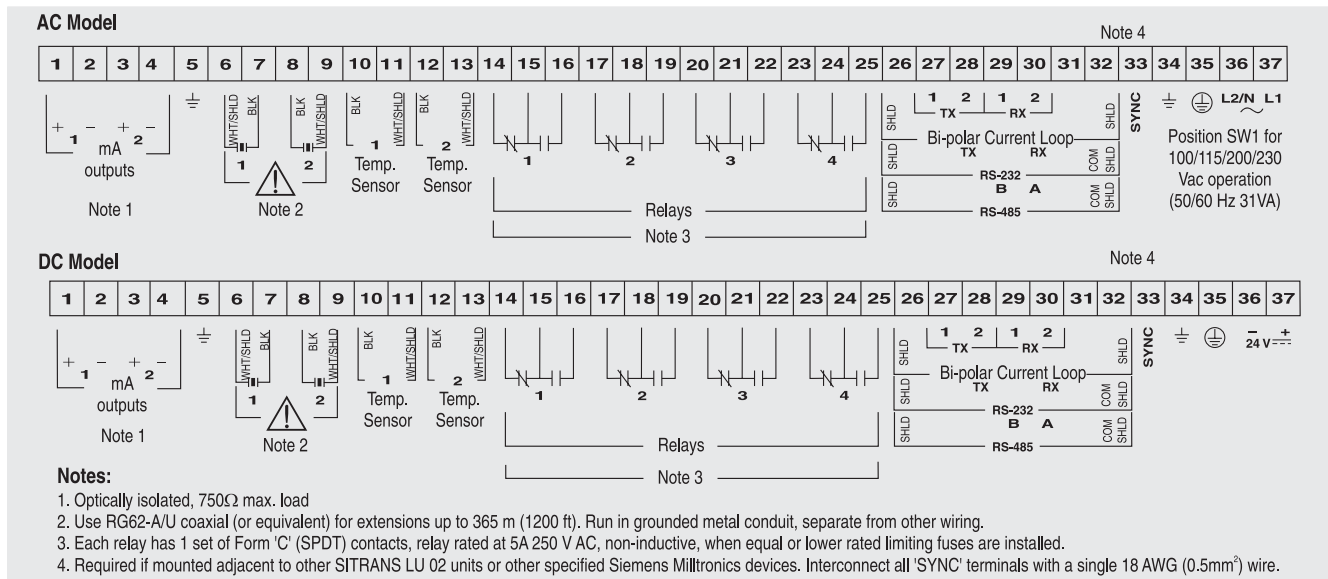
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Schematics



SITRANS LU 01 connections



SITRANS LU 02 connections