

# Level Measurement

## Continuous level measurement – Ultrasonic controllers

### SITRANS LU10

#### Overview



SITRANS LU10 is an ultrasonic long-range level monitor for liquids and solids, offering 10-point monitoring in a single unit.

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

#### Benefits

- Ten point, long-range level monitoring
- Automatic level-to-volume conversion for standard or custom tank shapes
- Dolphin Plus and SmartLinX compatible
- Backlit LCD display with reading in standard engineering units
- Easy to install, easy to program using removable infrared keypad (optional)

#### Application

It can be used in a wide range of applications to scan liquids, solids or a combination of both contained in vessels of differing size, shape, and configuration up to 60 m (200 ft).

SITRANS LU10 uses ultrasonic technology to measure level, space, distance, volume, or average/differential. Transducers can be mounted up to 365 m (1200 ft) from the monitor.

The SITRANS LU10 features patented Sonic Intelligence echo processing software for superior reliability. Readings are displayed in user-selectable linear engineering units on the LCD.

SITRANS LU10 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 (sugar, flour bins, grains, cereals), plastic pellets, tank farms

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### Technical specifications

#### Mode of operation

Measuring principle	Ultrasonic level measurement
Measuring range	Max. 0.3 ... 60 m (1 ... 200 ft)
Measuring points	Max. 10

#### Output

Ultrasonic transducer	Echomax series, ST-H transducers
Relays	<ul style="list-style-type: none"> <li>• SITRANS LU SAM module (option): 20 alarm/control relays</li> <li>• SPDT Form C relays, rated 5 A at 250 V AC, resistive load</li> </ul>
mA output	SITRANS LU A0 module (option): 0/4 ... 20 mA, optically isolated
• Max. load	750 Ω, isolated
• Resolution	0.1 % of range

#### 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 (0.08"), whichever is greater
Temperature compensation	-50 ... +150 °C (-58 ... +302 °F) <ul style="list-style-type: none"> <li>• Integral temperature sensor</li> <li>• External TS-3 temperature sensor (expandable to 10 inputs with optional TIB-9 card)</li> <li>• Programmable fixed temperature</li> </ul>

#### Rated operating conditions

Ambient conditions	
Ambient temperature for enclosure	-20 ... +50 °C (-4 ... +122 °F)

#### Design

Weight	2.7 kg (6 lbs)
Material (enclosure)	Polycarbonate
Degree of protection (wall mount)	IP65/Type 4X/NEMA 4X

#### Electrical connection

Ultrasonic transducer	RG62-A/U coaxial cable with low capacitance
Signal transmission	2-core copper conductor, twisted, shielded, 0.5 ... 0.75 mm <sup>2</sup> (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 LU10 units can be synchronized together

#### Power supply

100/115/200/230 V AC ± 15%, 50/60 Hz, 31 VA

#### 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, C-TICK, FM, CSA<sub>US/C</sub>, ATEX II 3D
- Lloyd's register of Shipping (Categories ENV1, ENV2, ENV3 and ENV5)

#### Options

##### Expansion card

TIB-9, increases the number of TS-3 inputs from 1 to 10

- External temperature sensor
- Communications

##### TS-3

- SmartLinX: protocol-specific modules as interface for popular industrial fieldbus systems
- Dolphin Plus: Siemens Windows-compatible interface and ComVerter link (infrared)
- Max. 3 I/O devices per SITRANS LU10
- SITRANS LU AO analog output module (max. 1)
- SITRANS LU SAM, satellite alarm module (max. 2)

- I/O devices

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#### Selection and Ordering data

##### SITRANS LU10

Ten point ultrasonic long-range level monitoring system for liquids and solids applications, and ranges up to 60 m (200 ft).

##### Input voltage

100/115, 200/230 V AC, selectable

##### Feature software

Standard

##### Application software

Standard

##### Data communications

No module (SmartLinx ready)

SmartLinx Allen-Bradley Remote I/O module

SmartLinx PROFIBUS DP module

SmartLinx Modbus RTU module

##### TIB-9 temperature card

None

With TIB-9 card

##### Enclosure

Wall mount

Wall mount, drilled, 12 x M20

##### Approvals

CE, CSA<sub>US/CA</sub>, FM<sup>1)</sup>

ATEX II 3D<sup>1)</sup>

CE, C-TICK<sup>2)</sup>

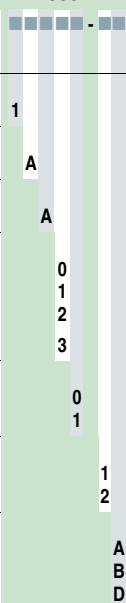
<sup>1)</sup> Available with Enclosure option 1 only

<sup>2)</sup> Available with Enclosure option 2 only

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

#### Order No.

C) 7ML5007-



#### Selection and Ordering data

##### 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

Y15

##### Operating Instructions

English

C) 7ML1998-5AN02

French

C) 7ML1998-5AN12

German

C) 7ML1998-5AN32

##### Other Operating Instructions

SmartLinx Allen-Bradley Remote I/O, English

C) 7ML1998-1AP03

SmartLinx PROFIBUS DP, English

C) 7ML1998-1AQ03

SmartLinx PROFIBUS DP, German

C) 7ML1998-1AQ33

SmartLinx Modbus, English

C) 7ML1998-1BF01

SmartLinx Modbus, German

C) 7ML1998-1BF31

SmartLinx Modem, English

C) 7ML1998-1BG01

Note: The appropriate SmartLinx Operating Instructions 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

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

7ML1930-1FV

TS-3 Temperature Sensor -  
see TS-3 on page 5/200

7ML1830-2AN

Sunshield kit, 304 SS

7ML1930-1GA

##### Spare parts

Card, mother main, AC, comm ready

C) 7ML1830-1ML

Card, daughter, comm ready

C) 7ML1830-1LY

Card, display  
See SmartLinx product page 5/120 for more information.

7ML1830-1LQ

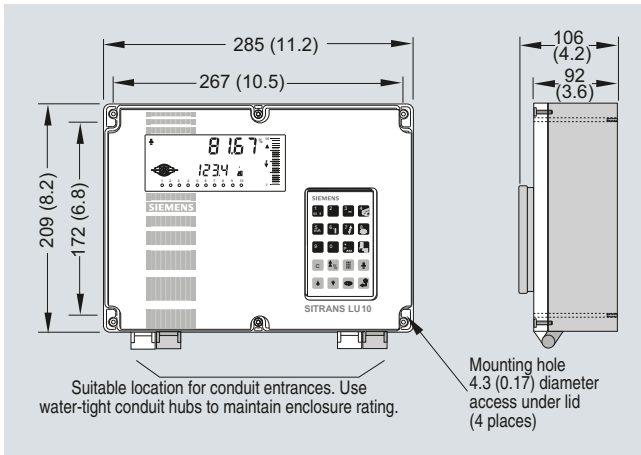
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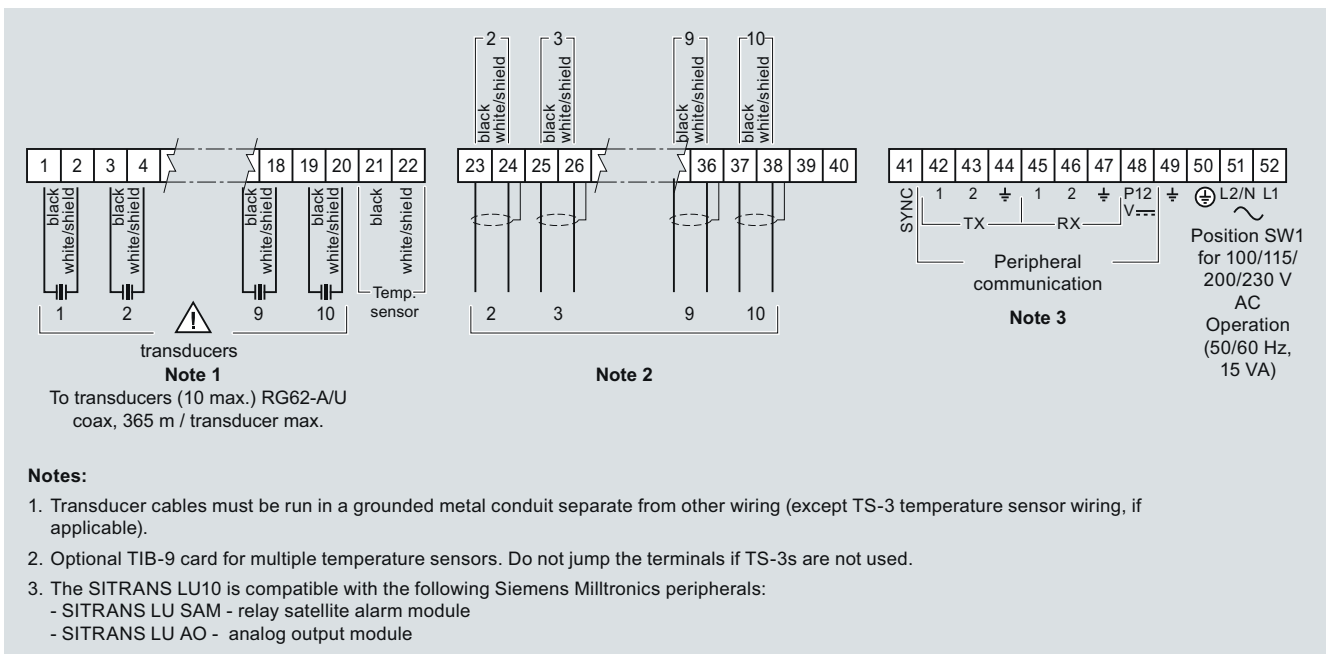
SITRANS LU10

### Dimensional drawings



SITRANS LU10, dimensions in mm (inch)

### Schematics



**Notes:**

1. Transducer cables must be run in a grounded metal conduit separate from other wiring (except TS-3 temperature sensor wiring, if applicable).
2. Optional TIB-9 card for multiple temperature sensors. Do not jump the terminals if TS-3s are not used.
3. The SITRANS LU10 is compatible with the following Siemens Milltronics peripherals:
  - SITRANS LU SAM - relay satellite alarm module
  - SITRANS LU AO - analog output module

SITRANS LU10 connections

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