

# FINE CONTROLS (UK) LTD



Fine Controls have been supplying process controls & instrumentation equipment since 1994, & now serves an ever expanding customer base, both in the UK & globally.

We offer a full range of valve & instrumentation products & services, with our product range representing leading technologies & brands:

**Flow:** Flow Meters & Transmitters, Flow Switches, Flow Control Valves & Batch Control Systems

**Temperature:** Temperature Probes & Thermowells, Temperature transmitters, Temperature Regulators & Temperature Displays

**Level:** Level Transmitters & Switches

**Pressure:** Pressure Gauges & Transmitters, Precision & High Pressure Regulators & I-P Converters, Volume boosters.

**Precision Pneumatics:** Pressure Regulators, I-P Converters, Volume Boosters, Vacuum Regulators

**Valves:** Solenoid & Pneumatic Valves, Control Valves & Positioners, Actuated Ball, Globe or Diaphragm Valves & Isolation Valves

**Services:** Repair, Calibration, Panel Build, System Design & Commissioning

A rotork® Brand  
**FAIRCHILD**



**bürkert**



**SIEMENS**



**alcon**  
SOLENOID VALVES

A rotork® Brand



**MIDLAND-ACS**  
A rotork® Brand



**Honeywell**



**Bourdon**  
Baumer Group



**SOLDO**  
CONTROLS

A rotork® Brand



Fine Controls (UK) LTD, Bassendale Road, Croft Business Park,  
Bromborough, Wirral, CH62 3QL UK  
Tel: 0151 343 9966  
Email: sales@finecontrols.com

# 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<sup>®</sup> 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<sup>®</sup> 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<sup>®</sup> 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<sup>®</sup> 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<sup>®</sup> 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<sup>®</sup> 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

# Level Measurement

## Continuous level measurement - Ultrasonic controllers

### SITRANS LU01 and LU02

#### 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. 1 mA output SITRANS LU02: Max. 2 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 (0.08"), 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 (optional)</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

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

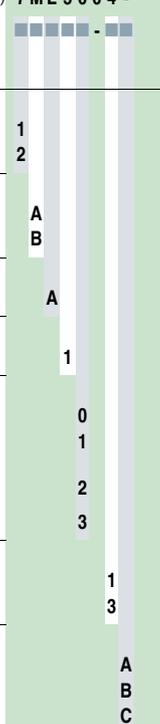
##### Options

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

# Level Measurement

## Continuous level measurement - Ultrasonic controllers

### SITRANS LU01 and LU02

Selection and Ordering data	Order No.
<b>SITRANS LU01/LU02</b> Single or dual point ultrasonic long-range level monitoring system for liquids and solids, and ranges up to 60 m (200 ft).	C) <b>7ML5004-</b> 
<b>Number of measuring points</b> LU01 version, 1 point LU02 version, 2 points	1 2
<b>Input voltage</b> 100/115/200/230 V AC, voltage selector switch 18 ... 30 V DC	A B
<b>Feature software</b> Standard	A
<b>Application software</b> Standard	1
<b>Data communications</b> No module (SmartLinX ready) SmartLinX Allen-Bradley® Remote I/O module SmartLinX PROFIBUS DP module SmartLinX Modbus® RTU module	0 1 2 3
<b>Enclosure</b> Wall mount Wall mount, drilled, 6 x M20	1 3
<b>Approvals</b> CE, CSA <sub>US/C</sub> , FM <sup>1)</sup> CE <sup>2)</sup> ATEX II 3D <sup>1)</sup>	A B C

1) Available with enclosure option 1 only

2) Available with enclosure option 3 only

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

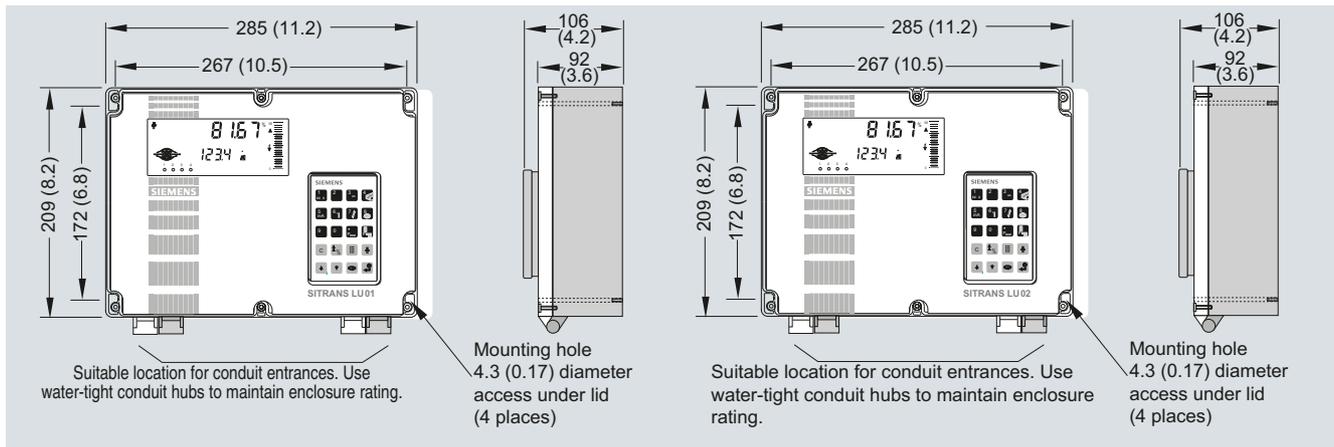
Selection and Ordering data	Order code
<b>Further designs</b> Please add "-Z" to Order No. and specify Order code(s). Stainless steel tag [69 x 50 mm (2.71 x 1.97")]: Measuring-point number/identification (max. 16 characters) specify in plain text	<b>Y15</b>
<b>Operating Instructions</b> <b>SITRANS LU01</b> English French German	Order No. C) <b>7ML1998-5BE02</b> C) <b>7ML1998-5BE12</b> C) <b>7ML1998-5BE32</b>
<b>SITRANS LU02</b> English French German	C) <b>7ML1998-5BD02</b> C) <b>7ML1998-5BD12</b> C) <b>7ML1998-5BD32</b>
Note: The Operating Instructions 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 Operating Instructions library.	
<b>Other Operating Instructions</b> 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 SmartLinX Modem, English Note: The appropriate SmartLinX Operating Instructions should be ordered as a separate line on the order.	C) <b>7ML1998-1AP03</b> C) <b>7ML1998-1AQ03</b> C) <b>7ML1998-1AQ33</b> C) <b>7ML1998-1AQ12</b> C) <b>7ML1998-1BF01</b> C) <b>7ML1998-1BF31</b> C) <b>7ML1998-1BG01</b>
<b>Accessories</b> 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 5/191	<b>7ML1830-2AN</b> <b>7ML1930-1AC</b> <b>7ML1830-1GM</b> <b>7ML1830-2AN</b>
<b>Spare parts</b> Card, LU01 mother main, AC, comm ready Card, LU02 mother main, AC, comm ready Card, LU02 daughter, comm ready Card, LU01 daughter, comm ready Card, display See SmartLinX product page 5/310 for more information. 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).	C) <b>7ML1830-1KX</b> C) <b>7ML1830-1MA</b> C) <b>7ML1830-1LP</b> C) <b>7ML1830-1LN</b> C) <b>7ML1830-1LQ</b>

# Level Measurement

## Continuous level measurement - Ultrasonic controllers

SITRANS LU01 and LU02

### Dimensional drawings



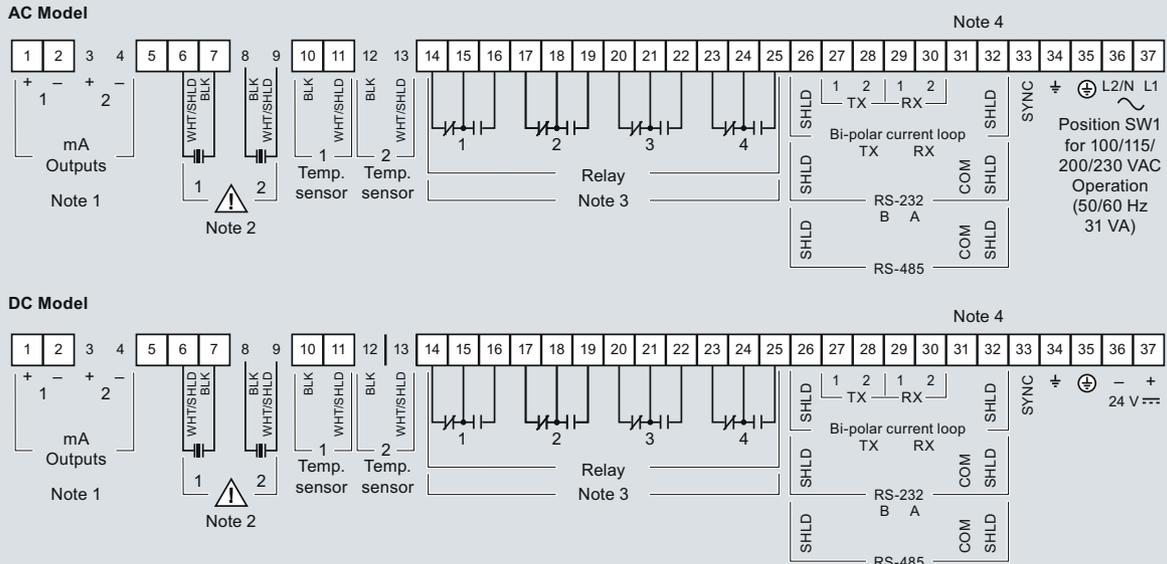
Dimensional drawings for SITRANS LU01 (left) and SITRANS LU02 (right), dimensions in mm (inch)

# Level Measurement

## Continuous level measurement - Ultrasonic controllers

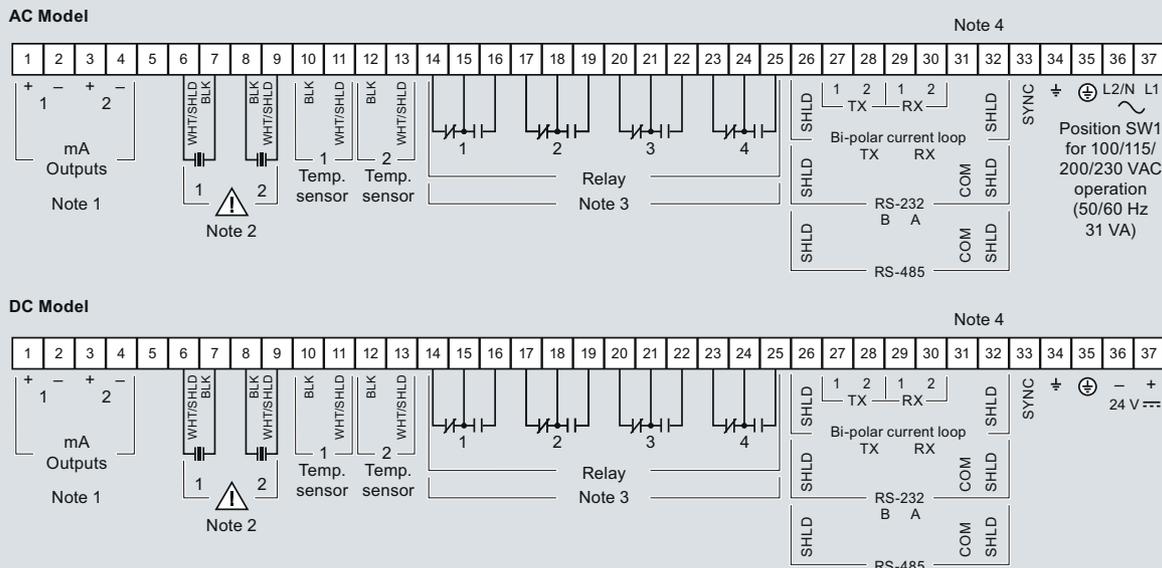
### SITRANS LU01 and LU02

#### Schematics



5

#### SITRANS LU01 connections



#### SITRANS LU02 connections