

## Level Measurement

Continuous level measurement  
Controllers

### SITRANS LT500 - MultiRanger / HydroRanger

#### Overview



SITRANS LT500 is a versatile, single and multi-vessel level monitor/controller for virtually any application in a wide range of industries.

#### Benefits

- Easy to use HMI display with local four-button programming, menu-driven parameters, and Wizard support for key applications.
- English, German, French, Spanish, Chinese, Italian, Portuguese, Japanese, Danish, Dutch, Swedish, Finnish, Polish, and Russian texts on the HMI.
- Removable terminal blocks for ease of wiring.
- Digital input for back-up level override from point level device.
- Communication options for HART, Modbus RTU, PROFIBUS PA, PROFIBUS DP, and ProfiNet.
- Single or dual point level monitoring.
- Auto False-Echo Suppression for fixed obstruction avoidance.
- Up to 6 independent programmable relays for pump control, alarms, or remote totalization.
- Level, volume, and flow measurements in open channels, differential control, extended pump control, and alarm functions.
- Wall and panel mounting options.
- Remote configuration via EDD with SIMATIC PDM and SITRANS DTM.

#### Application

SITRANS LT500 can be used with SITRANS LR110, LR120, Probe LU240 or any level device generating a mA signal. SITRANS LT500 offers true dual point monitoring and digital communications. SITRANS LT500 is low maintenance and economical. With its advanced control functions, it can operate pumps during lower cost time periods and manage pump rosters for efficiency.

SITRANS LT500 will monitor open channel flow and features advanced relay alarming and pump control functions as well as volume conversion.

- Key Applications: wet wells, flumes/weirs, bar screen control, hoppers, chemical storage, liquid storage, crusher bins, dry solids storage

#### Design

SITRANS LT500 is available in wall or panel mounting options.

### Technical specifications

<b>Mode of operation</b>	Level, space, distance, volume, flow, head, difference, average, totalization
<b>Sensor input</b>	
Number of inputs	1 or 2
Terminal voltage	Max. 26 V, Min. 18 V (0 ... 22.6 mA)
Wiring	2 conductor, twisted, shielded, 0.5 ... 0.75 mm <sup>2</sup> (22 ... 18 AWG)
Max. cable length	500 m (1 640.42 ft)
Sensor input communication	<ul style="list-style-type: none"> <li>4 ... 20 mA</li> <li>HART protocol, for supported sensors: SITRANS LR110, LR120, SITRANS Probe LU240</li> </ul>
4 ... 20 mA sensor input	
• Resolution	0.025 % of full scale
• Accuracy	0.1 % of full scale
HART sensor input	Resolution, range, and accuracy are dependent on connected sensor
<b>Digital input</b>	
Quantity	2
Switching threshold, low	0 ... 0.5 V DC
Switching threshold, high	10 ... 50 V DC
Input current	Max. 3 mA
Bias voltage	24 V
<b>Analog output</b>	
Quantity	1 or 2
Range	0 ... 20 mA or 4 ... 20 mA isolated
• Max. load	750 Ω
• Resolution	0.1 % of range
Accuracy	±20 μA
Startup current	3.6 mA
Fail-safe	Programmable as high, low, last reliable, set value, or hold per NAMUR NE43
Wiring	2 conductor, twisted, shielded, 0.5 ... 0.75 mm <sup>2</sup> (22 ... 18 AWG)
<b>Relay output</b>	
Quantity	Up to 6, 4 form A and 2 form C
Rating	5 A at 250 V AC, 5 A at 30 V DC, non-inductive
Durability	50 000 operations min. per relay (5 A at 30 V DC, resistive load)
Fail-safe	Programmable as energized, de-energized, or hold

<b>Rated operating conditions</b>	
Installation conditions	
• Location	Indoor/outdoor
• Installation category	II
• Pollution degree	4
Ambient conditions	
• Ambient temperature	-20 ... +50 °C (-4 ... +122 °F)
• Storage temperature	-20 ... +50 °C (-4 ... +122 °F)
<b>Design</b>	
Weight	
• Wall mount	1.22 kg (2.68 lb)
• Panel mount	1.35 kg (2.97 lb)
Enclosure	
• Material	Polycarbonate
• Degree of protection	
- Wall mount	IP65/Type 4X
- Panel mount	IP54/Type 3
<b>Display and control</b>	
LCD display	60 x 40 mm (2.36 x 1.57 inch) LCD, 240 x 160 pixels resolution
Menu navigation	4 push button keys
Update time	1 second or less
Memory	Program and parameters stored in non-volatile Flash memory
<b>Memory card</b>	8 GB Industrial micro SD
<b>Power supply</b>	
AC version	100 ... 230 V AC, ±15 %, 50/60 Hz, 36 VA (17 W)
DC version	12 ... 30 V DC (20 W)
<b>Certificates and approvals</b>	CE, UKCA, RCM, EAC, FM, cCSA <sub>US</sub> , cUL <sub>US</sub>
<b>Communication</b>	
Service interface	USB 2.0 mini A cable
Optional Fieldbus	<ul style="list-style-type: none"> <li>HART 7, with Active/Passive 4 ... 20 mA</li> <li>Modbus RTU</li> <li>PROFIBUS PA per profile 4.01</li> <li>PROFIBUS DP</li> <li>ProfiNet</li> </ul>
Remote configuration	<ul style="list-style-type: none"> <li>EDD via SIMATIC PDM</li> <li>SITRANS DTM via PACTware</li> </ul>

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#### Selection and ordering data

#### Article No.

#### Order code

##### SITRANS LT500

Continuous, non-contact, for liquids, slurries, and solids. Monitors level, volume, and volume flow, for virtually any application in a wide range of process industries.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

##### Product type

HydroRanger

MultiRanger

##### Feature set

Level, volume, and flow

##### Sensor input type

4 ... 20 mA input(s)

##### Number of measurement points

Single point version

Dual point version

##### Relay output

1 relay (1 Form A), 250 V AC

3 relays (2 Form A, 1 Form C), 250 V AC

6 relays (4 Form A, 2 Form C), 250 V AC

##### Mounting, enclosure design

Wall mount, standard enclosure

Wall mount, 4 entries, M20 cable glands included

Panel mount

##### Type of protection

Ordinary Locations/General Purpose (Non-Ex), cCSA<sub>US</sub>, FM, CE, UKCA, RCM, EAC

##### Removable data storage

Included, (8 GB micro SD)

##### Input voltage

10 ... 30 V DC

100 ... 230 V AC

7ML60
0 - 0 - A A
0
1
3
0
A
B
A
B
C
0
1
2
0
1
2
3

##### Further designs

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

##### Stainless steel tag [13 x 45 mm (0.5 x 1.75 inch)]:

Tag (device parameter, max. 32 characters) plate stainless steel 304/1.4301

##### Certificates

Factory test certificate - M to DIN 55350, Part 18

Factory certificate 2.2 (EN 10204)

##### Communication

4 ... 20 mA, active output, with HART

Modbus RTU

PROFIBUS PA

PROFIBUS DP

ProfiNet

##### Specials

Special design

For customs, contact a local sales person.

For more information please visit

[http://www.automation.siemens.com/aspa\\_app](http://www.automation.siemens.com/aspa_app)

##### Operating Instructions

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/processinstrumentation/documentation>

##### Optional equipment

Tag, stainless steel, 12 x 45 mm, one text line, (max. 16 characters)

Barriers in a NEMA 4X/IP65 enclosure

Barrier suitable for LR1xx & LU240

(STAHL: 9001/01-280-110-101)

Sunshield, 304 Stainless steel

SITRANS RD100, loop powered display - see Chapter 7

SITRANS RD150, remote digital display for

4 ... 20 mA and HART devices - see Chapter 7

SITRANS RD200, universal input display with

Modbus conversion - see Chapter 7

SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7

Y15

C19

C14

F01

F04

F05

F06

F07

Y99

Article No.

7ML1930-1AC

A5E50255823

A5E50113513

7ML1930-1GA

7ML5741-.....-

7ML5742-.....-

7ML5740-.....-

7ML5744-.....-

4

**Spare parts**

Replacement motherboard, single point, includes DC power module	<b>A5E50113558</b>
Replacement motherboard, dual point, includes DC power module	<b>A5E50113557</b>
Replacement motherboard, single point, includes AC power module	<b>A5E50113542</b>
Replacement motherboard, dual point, includes AC power module	<b>A5E50113543</b>
Replacement lid with 4 button HMI	<b>A5E50113559</b>
Replacement lid with 4 button HMI panel mount version	<b>A5E50113560</b>
Retrofit kit for wall mount to panel mount version	<b>A5E50114010</b>
Replacement SD card	<b>A5E50113554</b>
HART communications module	<b>A5E50113564</b>
PROFIBUS PA communications module	<b>A5E50113568</b>
Modbus RTU communications module	<b>A5E50113565</b>
PROFIBUS DP communications module	<b>A5E50113567</b>
ProfiNet communications module	<b>A5E50113569</b>

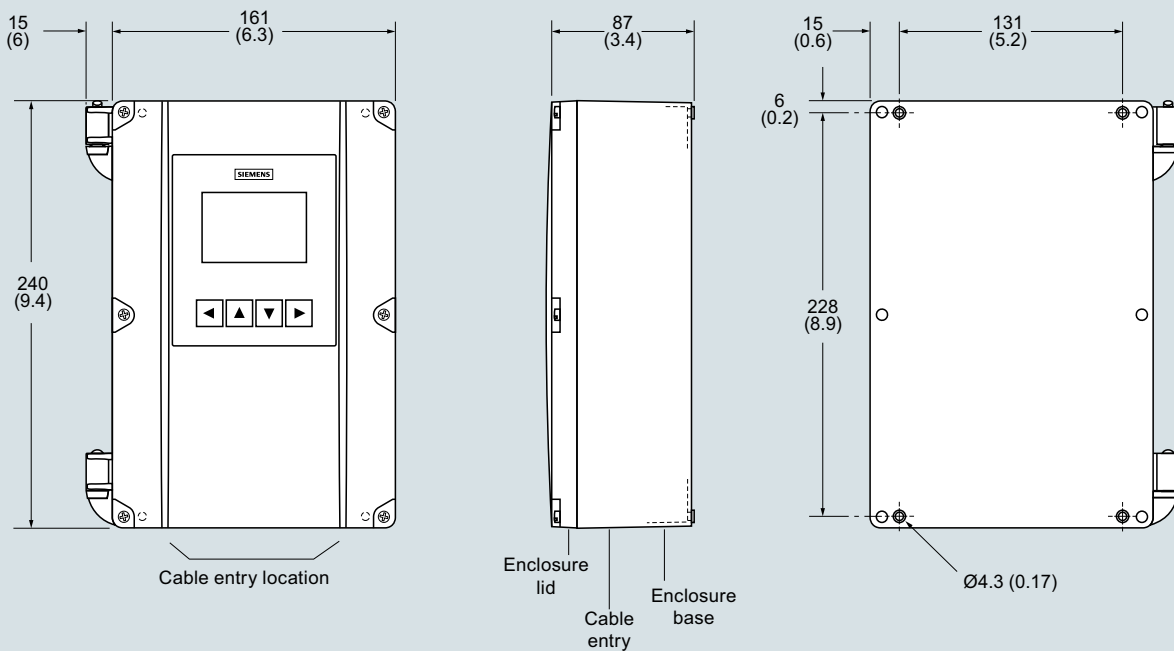
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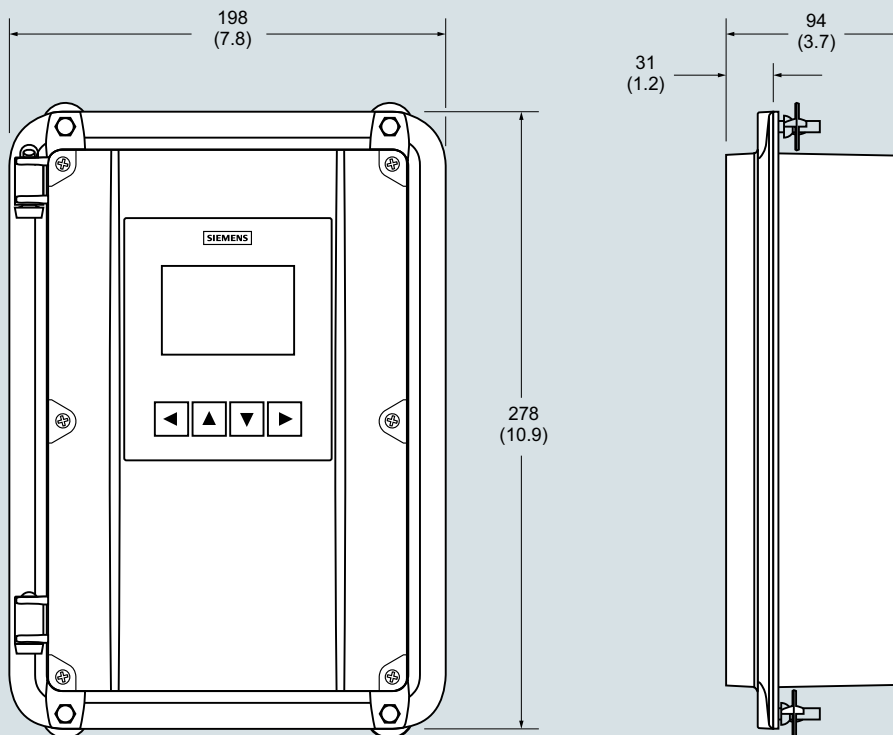
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#### Dimensional drawings

##### Wall mount dimensions

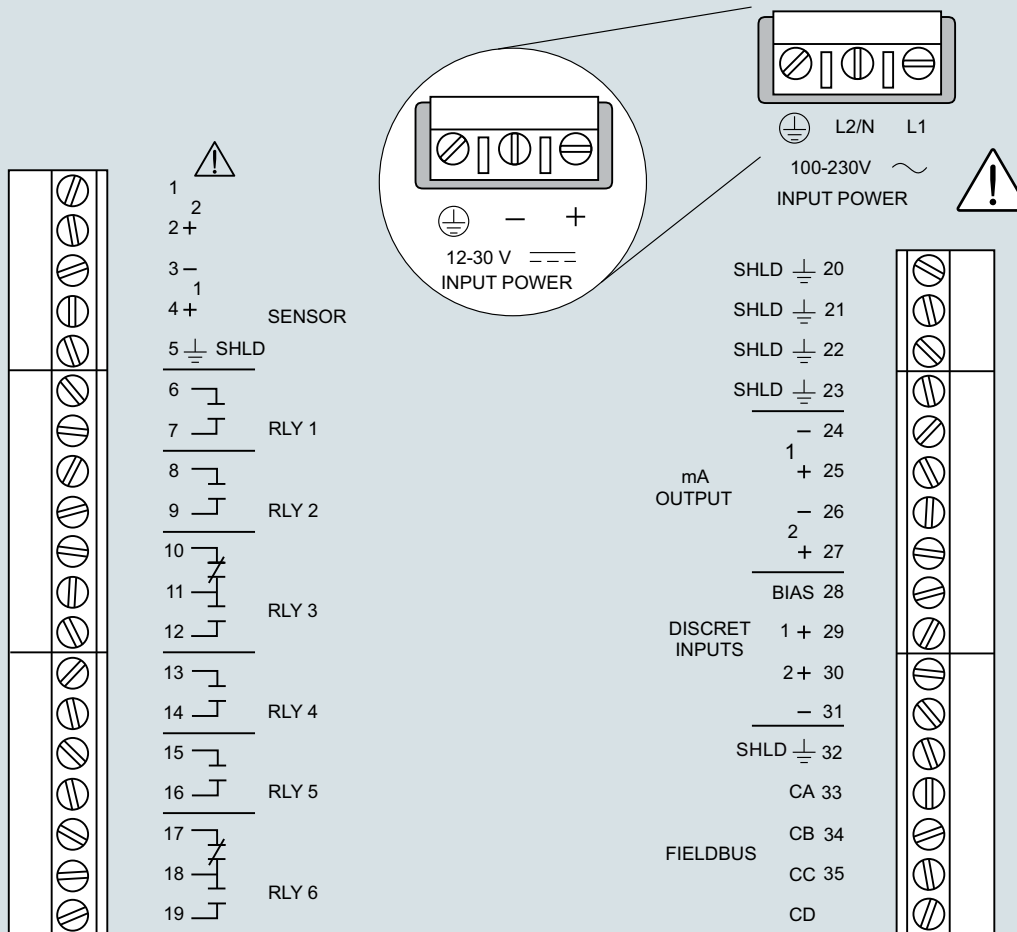


##### Panel mount dimensions



SITRANS LT500, dimensions in mm (inch)

**Circuit diagrams**



Relays shown in released state

**Note:**

1. Use 2-core copper wire, twisted, with shield, for expansion up to 365 m (1 200 ft). Route cable in grounded metal conduit, separate from other cables.
2. Verify that all system components are installed in accordance with instructions.
3. Connect all cable shields to the SITRANS LT500 shield connections. Avoid differential ground potentials by not connecting cable shields to ground (earth) anywhere else.
4. Keep exposed conductors on shielded cables as short as possible to reduce noise on the line caused by stray transmissions and noise pickup.

SITRANS LT500 connections