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in one

sitrans

LU AO

SIEMENS

Safety Guidelines: Warning notices must be observed to ensure personal safety as well as that of others, and to protect the product and the connected equipment. These warning notices are accompanied by a clarification of the level of caution to be observed.

Qualified Personnel: This device/system may only be set up and operated in conjunction with this manual. Qualified personnel are only authorized to install and operate this equipment in accordance with established safety practices and standards.

Unit Repair and Excluded Liability:

- The user is responsible for all changes and repairs made to the device by the user or the user's agent.
- All new components are to be provided by Siemens Milltronics Process Instruments Inc.
- Restrict repair to faulty components only.
- Do not reuse faulty components.

Warning: This product can only function properly and safely if it is correctly transported, stored, installed, set up, operated, and maintained.

This product is intended for use in industrial areas. Operation of this equipment in a residential area may cause interference to several frequency based communications.

Note: Always use product in accordance with specifications.

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SITRANS LU AO: Introduction

Note:

- The SITRANS LU AO is to be used only in the manner outlined in this instruction manual.
- This product is intended for use in industrial areas. Operation of this equipment in a residential area may cause interference to several frequency based communications.

The SITRANS LU AO Analog Output Module is used to provide analog output for the scan points of the associated application device. The operation of the SITRANS LU AO is programmed via the application device. The only SITRANS LU AO on-board settings are for bank selection and output testing.

The SITRANS LU AO can be programmed to provide up to 10 analog outputs, each sharing a common negative buss which is electrically isolated from ground. If desired, the common negative buss and / or cable shield may be connected to ground at only one location; either at the SITRANS LU AO or at the load (e.g. customer's computer).

Specifications

Power

- 100/115/200/230 V AC $\pm 15\%$, 50/60 Hz, 15 VA

Environmental

- location: indoor / outdoor
- altitude: 2000 m max.
- ambient temperature: -20 to 50 °C (-5 to 122 °F)
- relative humidity: suitable for outdoor (Type 4X / NEMA 4X / IP65 enclosure)
- installation category: II
- pollution degree: 4

Input

- communication from application device¹
- ± 20 mA bipolar current loop
- 4800 baud rate
- non-polarized

¹. Application Device: SITRANS LU10 process material level monitors

Output

- 10 analog current outputs, programmable from application device¹
- isolated 0 or 4 to 20 mA into 750 Ω max.
- 0.1% resolution
- Accuracy: 0.25% of span

Display

- 1 power / communication status LED

Memory

- 10 minutes minimum data retention

Enclosure

- Type 4X / NEMA 4X / IP65
- 209 mm W x 285 mm H x 92 mm D
(8.2" W x 11.2"H x 3.6"D)
- polycarbonate

Approvals

- CE¹, FM, CSA **NRTL/C**

Weight

- 2 kg (4.4 lb)

Cable (optional):

- Belden 8760, shielded / twisted pair, 18 ga. or equivalent

¹. EMC performance available upon request.

Installation

Note: Installation shall only be performed by qualified personnel and in accordance with local governing regulations.

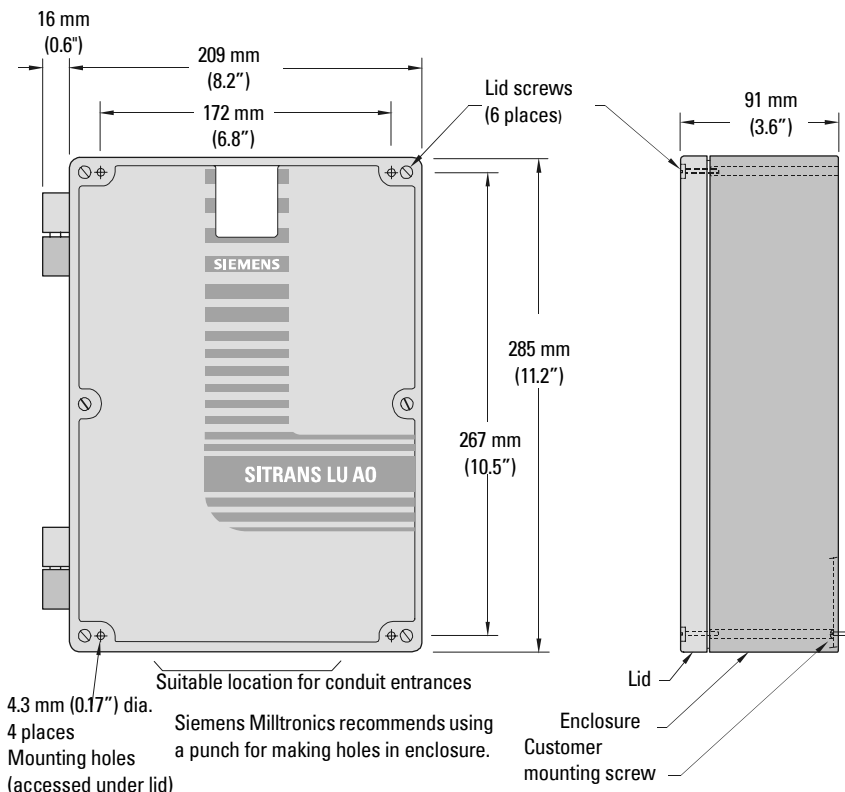
Mount the SITRANS LU AO in an area that is within the unit's ambient temperature range and suitable for the specified enclosure. The front cover should be easy to view, and should have room to swing open for access to wiring and switch-settings.

Caution:

- Do not mount the SITRANS LU AO in direct sunlight without the use of a sun shield.
- This product is susceptible to electrostatic shock: follow proper grounding procedures.

The SITRANS LU AO may be installed remotely from the associated application device to a maximum loop length of 3,000 m (10,000 ft) when using 18 ga. wire.

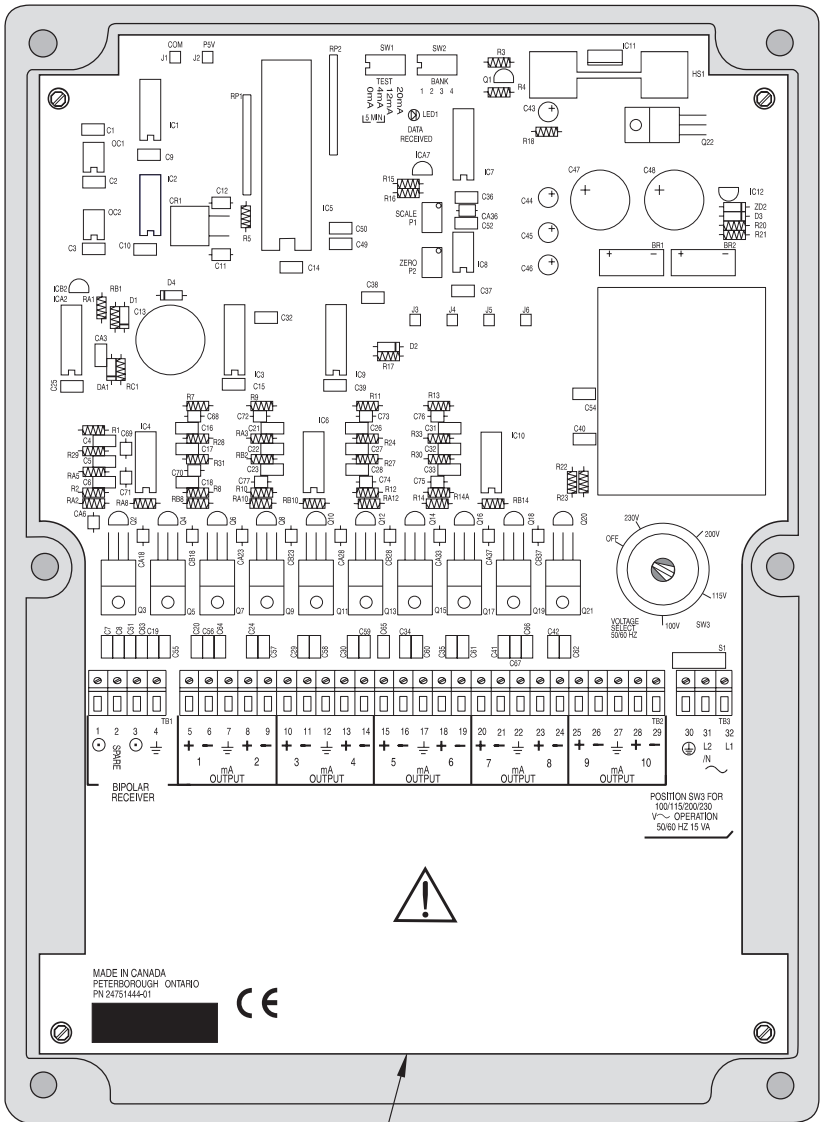
Outline and Mounting



Caution:

- Non-metallic enclosure does not provide grounding between connections.
- Use grounding type bushings and jumpers.

Layout



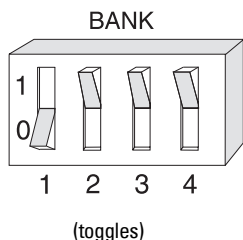
Board A



All field wiring must have insulation suitable for at least 250 V.

Switch Settings

Ensure that the BANK dip switch is set as shown below.



toggle				bank (output)
1	2	3	4	
1	0	0	0	1 (1-10)

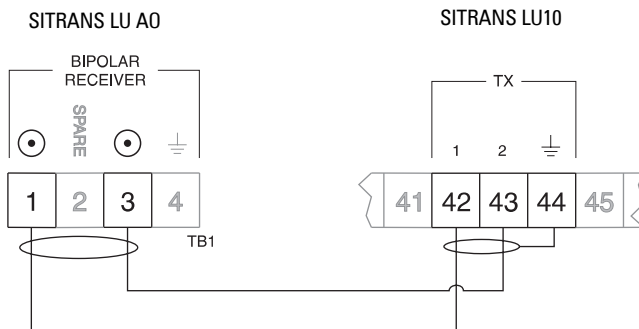
Interconnection

System Diagram



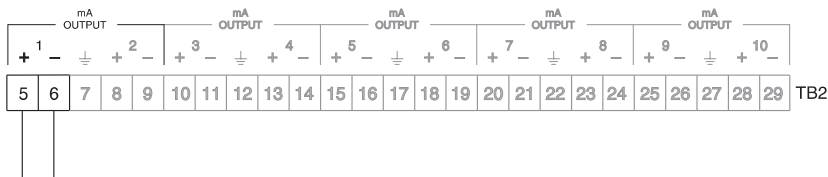
Typical system design. Refer to associated application device instruction manual.

SITRANS LU10 Communication



1. SITRANS LU A0 receiver input is non-polarized.
2. Refer to associated application device instruction manual for wiring detail. Check that the communication parameter (SITRANS LU10 \ P740) is ON.
3. SITRANS LU A0 interconnecting cable shield should be grounded at SITRANS LU10 only. Insulate shields at junctions to prevent inadvertent grounding. Use Belden 8760, 1 pair shielded twisted, 18 ga. or equivalent. Maximum individual loop length is 3000 m (10,000 ft).

Current Output



isolated 0 or 4 to 20 mA out,
750 Ω load max.
(typical of 10)



- mA outputs: Belden 8760, shielded / twisted pair, 18 AWG (0.75mm²) or equivalent. Maximum separation 1,500 m (5,000 ft).
- mA output to customer instrumentation: ground shield at one end only

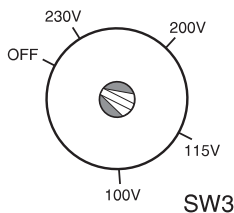
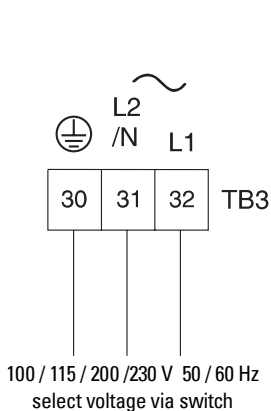


All wiring must have insulation suitable for at least 250 V

Note: The SITRANS LU AO mA output cable must be shielded over its entire length and grounded at one point only, for maximum noise immunity.

- Ensure the application device is properly grounded.
- Connect the cable shield to the application device **shield** terminal.
- To avoid developing a ground loop, leave the cable shield **open** at the SITRANS LU AO termination and insulate any cable shield junctions from ground.

Power



Switch is shown in **OFF** position.
Select appropriate voltage.

Caution:

- The equipment must be protected by a 15 A fuse or circuit breaker in the building installation.
- A circuit breaker or switch in the building installation, marked as the disconnect switch, shall be in close proximity to the equipment and within easy reach of the operator.

Operation

Analog output span (empty to full scale) and range (0 - 20 or 4 - 20 mA, proportional or inverse) are established when programming the associated application device. Trimming and limiting of the individual analog outputs is done via the application device, where applicable..

Function	Parameter
span	P007
range	P006
trim	P212 & P213
limit	P214 & P215

Refer to the associated application device manual.

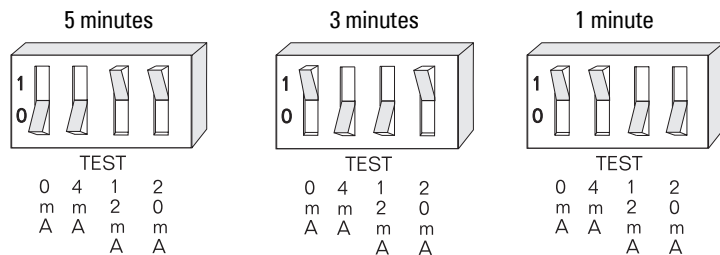
When power is applied to the SITRANS LU AO, LED 1 illuminates, and all analog outputs default to 0 mA until they are updated by the associated application device.

DATA RECEIVED LED 1 also flashes whenever a valid message is received from the application device. If LED 1 does not flash and the corresponding SITRANS LU AO is functioning properly, check for faulty communication wiring.

The received data from the application device is then processed to extract only the data dedicated to the SITRANS LU AO bank selected. The buffers associated with the individual outputs hold the extracted data until it is updated, controlling the analog output level accordingly. These buffers are updated subject to the scan sequence of the application device, **but the analog outputs are independent of the application device LCD display.**

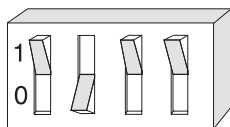
If there is a power interruption, all outputs drop to 0 mA, but the stored output values are retained in memory for ten minutes. Once power is restored, all outputs revert to their previous mA values, if the memory is intact, and normal operation resumes.

The SITRANS LU AO can be programmed to activate an alarm if communication is lost. When the toggles are set as shown below, the SITRANS LU AO forces all outputs to 0mA if communication is lost for more than the set time. When communication is resumed, the outputs revert to their normal function.



The SITRANS LU AO may be tested in two ways:

1. Via the associated application device: Refer to the associated instruction manual.
2. Via the TEST switch located at the top of the SITRANS LU AO board.



Set the toggle down at '1' for the test output desired.

Set all toggles down at '0' for normal operation.

TEST			
0	4	1	2
m	m	2	0
A	A	m	m
		A	A

Test output of 4 mA is selected.

This test overrides the normal operation and all 10 outputs on the SITRANS LU AO assume the test value selected until the toggle is reset (0) for normal operation. During test, the SITRANS LU AO buffer updates if communication has continued. Upon resumption of normal operation, the outputs assume the value found in the buffer.

Maintenance

The SITRANS LU AO requires no maintenance, but a program of periodic checks is recommended. This should include regular inspection, general cleaning and good housekeeping practices.

- Always disconnect power at the main breaker before cleaning the enclosure.
- Use a vacuum and a clean, dry paint brush to clean the enclosure and circuit boards.
- Check all electrical terminals for corrosion and arcing.

Notes

Notes



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Printed in Canada

Rev. 1.1